Program Change Request

APPROVED BY SENATE
04/22/2024

New Proposal

Date Submitted: 01/02/24 11:43 am

Viewing: **: Molecular and Cellular Biology + Data Science, BSLAS**

Last edit: 04/19/24 12:52 pm

Changes proposed by: Melissa Michael

In Workflow

1. U Program Review
2. 1415 Head
3. 1257 Head
4. 1434 Head
5. 1992 Head
6. 1583 Head
7. KP Committee Chair
8. LP Committee Chair
9. KP Dean
10. LP Dean
11. SMCB Head
12. KV Dean
13. University Librarian
14. COTE Programs
15. Provost
16. Senate EPC
17. Senate
18. U Senate Conf
19. Board of Trustees
20. IBHE
21. HLC
22. DMI

Approval Path

1. 01/08/24 8:34 pm Donna Butler (dbutler): Approved for U Program Review
2. 01/17/24 3:39 pm Melissa Michael (mmichae): Approved for 1415 Head
3. 01/17/24 3:43 pm Lee DeVille

(rdeville): Approved for 1257 Head
4. 01/18/24 4:44 pm Mahesh Viswanathan (vmahesh): Approved for 1434 Head
5. 02/20/24 5:21 pm Amber Holmes (aflowers): Approved for 1992 Head
6. 02/20/24 7:03 pm Bo Li (libo): Approved for 1583 Head
7. 02/22/24 2:26 pm Ashley Hallock (ahallock): Approved for KP Committee Chair
8. 03/11/24 4:48 pm Lisa Bievenue (bievenue): Approved for LP Committee Chair
9. 03/12/24 7:55 am Michael Stoller (stoller4): Approved for KP Dean
10. 03/12/24 9:05 am Catherine Blake (clblake): Approved for LP Dean
11. 03/12/24 10:07 am Melissa Michael (mmichae): Approved for SMCB Head
12. 03/29/24 11:09 am

Andrea Ray (aray): Approved for KV Dean
13. 04/09/24 4:15 pm Claire Stewart (clairest): Approved for University Librarian
14. 04/09/24 4:17 pm Suzanne Lee (suzannel): Approved for COTE Programs
15. 04/10/24 10:47 am Brooke Newell (bsnewell): Approved for Provost
16. 04/16/24 7:59 am Barbara Lehman (bjlehman): Approved for Senate EPC
17. 04/19/24 11:20 am Barbara Lehman (bjlehman): Rollback to Senate EPC for Senate
18. 04/19/24 1:57 pm Barbara Lehman (bjlehman): Approved for Senate EPC
19. 04/19/24 2:00 pm Barbara Lehman (bjlehman): Rollback to Senate EPC for Senate

Proposal Type

Proposal Type:
Major (ex. Special Education)

Administration Details

Official Program Name	Molecular and Cellular Biology + Data Science, BSLAS
Diploma Title	Bachelor of Science in Liberal Arts and Sciences
Sponsor College	Liberal Arts & Sciences
Sponsor Department	Molecular and Cellular Biology
Sponsor Name	Melissa Michael, Associate Director for Curriculum & Instruction
Sponsor Email	mmichae@illinois.edu
College Contact	Stephen R. Downie, Associate Dean for Curricula and Academic Policy
College Contact Email	sdownie@illinois.edu
College Budget Officer	Michael Wellens
College Budget Officer Email	wellens@illinois.edu

List the role for rollbacks (which role will edit the proposal on questions from EPC, e.g., Dept Head or Initiator) and/or any additional stakeholders. Purpose: List here who will do the editing work if proposal needs rolled back. And any other stakeholders.

Melissa Michael, Associate Director for Curriculum & Instruction (Initiator/Sponsor) will respond to questions and make changes as needed. The other two stakeholders are Brenda Anne Wilson (Assoc. Dir. for Undergraduate Instruction, wilson7@illinois.edu) and Milan Bagchi (Director, School of Molecular and Cellular Biology, mbagchi@illinois.edu).

Does this program have inter-departmental administration?

Yes

Interdisciplinary Colleges and Departments (list other colleges/departments which are involved other than the sponsor chose above)

Please describe the oversight/governance for this program, e.g., traditional departmental/college governance. Inclusion of/roles of elected faculty committees? Inclusion of/roles of any advisory committees.

In Spring 2017, the College of Liberal Arts & Sciences submitted an Investment for Growth Proposal to "Jump Start Data Science", focusing on undergraduate data science education. Interim Provost John Wilkin supported the proposal, but called on LAS to work with three colleges (Engineering, the iSchool, and the Gies College of Business) to develop a collaborative approach to undergraduate data science at Illinois.

Those deans formed a task force (herein the "Data Science Education Task Force" or DSETF) to explore opportunities and make proposals for undergraduate data science education at Illinois. The DSETF conducted its work during academic years 2017—2018 and 2018—2019. At the core of their work was the vision that every Illinois undergraduate should have the opportunity to have a meaningful exposure to data science.

In February 2019, the four deans agreed to support a shared framework for X+Data Science majors, based on suggestions from the DSETF. The framework consisted of the following pieces.

1) A set of core competencies and common features which will be expected of X+Data science majors, together with a reference standard set of courses and activities that fulfills the data science portion of those expectations.

2) Each college can propose its own X+Data Science majors, which will be majors of that college. They may differ from the reference standard approach. When they do so, they should explain how the proposed major provides the expected competencies and features of an X+Data Science major in a manner that is appropriate for their students.

3) The deans will engage with the campus leadership to establish a Data Science Education committee. The committee will:

- Keep track of offerings related to data science to facilitate collaboration and reduce redundancy
- Facilitate the development of data science programs by connecting undergraduate data science education resources across the university
- Advise colleges on matters related to undergraduate data science education
- Review X+Data Science major proposals, commenting on how they meet the expectations for X+Data Science majors and engage collaboratively and strategically with the university's resources in data science education.

College Liberal Arts & Sciences

Department Mathematics

Is there an additional department involved in governance?
Yes

College Grainger College of Engineering

Department Computer Science

Is there an additional department involved in governance?

Yes

College: Information Science, School of

Department: Information Sciences

Is there an additional department involved in governance?

Yes

College: Liberal Arts & Sciences

Department: Statistics

Proposal Title

Effective Catalog Term: Fall 2024

Proposal Title (either Establish/Revise/Eliminate the Degree Name in Program Name in the College of XXXX, i.e., Establish the Bachelor of Science in Entomology in the College of Liberals Art and Sciences, include the Graduate College for Grad Programs)

Establish the Bachelor of Science in Liberal Arts and Sciences in Molecular and Cellular Biology plus Data Science in the College of Liberal Arts and Sciences

Does this proposal have any related proposals that will also be revised during the next 6 weeks? Consider Majors, Minors, Concentrations & Joint Programs in your department. Please know that this information is used administratively to move related proposals through workflow efficiently. Example: If you are revising the BS proposal and one related concentration within the next 6 weeks, "This BS proposal (key 567) is related to the Concentration A proposal (key 145)."

No

Program Justification

Provide a brief justification of the program, including highlights of the program objectives, and the careers, occupations, or further educational opportunities for which the program will prepare graduates, when appropriate.

Ubiquitous digital technology and the generation of massive amounts of data, including biological and environmental data that impact biological systems, are rapidly transforming society and multiple fields of inquiry. Indeed, data science is ushering in a new era of modern medicine, where algorithms, artificial intelligence, machine learning, high-throughput genomics, and other data-driven technologies are revolutionizing how decision-makers like physicians and other healthcare providers are being informed about how to identify, treat, and manage health and disease. This transformation has created exciting opportunities and worrisome scenarios across multiple domains of human endeavor and biological wellbeing. Like the industrial technologies of the early-20th century, the new digital technologies of the early-21st century have great potential to transform society, for good or ill. The University of Illinois at Urbana-Champaign has a high calling to prepare students to lead society's digital transformation. The School of Molecular and Cellular Biology (SMCB), which is home to the largest group of pre-health undergraduate majors on Campus (BSLAS Molecular and Cellular Biology, BS Biochemistry, and the recently launched BSLAS Neuroscience), is poised to embrace this challenge by offering students a major that is at the interface of molecular and cellular biology and data science.

There is substantial and rapidly growing demand, both from students and from employers, for educational programs that are at the interface between specific disciplines and data science. Nowhere have we seen the rapid rise in this demand as we have within the field of molecular and cellular biology, where massive datasets from genomic and population studies, diagnostic and other health applications, and integrative holistic approaches toward global health and biosecurity have overwhelmed scientists, pharmaceutical, and health professionals. Data science is critical for enabling rapid, efficient, and accurate processing, analysis, management, and assimilation of large quantities of disparate, fragmented, unstructured, and sometimes conflicting data generated by healthcare systems, environmental surveillance, and biological research enterprises. A 2017 study by researchers at IBM and Burning Glass Technologies predicted the demand for Data Scientists will grow by 28% by 2020. The U.S. Bureau of Labor Statistics, in their "Job Outlook, 2021-31" says that the average growth rate for all occupations is 5%. They currently project that the employment of Data Scientists is projected to grow 36% from 2021 to 2031 (https://www.bls.gov/ooh/math/data-scientists.htm). The Enrollment in the undergraduate majors of "Statistics" and "Statistics and Computer Science," which provide students access to some of the competencies of data science, have grown by a factor of six in the last ten years. For example, health data science is an emerging discipline that combines mathematics, statistics, epidemiology, microbial and human genomics, and bioinformatics. Not only are hospitals and government health organizations such as NIH, CDC, WHO, and USDA urgently seeking graduates with backgrounds in health data science, but also the global pharmaceutical, food, and agricultural industries.

Data science is emerging as a subject of great importance in many domains of human

Data science is emerging as a subject of great importance in many domains of human and scholastic endeavor. National policy documents for data science majors emphasize that engagement with an application domain is an important part of data science education. The University of Illinois' white paper on data science education (https://blogs.illinois.edu/files/7831/599574/133040.pdf) recommended the development of "X + Data Science Majors" as an approach to offering broad collaborative opportunities for Illinois students to engage with data science. The proposed degree program in Molecular and Cellular Biology plus Data Science (MCB + DS) is designed to equip our graduates with the knowledge, tools, and skills to manage and analyze very large and diverse datasets across various biological systems, including healthcare systems, pharmaceutical industry, biologically and environmentally relevant government agencies, and data-intensive biological research areas.

Minimum hours required for graduation is 120, to include a minimum of 40 hours of upper-division coursework. These hours can be drawn from all elements of the degree. Upper-division courses are those whose content and teaching are appropriate for junior- and senior-year students in a baccalaureate program or other students with experience in the subject.

The proposed MCB + DS degree program requires a minimum of 120 credit hours of which 40 credit hours of advanced courses. Of those, 33 credit hours are at the 300- or 400-level. Seven (7) credit hours come from 200-level courses with multiple prerequisites. The courses fall into the categories listed below.

Advanced Data Science Coursework: Total of 10 cr. hrs.
CS 307: Modeling and Learning in Data Science (4 cr. hrs.)
IS 467: Ethics and Policy for Data Science (3 cr. hrs.)
IS 477: Data Management, Curation & Reproducibility (3 cr. hrs.)

Advanced Non-Laboratory MCB Coursework (21-22 cr. hrs.)
MCB 354: Biochemical and Physical Basis of Life (3)
Six Advanced Elective Courses at 3 or 4 credit hours each (18-19)

Advanced MCB Laboratory Course (2-4 cr. hrs.)
MCB 301: Experimental Microbiology (3 cr. hrs.)
MCB 364: Eukaryotic Cell Biology Laboratory (4 cr. hrs.)
MCB 428: Microbial Pathogens Laboratory (2 cr. hrs.)
MCB 460: Neuroanatomy Laboratory (2 cr. hrs.)
BIOC 455: Techniques in Biochemistry and Biotechnology (4 cr. hrs.)

Advanced Research or Discovery Experience Coursework (3-5 cr. hrs.)
MCB 492: Senior Thesis (3 to 5 cr. hrs.)
Advanced courses articulated from institutions abroad would fit in one of the prior categories.

200-level Coursework with Multiple Pre-Requisites (7 cr. hrs.)
CS 277: Algorithms and Data Structures for Data Science (4 cr. hrs.) Prerequisite

courses are STAT 207 and one of MATH 220, MATH 221, MATH 234.
MCB 250: Molecular Genetics (3 cr. hrs.) Prerequisite courses are MCB 150, CHEM 102, and CHEM 104.

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/proposed change?

No

Does this new program/proposed change result in the replacement of another program?

No

Does the program include other courses/subjects outside of the sponsoring department impacted by the creation/revision of this program?

Yes

Courses outside of the sponsoring department/interdisciplinary departments

MATH 220 - Calculus
MATH 221 - Calculus I
MATH 227 - Linear Algebra for Data Sci
MATH 257 - Linear Algebra w Computat Appl
STAT 107 - Data Science Discovery
STAT 207 - Data Science Exploration
CS 277 - Algo & Data Stru for Data Sci
CS 307 - Model & Learning in Data Sci
IS 467 - Ethics & Policy for Data Scien
IS 477 - Data Mgmt, Curation, & Reprodu
CHEM 102 - General Chemistry I
CHEM 104 - General Chemistry II
CHEM 232 - Elementary Organic Chemistry I
BIOC 455 - Technqs Biochem & Biotech
BIOC 446 - Physical Biochemistry

Please attach any letters of support/acknowledgement for any Instructional Resources consider faculty, students, and/or other impacted

STAT-Support-MCB+DS Letter 7 Mar 2023.docx
CS MCB + Data Science_Ltr of Support 7 Mar 2023.pdf
Chemistry MCB+DS support.pdf
iSchool MCB+DS Ltr 30 Mar 2023.pdf
Math MCB+DS Support Ltr 19 Apr 2023 .pdf
BIOC MCB + DS support 9 Oct 2023.pdf

units as
appropriate.

Program Regulation and Assessment

Plan to Assess and Improve Student Learning

Illinois Administrative Code: 1050.30(b)(1)(D) Provision is made for guidance and counseling of students, evaluations of student performance, continuous monitoring of progress of students toward their degree objectives and appropriate academic record keeping.

List the program's student learning outcomes. Each outcome should identify what students are expected to know and/or be able to do upon completing this program.

The School of MCB Courses and Curriculum Committee will provide faculty input and oversight regarding the evaluation of the program as it does for all undergraduate degree programs in the School of Molecular and Cellular Biology.

Upon successful completion of the Molecular & Cellular Biology + Data Science undergraduate curriculum, students will be able to:
1. understand and appreciate the diversity of life as it evolved over time by processes of mutation, selection, and genetic change.
2. illustrate that fundamental structural units define the function of all living things.
3. explain that the growth, development, and behavior of organisms are activated through the expression of genetic information in context.
4. summarize that biological systems grow and change by processes based upon chemical transformation pathways and are governed by the laws of physics.
5. illustrate that living systems are interconnected and interacting across scales of space and time.
6. design a scientific process and employ the scientific method, demonstrating that biology is evidence based and grounded in the formal practices of observation, experimentation, and hypothesis testing.
7. apply critical thinking and quantitative reasoning skills to solve problems.
8. execute quantitative analysis to interpret biological data.
9. construct and utilize predictive models to study and describe complex biological systems.
10. apply concepts from other sciences in order to interpret biological phenomena.
11. communicate biological concepts and understanding to members of a diverse scientific community as well as to the general public.
12. identify social and historical dimensions of biological investigation.
13. develop relevant programming abilities.
14. demonstrate proficiency with statistical analysis of data.
15. develop the ability to build and assess data-based models.
16. execute statistical analyses with professional statistical software.
17. demonstrate skill in data management.
18. apply data science concepts and methods to solve problems in real-world contexts and communicate these solutions effectively.

Describe how, when, and where these learning outcomes will be assessed.

Describe here:

The program learning objectives will be assessed in groups of three or four each academic year. The School of Molecular and Cellular Biology Instructional Program Leadership Team will produce a learning objectives map that will identify which courses support each learning objective. The Degree Program Curriculum Map will be used to assist in understanding how students move through the program and gain knowledge and skills that can be measured. Performance on selected questions on final exams in required courses will be monitored, and checks will take placed each academic year to be certain that students are meeting the objectives. Evidence of integrated knowledge and skills will be collected by monitoring progress in projects that are part of our collection of five (5) of advanced laboratory courses which are student-centered and inquiry-based. Every student in the degree program is required to take a minimum of one of these courses which provides us with a metric that can be used for all students. Instructors in these courses work closely with the SMCB Instructional Program leadership such that project requirements are as close to identical as is possible. Using defined rubrics, it can be determined whether, and at what level, students have attained the learning outcomes. These laboratory courses will serve as capstone experiences for the degree program. Annual focus groups with students will be conducted to better understand the student experience in the program. Where students conduct undergraduate research or participate in experiential learning experiences such as internships or study abroad, evidence of content and skills mastery will be sought in written research documents, such as posters and papers. First destination data for graduates will be collected with special effort to identify specifically where the graduates go after the BSLAS, such as professional school, graduate school, industry, or other. Patterns in matriculation to institutions and degree programs will be monitored to better understand how the program connects students to their future profession and/or career.

Identify faculty expectations for students' achievement of each of the stated student learning outcomes. What score, rating, or level of expertise will signify that students have met each outcome? Provide rating rubrics as necessary.

The Faculty of the School of Molecular & Cellular Biology seek a minimum of 70% success rate for direct measures which include performance on formative and summative assessments, laboratory research data collection and write-up, research presentations in the form of posters presented at research symposia. In situations where the direct measures do not lend themselves well to a percent mastery rate, the faculty expect students to perform satisfactorily.

Explain the process that will be implemented to ensure that assessment results are used to improve student learning.

We will use the information we collect to adjust course content if we find that learning objectives are not being met or not being met sufficiently (i.e., at the 70% success rate or higher). The results of all assessment work will be shared with those delivering the courses (SMCB Faculty) with an eye toward catching objectives that we may not fully meet or areas where we could improve outcomes with adjustments. The results from assessment activities are shared with all members of the MCB Courses and Curriculum Committee comprised of two faculty members from each of our departments (total of eight), Associate Directors for Graduate Education, Undergraduate Education, and Curriculum and Instruction, as well as one graduate student and one undergraduate student committee members. The results are also shared with the Director for the School of Molecular and Cellular Biology and are available to all SMCB faculty members.

Program Description and Requirements
Attach Documents

Is the career/profession for graduates of this program regulated by the State of Illinois?

No

Program of Study

Baccalaureate degree requires at least 120 semester credit hours or 180 quarter credit hours and at least 40 semester credit hours (60 quarter credit hours) in upper division courses" (source: https://www.ibhe.org/assets/files /PublicAdminRules2017.pdf). For proposals for new bachelor's degrees, if this minimum is not explicitly met by specifically-required 300- and/or 400-level courses, please provide information on how the upper-division hours requirement will be satisfied.

Attach Program of Study-related information such as sample sequences (for undergraduate programs) or college-level forms.	MCB + DS SS.docx

Catalog Page Text - Overview Tab

Description of program for the catalog page. This is not official content, it is used to help build the new catalog page for the program. Can be edited in the catalog by the college or department.

Molecular & Cellular Biology + Data Science, BSLAS
for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Molecular & Cellular Biology + Data Science

In the Molecular and Cellular Biology (MCB) + Data Science (DS) degree program students are provided with a thorough foundation in both molecular and cellular biology and data science through an integrated and deliberate effort to ensure that our students have the necessary understanding of the biological science underpinning the study of life and biological systems, while also having access to the tools and training in the skillsets needed to collect, handle, and interpret the large biological datasets being generated by the field. Thorough preparation in molecular biology, molecular genetics, microbiology, cellular biology, biochemistry, physiology, and structural biology comes from coursework, laboratory classes, as well as research and discovery experiences. This degree program equips students with the knowledge, tools, and skills to manage and analyze very large and diverse datasets across various biological systems, including healthcare systems, pharmaceutical industry, biologically and environmentally relevant government agencies, and data-intensive biological research areas.

Undergraduate degree programs in Molecular & Cellular Biology
Biochemistry, BS
Molecular & Cellular Biology, BSLAS
Molecular & Cellular Biology Honors Concentration, BSLAS
Molecular & Cellular Biology + Data Science, BSLAS
Neuroscience, BSLAS

Distinction
Students in MCB + Data Science can qualify for Distinction via one of the following:
Distinction for Excellence in Research:

To be eligible for graduation with Distinction a student must:
Complete 3 semesters of MCB 290 for 2 credit hours or more each semester. Maintain a minimum cumulative GPA of 3.25 at the end of penultimate semester. Give at least one poster presentation at the Undergraduate Research symposium or other approved venue. Obtain a letter of support from their Principal Investigator.

To be eligible for graduation with High Distinction a student must:
Complete 2 semesters of MCB 290 for 2 credit hours or more each semester. Complete 1 semester of MCB 492 for 3 credit hours or more. Maintain a minimum cumulative GPA of 3.25 at the end of penultimate semester. Give at least one poster presentation at the Undergraduate Research symposium or other approved venue. Obtain a letter of support from their Principal Investigator. Submit a written thesis that is approved by the Distinction Committee.

To be eligible for graduation with Highest Distinction a student must:
Complete 2 semesters of MCB 290 for 2 credit hours or more each semester. Complete 1 semester MCB 492 for 3 credit hours or more. Maintain a minimum cumulative GPA of 3.90 at the end of penultimate semester. Give at least one poster presentation at the Undergraduate Research symposium or other approved venue. Obtain a letter of support from their Principal Investigator. Submit a written thesis that is approved by the Distinction Committee.

To be eligible for graduation with Academic Distinction a student must:
Maintain a major GPA of 3.90 or higher in the MCB + Data Science major (biology, chemistry, and math courses for the MCB + Data Science major) at the end of their penultimate semester.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum hours required for graduation: 120 hours.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300- or 400-level. These hours can be drawn from all elements of the degree. Students should consult their academic advisor for additional guidance in fulfilling this requirement.
The university and residency requirements can be found in the Student Code (§ 3-801) and in the Academic Catalog.

General Education Requirements

Follows the campus General Education (Gen Ed) requirements. Some Gen Ed requirements may be met by courses required and/or electives in the program.

Course List

Code	Title	Hours
Composition I		4-6
Advanced Composition		3
Humanities & the Arts (6 hours)		6
Natural Sciences & Technology (6 hours)		6
fulfilled by MCB 150, CHEM 102, CHEM 104		
Social & Behavioral Sciences (6 hours)		6
Cultural Studies: Non-Western Cultures (1 course)		3
Cultural Studies: US Minority Cultures (1 course)		3
Cultural Studies: Western/Comparative Cultures (1 course)		3
Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)		6-10
fulfilled by MATH 220 or MATH 221; STAT 107, STAT 207		
Language Requirement (Completion of the fourth semester or equivalent of a language other than English is required)		0-20

Course List

Code	Title	Hours
Orientation and Professional Development		
LAS 101	Design Your First Year Experience	1
OR		

Code	Title	Hours
LAS 100	Success in LAS for International Students	3
& LAS 101	and Design Your First Year Experience	
OR		
LAS 102	Transfer Advantage	1
Total Hours		1 or 3

Course List

Code	Title	Hours
Major Core Requirements and Electives		
MCB Core		17
MCB 150	Molec & Cellular Basis of Life	
MCB 250	Molecular Genetics	
MCB 251	Exp Techniqs in Molecular Biol	
MCB 252	Cells, Tissues & Development	
MCB 253	Exp Techniqs in Cellular Biol	
MCB 354	Biochem & Phys Basis of Life	
Data Science Core		29-30
Mathematical Foundations		
MATH 220	Calculus	
or MATH 221	Calculus I	
MATH 227	Linear Algebra for Data Science	
or MATH 257	Linear Algebra with Computational Applications	
Data Science Fundamentals		
STAT 107	Data Science Discovery	
STAT 207	Data Science Exploration	
CS 307	Modeling and Learning in Data Science	
Computational Fundamentals		
CS 277	Algorithms and Data Structures for Data Science	
Social Impact in Data Science		
IS 467	Ethics and Policy for Data Science	
IS 477	Data Management, Curation & Reproducibility	
Chemistry		10
CHEM 102	General Chemistry I	
CHEM 104	General Chemistry II	
CHEM 232	Elementary Organic Chemistry I	
Advanced MCB Lab Courses		2-4
At least one course from this list is required.		
MCB 301	Experimental Microbiology	
MCB 364	Eukaryotic Cell Biology Laboratory	
MCB 428	Microbial Pathogens Laboratory	
MCB 460	Neuroanatomy Laboratory	
BIOC 455	Technqs Biochem & Biotech	
Advanced Courses Group A		9
At least 3 courses, a minimum of 9 credit hours, is required from this list.		
MCB 317	Genetics and Genomics	
MCB 419	Brain, Behavior & Info Process	

Code	Title	Hours
MCB 421	Microbial Genetics	
MCB 432	Computing in Molecular Biology	
MCB 435	Evolution of Infectious Disease	
BIOC 446	Physical Biochemistry	
BIOP 401	Introduction to Biophysics	
Advanced Courses Group B		9
At least 3 courses, a minimum of 9 credit hours, is required from this list.		
MCB 300	Microbiology	
MCB 314	Introduction to Neurobiology	
MCB 316	Genetics and Disease	
MCB 320	Mechanisms of Human Disease	
MCB 400	Cancer Cell Biology	
MCB 401	Cellular Physiology	
MCB 402	Sys & Integrative Physiology	
MCB 406	Gene Expression & Regulation	
MCB 408	Immunology	
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine	
MCB 413	Endocrinology	
MCB 424	Microbial Biochemistry	
MCB 426	Bacterial Pathogenesis	
MCB 430	Molecular Microbiology	
Research or Discovery Experience		6
One of the most important skills a student will gain in the MCB + DS degree will be the ability to work with data in context. A minimum of 6 credit hours of research or discovery experience is required. This can be achieved through one or more of the options listed below.		
Option 1		
MCB 290	Undergraduate Research	
Completed in School of MCB research labs, designated MCB data science-focused labs is encouraged. Optional: MCB 492: Senior Thesis in MCB 290 research lab.		
Option 2		
MCB 292	Experiential Learning in MCB	
Option 3		
School of MCB-developed Study Abroad Program where advanced courses in MCB and Data Science are the focus (minimum of the equivalent to 6 UIUC credit hours transferred back to Illinois). Some programs offer course-based research experiences in MCB research laboratories with an emphasis on Data Science. Students choose from MCB-developed residential study abroad programs. All courses are selected under the supervision of an MCB Study Abroad Academic Advisor and will be pre-articulated.		

Corresponding Degree	BSLAS Bachelor of Science in Liberal Arts and Sciences

Program Features

Academic Level	Undergraduate
Does this major have transcripted concentrations?	No

What is the typical time to completion of this program?

4 years

What are the minimum Total Credit Hours required for this program?

120

CIP Code	26.0406 Cell/Cellular and Molecular Biology - 26.0406 Cell/Cellular and Molecular Biology

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Delivery Method

This program is available:

On Campus - Students are required to be on campus, they may take some online courses.

Admission Requirements

Desired Effective Admissions Term	Fall 2024

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

The requirement for the MCB + Data Science degree program will be the same as for all first time freshman entering a major in the School of Molecular and Cellular Biology.

The proposed BSLAS in MCB + Data Science will be a rigorous degree program, but we want to remove as many barriers to matriculation as possible.

Specifically, the requirements will be those for all incoming first-year applicants to UIUC. The details can be found at this URL: https://admissions.illinois.edu/Apply/Freshman/requirements, but can also be summarized as follows:

English: 4 years required
Math: 3 or 3.5 years required, 4 years recommended
Social Sciences: 2 years required, 4 years recommended
Lab Sciences: 2 years required, 4 years recommended
Language other than English: 2 years required, 4 years recommended
Flexible academic units: 2 years required, 4+ years recommended

Transfer Students
Students must obtain approval from the School of MCB before processing in LAS Student Academic Affairs. The school broadly evaluates transfer candidates according to the following three requirements:

• MCB + Data Science major GPA of 2.50 or higher, based on at least one full semester of course work at Illinois.

• MCB 150 and at least one general chemistry lecture completed with grades of C or higher in each individual course.

• Attendance at an MCB + Data Science Information Session.

Number of Students in Program (estimate)

Year One Estimate	30	5th Year Estimate (or when fully implemented)
120		

Estimated Annual Number of Degrees Awarded

Year One Estimate	0	5th Year Estimate (or when fully implemented)
30		

What is the matriculation

term for this program?

Fall

Budget

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?

No

Additional Budget Information

The School of Molecular and Cellular Biology does not expect to alter the number of faculty in MCB due to the creation of this degree program. The School of Molecular and Cellular Biology is already searching for two new faculty in RNA Biology, Genomics, and Informatics. The faculty hired in this search will be uniquely qualified to contribute to this degree program due to their areas of expertise lying at the interface of modern biology and bimolecular medicine and Data Science. The MCB courses required for this degree program are currently operational and have capacity to accommodate MCB + Data Science students. Faculty teaching load will not change because of this proposed degree program because the MCB required courses for this degree program currently have capacity to seat additional students or are delivered in sections and can scale. The student-faculty ratio may shift slightly, but given our current capacity, the addition of thirty students per cohort will not affect any one course in a significant way. Further, we expect that some of the students who will choose this major are likely to come from the group who would have selected MCB or Biochemistry in the absence of this degree program. This further reduces the overall effect on student to faculty ratios and class size. If any individual course sees increased enrollment pressure, the School of Molecular and Cellular Biology will work with our faculty to find solutions so that the course can move forward with undiminished quality. These solutions may include the service of a course coordinator or additional graduate teaching assistants being assigned. SMCB will use existing revenue streams to meet these needs, and will not ask the College of Liberal Arts and Sciences for additional funding. SMCB has a very strong existing instructional program infrastructure (curricular and instructional support, academic advising and career services, etc.), but if this program proves to be as successful as expected and the interest exceeds the stated goal of annual cohorts of thirty, the School of Molecular and Cellular Biology may be in a position to request permission to hire one academic advisor/program coordinator to advise students, track student success, work on program assessment among other degree-program essentials.

The Departments of Mathematics, Statistics, and Computer Science, and the i-School are coordinating to provide support for advising in data science.

Attach File(s)

Financial Resources

How does the unit intend to financially support this proposal?

The School of Molecular and Cellular Biology will not ask the College of Liberal Arts and Sciences for additional funding due to the deployment of this degree program. We will use existing revenue streams, such as differential tuition from existing undergraduate degree programs, to support this proposal until it is generating revenue on its own. The SMCB will seek differential tuition for this degree program as we have for our other BS and BSLAS degree programs (BS Biochemistry, BSLAS Molecular and Cellular Biology, BSLAS Neuroscience).

Will the unit need to seek campus or other external resources?

No

Attach letters of support

What tuition rate do you expect to charge for this program? e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

The School of Molecular and Cellular Biology requests Chemical & Life Sciences Differential Tuition rate for this degree program as we have for our other existing undergraduate degree programs in the school (BSLAS MCB, BSLAS Neuroscience, BS in Biochemistry).

IBHE

Degree Program Title and Overview

What is the specific title of the proposed degree program as it would be listed in the IBHE Program Inventory? The name should be what typically is used for similar programs nationally. Provide a short description of the program, including highlights of the program objectives, and the careers, occupations, or further educational opportunities for which the program will prepare graduates.

Molecular and Cellular Biology + Data Science (MCB + DS), Bachelor of Science in Liberal Arts and Sciences (BSLAS)

Ubiquitous digital technology and the generation of massive amounts of data, including biological and environmental data that impact biological systems, are rapidly transforming society and multiple fields of inquiry. Indeed, data science is ushering in a new era of modern medicine, where algorithms, artificial intelligence, machine learning, high-throughput genomics, and other data-driven technologies are revolutionizing how decision-makers like physicians and other healthcare providers are being informed about how to identify, treat, and manage health and disease. This transformation has created exciting opportunities and worrisome scenarios across multiple domains of human endeavor and biological wellbeing. Like the industrial technologies of the early-20th century, the new digital technologies of the early-21st century have great potential to transform society, for good or ill. The University of Illinois at Urbana-Champaign has a high calling to prepare students to lead society's digital transformation. The School of Molecular and Cellular Biology (SMCB), which is home to the largest group of pre-health undergraduate majors on Campus (BSLAS Molecular and Cellular Biology, BS Biochemistry, and the recently launched BSLAS Neuroscience), is poised to embrace this challenge by offering students a major that is at the interface of molecular and cellular biology and data science.

There is substantial and rapidly growing demand, both from students and from employers, for educational programs that are at the interface between specific disciplines and data science. Nowhere have we seen the rapid rise in this demand as we have within the field of molecular and cellular biology, where massive datasets from genomic and population studies, diagnostic and other health applications, and integrative holistic approaches toward global health and biosecurity have overwhelmed scientists, pharmaceutical, and health professionals. Data science is critical for enabling rapid, efficient, and accurate processing, analysis, management, and assimilation of large quantities of disparate, fragmented, unstructured, and sometimes conflicting data generated by healthcare systems, environmental surveillance, and biological research enterprises. A 2017 study by researchers at IBM and Burning Glass Technologies predicted the demand for Data Scientists will grow by 28% by 2020. The U.S. Bureau of Labor Statistics, in their "Job Outlook, 2021-31" says that the average growth rate for all occupations is 5%. They currently project that the employment of Data Scientists is projected to grow 36% from 2021 to 2031 (https://www.bls.gov/ooh/math/data-scientists.htm). Enrollment in the undergraduate majors of "Statistics" and "Statistics and Computer Science," which provide students access to some of the competencies of data science, have grown by a factor of six in the last ten years. For example, health data science is an emerging discipline that combines mathematics, statistics, epidemiology, microbial and human genomics, and bioinformatics. Not only are hospitals and government health organizations such as NIH, CDC, WHO, and USDA

are hospitals and government health organizations such as NIH, CDC, WHO, and USDA urgently seeking graduates with backgrounds in health data science, but also the global pharmaceutical, food, and agricultural industries.

Data science is emerging as a subject of great importance in many domains of human and scholastic endeavor. National policy documents for data science majors emphasize that engagement with an application domain is an important part of data science education. The University of Illinois' white paper on data science education (https://blogs.illinois.edu/files/7831/599574/133040.pdf) recommended the development of "X + Data Science Majors" as an approach to offering broad collaborative opportunities for Illinois students to engage with data science. The proposed degree program in Molecular and Cellular Biology plus Data Science (MCB + DS) is designed to equip our graduates with the knowledge, tools, and skills to manage and analyze very large and diverse datasets across various biological systems, including healthcare systems, pharmaceutical industry, biologically and environmentally relevant government agencies, and data-intensive biological research areas.

Illinois Administrative Code: 1050.30(a)(1): A) The objectives of the unit of instruction, research or public service are consistent with the mission of the college or university; B) The objectives of the unit of instruction, research or public service are consistent with what the unit title implies.

Institutional Context

University of Illinois at Urbana-Champaign

Describe the historical and university context of the program's development. Include a short summary of any existing program(s) upon which this program will be built.

Explain the nature and degree of overlap with existing programs and, if such overlap exists, document consultation with the impacted program's home department(s).

Data science is an area of scholarship involving principles for data collection, storage, integration, analysis, inference, communication, and ethics in the context of the ubiquitous collection of massive data sets that have emerged in recent years. The field draws from several existing fields, including information technology, computer science, statistics, mathematics, and business analytics. However, core data science concepts are not being conveyed by mainstream training in any single other field because data science is not reducible to any of the preexisting fields (https://doi.org/10.17226/25104).

The university's 2018 Strategic Plan "The Next 150" (https://archive.strategicplan.web.illinois.edu) calls for "[p]rovid[ing] all Illinois students the opportunity to have a meaningful exposure to data science." One of the hallmarks of data science is that it is outward-looking, engaging richly with multiple domains of application. In response to the university's strategic plan and in recognition of the interdisciplinary and outward-looking nature of data science, the Departments of Computer Science, Mathematics, and Statistics, the Gies College of Business, and the iSchool collaborated to develop a framework for X + Data Science majors, enabling students to learn the principles of data science while engaging deeply with a variety of subject matters (X). In this program, the Department of Scholarship in X offers coursework and advising in X, while the Departments of Computer Science, Mathematics, and Statistics, and the iSchool offer a core framework of courses and advising in data science. In addition, the overall program provides coursework and independent work/research experiences that integrate X and data science and enhance the students' experience.

In the proposed MCB + DS degree program, students will be provided with a thorough foundation in both molecular and cellular biology and data science through an integrated and deliberate effort to ensure that our students have the necessary understanding of the biological science underpinning the study of life and biological systems, while also having access to the tools and training in the skillsets needed to collect, handle, and interpret the large biological datasets being generated by the field.

The data science components of the MCB + DS program, like all X + Data Science programs, are a collaboration of four departments in three colleges of the university: the department of Computer Science in the Grainger College of Engineering, the departments of Mathematics and Statistics in the College of Liberal Arts and Sciences, and the iSchool. By drawing strategically from the resources of these units we have provided a set of 8 courses that can be used for a wide variety of undergraduate degree and certificate programs in data science, while avoiding wasteful duplication. The MCB components for the MCB + DS have their foundation in the long-existing BSLAS in MCB program, which is also a collaboration of multiple departments within the College of LAS (Chemistry, Mathematics, Statistics, Microbiology, Biochemistry, Cell & Developmental Biology, and Molecular & Integrative Physiology). The MCB major has grown multifold since its inception. The proposed MCB + DS degree will be an expansion of the offerings provided by these units to meet the needs of our students.

The proposed MCB + DS degree program, like other X + DS degree programs, differs from other undergraduate degree programs in data science because it provides the student with substantial

undergraduate degree programs in data science because it provides the student with substantial exposure to data science and to scholarship in X, here MCB. It also differs significantly from the CS + X degrees because the focus beyond X is in data science, not computer science, with which it overlaps but is distinct from in that computer science focuses on building computer hardware and programming software, while data science focuses on developing and using programs, analytics, and statistics to study and manage large data sets in the field of X, here Molecular and Cellular Biology.

This program is unique in that it is the only X + Data Science degree program on our campus, or anywhere else that we could identify, that involves the combined disciplines found in the School of Molecular and Cellular Biology with the Departments of Biochemistry, Cell and Developmental Biology, Microbiology, Molecular and Integrative Physiology and the Center for Biophysics and Quantitative Biology. There are other X + Data Science degree programs at University of Illinois at Urbana-Champaign, and the Data Science Core part of the proposed degree program is identical or very similar to each of those. That is the only replication of which we are aware.

University of Illinois

Briefly describe how this program will support the University's mission, focus and/or current priorities. Demonstrate the program's consistency with and centrality to that mission.

The university continually examines its educational programs to respond to emerging student demand, societal need, and economic opportunity. Data science has rapidly emerged as a field for which there is broad-based demand across many areas of economic activity and across many fields of scholarship. The university recognized this in its 2018 Strategic Plan "The Next 150", which called on the to “provide all Illinois students the opportunity to have a meaningful exposure to data science.” The degree program proposed here is part of that response.

The proposed MCB + DS degree will support the mission of the University of Illinois by preparing its graduates to fulfill an urgent and growing societal need in managing, critically analyzing, and interpreting large-scale information with accuracy, reliability, and high quality. Specifically, the MCB + DS degree graduates will be highly sought after for their expertise in data management but also relevant interpretation, analysis, and application to the field where the data is being generated.

Discuss projected future employment and/or additional educational opportunities for graduates of this program. Compare estimated demand with the estimated supply of graduates from this program and existing similar programs in the state. Where appropriate, provide documentation by citing data from such sources as employer surveys, current labor market analyses, and future workforce projections. (Whenever possible, use state and national labor data, such as that from the Illinois Department of Employment Security at http://lmi.ides.state.il.us/ and/or the U.S. Bureau for Labor Statistics at http://www.bls.gov/).

Data science is one of the fastest growing domains of medical and pharmaceutical information technology today. Medical enterprises, private and public healthcare organizations, government health agencies, and pharmaceutical companies all over the world are scrambling to adopt and integrate data science technologies and approaches into their systems. The medicine, healthcare and pharmaceutical industries have embraced the new paradigm of collecting, integrating, utilizing, and managing massive amounts of health-related data to achieve more rapid, more accurate, and more predictable diagnoses, interventions, and outcomes.

The ubiquity of massive data arising from an increasingly connected world means that data scientists and those who understand the human and policy implications of data are in demand in all domains of economic activity. There is an urgent and growing need for graduates with a degree in MCB + DS in medicine, healthcare, and pharmaceutical industries. There is already a high need for these individuals as medical image and data analysts, predictive analytics modelers, drug research and data analysts, virtual assistance platform developers, and researchers in the areas of microbial and human genomics, epidemiology and disease transmission, environmental impacts, data management, and other technological advancements involving big datasets. In addition to medical organizations and health industry, research institutions are also clambering for graduates at the interface of biology and data science to fill academic professional positions in biotechnology centers, genome centers, and bioinformatics centers.

Current job opportunities boards indicate that there is a wealth of opportunities for data science and biology positions with salaries that range from $70,000 to $170,000 depending on the level of further education obtained. Job descriptions for recent graduates with Bachelor of Science degrees include: “training in data analysis and expertise and intuition in biology,” “data scientists, computational biology, mine and analyze large datasets, develop statistical and predictive models on genomic and health related data sets” and “evaluate and develop state-of-the-art computational methods to analyze molecular biology data.” The proposed MCB + DS degree program will provide our graduates with the necessary background to excel at securing this type of position.

The U.S. Bureau for Labor Statistics indicates that the job outlook for data scientists with expertise in companion disciplines is quite strong. Employment of data scientists is projected to grow 36 percent from 2021 to 2031, much faster than the average for all occupations. About 13,500 openings for data scientists are projected each year, on average, over the next decade. Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force

need to replace workers who transfer to different occupations or exit the labor force, such as to retire. The median annual wage for data scientists was $100,910 in May 2021. We expect graduates from this proposed degree program to enter a strong job market with a very sought-after skillset.

What resources will be provided to assist students with job placement?

As stated above, the School of MCB Instructional Program has a large advising group (six full-time advisors, three part-time advisors), which provides a welcoming and inclusive community of support to empower all our students to take ownership of their education, while enriching their experiences and achieving their academic, professional, and personal goals. The School of Molecular and Cellular Biology offers a variety of research, pre-med/pre-health mentorship, study abroad, honors, merit, tutoring, leadership, and other professional development programs. The School of Molecular and Cellular Biology provides individualized advising for all our students, and students in the proposed MCB + DS would have access to the same level of care. Among the academic advising team are two individuals who are also certified as Career Coaches. These coaches assist students in finding a path for themselves that is well-aligned to the student's objectives. There are also faculty who frequently volunteer at workshops and career development activities for our students, and the School of Molecular and Cellular Biology reaches out to these faculty when appropriate for the students in this program. If this program is more successful than our initial projections, we may request permission to hire one academic advisor/program coordinator.

If letters of support are available attach them here:

Comparable Programs in Illinois

Illinois Administrative Code: 1050.30(a)(6): B) The unit of instruction, research or public service meets a need that is not currently met by existing institutions and units of instruction, research or public service. For additional information about similar programs, check the Degree Program Inventory on the IBHE website (https://www.ibhe.org/ProgInv_Prog.aspx) and review the Notice of Intent website for programs being planned (https://legacy2.ibhe.org/ODA/tracking/NOI/NOISearch.asp).

Identify similar programs and sponsoring institutions in the state, at both public and private colleges and universities. Compare the proposed program with these programs, and discuss its potential impact upon them. Provide complete responses, do not reference website links.

The proposed MCB + DS degree program falls under the 26.0406 - Cell/Cellular and Molecular Biology CIP classification.

Other X + Data Science programs on this Campus have used 30.7001 But the School of MCB has chosen to use the 26.0406 Cell/Cellular and Molecular Biology category since the majority of credit hours in the degree are either MCB courses or courses in disciplines supporting MCB (Chemistry, Mathematics, Physics).

In the State of Illinois there are three institutions with bachelor of science or arts degree programs in the 26.0406 Cell/Cellular and Molecular Biology category:
Bradley University, Bachelor of Arts and Bachelor of Science, Central Region
Illinois State University, Bachelor of Science, Central Region
University of Illinois at Urbana-Champaign, School of Molecular and Cellular Biology, Prairie Region

In the State of Illinois there are three institutions with bachelor of science or arts degree programs in the 30.7001 Data Science category:
Dominican University, Bachelor of Science, West Suburban Region
Knox College, Bachelor of Arts, Western Region
Olivet Nazarene University, Bachelor of Science, South Metro Region

The University of Illinois at Urbana-Champaign has three degree programs listed in the IBHE Program Inventory under the CIP of 30.7001 Data Science, General. Those programs are:
Accountancy + Data Science, Bachelor of Science, Prairie Region
Information Science + Data Science, Bachelor of Science, Prairie Region
Business + Data Science, Bachelor of Science, Prairie Region

It is to these programs that the proposed program (MCB + Data Science) is most closely related. These degree programs were created by the X + Data Science Initiative on the University of Illinois at Urbana-Champaign campus. The strategy was to bring a significant component of Data Science to existing degree programs/disciplinary areas across a very broad set of disciplines so as to prepare students for the future employment in which data science will surely have a role.

Based on the information available, it appears that the proposed combination of MCB + DS degree program may be the first of its kind in Illinois at the Bachelor level. There will be no impact on existing programs given that they do not currently exist. There is every reason to believe that this degree program will provide a unique experience for students and leave them with many career opportunities from which to choose.

Comparable
Programs in

Illinois Attach
Documents

A Thriving Illinois: Higher Education Paths to Equity, Sustainability, and Growth

IBHE is charged to develop a strategic plan to address the present and future aims and needs and requirements of higher education in Illinois (110 ILCS 205/6) (from Ch. 144, par. 186) Sec. 6). Illinois Administrative Code:

1050.30(a)(6): A) The unit of instruction, research or public service is educationally and economically justified based on the educational priorities and needs of the citizens of Illinois Respond to the following questions about how the proposed program will support the three goals of A Thriving Illinois: Higher Education Paths to Equity, Sustainability, and Growth Strategic Plan.

Equity

Describe institutional-level plans to close equity gaps in access, progression, completion, and attainment and the implications for the proposed program. More specifically, provide institutional-level plans for attracting, recruiting, retaining, and completing a diverse group of students including working adults, students of color, transfer and low-income students and implications for the proposed program. Explain how progress will be monitored.

The X + Data Science programs are designed to respond to all three of the goals of the A Thriving Illinois Strategic Plan.

With regard to equity, the Data Science core of the proposed Molecular and Cellular Biology + Data Science degree program, like all the X + Data Science programs are designed from the ground up to be diverse, inclusive, and equitable. They have many fewer technical prerequisites and requirements than most programs in computer science, mathematics, or statistics. The first course in the data science core introduces students to data science and the computer language Python and has no prerequisites. The sequence has no external prerequisites beyond first-semester calculus. The first MCB components have no prerequisites associated with them and can be enrolled in from the first semester.

In addition, the School of MCB has embraced the overall goals of the Campus to expand student access for high-achieving, low- and moderate-income students by engaging in several efforts to enhance recruitment in our majors. These efforts include:

1. hiring an Assistant Director for Curriculum & Instruction + Diversity, Equity, Inclusivity, who is also the School's Director of the Merit Program for Emerging Scholars, an enrichment and cohort-building program for undergraduates of high potential who are women or members of minority groups underrepresented in STEM areas. This person is committed to DEI-related goals within our School's curricula and is helping to develop and implement policies that foster understanding, adoption, and adherence to DEI best practices. This person helps organize and convene School-wide lectures, workshops, professional networking and DEI training workshops, and other climate improving activities that welcome and help retain underrepresented students in STEM majors such as ours. This person also serves on the School's Diversity Committee and will help interface with Campus-level Climate efforts.

2. currently the Assistant Director for Curriculum & Instruction, in partnership with Integrative Biology, Mathematics, and Chemistry, is co-teaching a Merit Mentoring & Professional Network course (LAS 199 MPN funded by the Student Success Initiative) for students majoring in these disciples that provides both a majors-based mentoring network and professional development opportunities and sponsorship of paid high-impact major-related co-curricular experiences including but not limited to undergraduate research, teaching, and other laboratory experiences. Based on preliminary analyses, a pre-post survey of participants in FA22 shows an increased sense of belonging in their academic major's community after just 8-weeks in the Merit MPN course (the percentage of students who agreed or strongly agreed with the statement increased from 58.5% to 80.5%). Additionally, the percentage of students who agreed or strongly agreed that they are likely to remain in STEM increased from

who agreed or strongly agreed that they are likely to remain in STEM increased from 80.0% to 93.0%.

3. ramping up efforts to attract exceptionally talented students to our undergraduate biology program. SMCB and SIB jointly award merit-based Biology, Experience, Scholarship, and Training (BEST) scholarships to our incoming freshmen. All early action applicants are automatically considered for one of 15 BEST Merit Scholarships. SMCB has received the first endowment in 2022 to support BEST scholar program and will continue our fundraising efforts to boost this program.
4. working closely with College of LAS Access and Achievement Program (AAP) to provide retention services for STEM students admitted through the Educational Opportunities Program and President's Award Program.

5. working closely with the Office of Minority Student Affairs (OMSA) to provide free support and academic services for underrepresented students.

6. participating in Campus recruiting events specifically targeting underrepresented minority and first-generation college students.

7. participating in a climate survey process conducted by the College of LAS by helping to gather information from all unit constituencies as it pertains to DEI perceptions, analyzing the results, prioritizing and implementing subsequent action plans to address issues that are identified.

8. Expanding outreaching, in partnership with STEM Illinois, an outreach initiative of the University of Illinois Urbana-Champaign, the School of MCB aims to engage with K-12 students, especially those from diverse backgrounds and different learning styles, and connect them with STEM education and career opportunities. The School of MCB Communications and Academic Advising units help produce webcast episodes featuring alumni in health professions to provide career guidance to underrepresented students to help develop a high school to college pipeline. The School of MCB will also reach out to underserved high school students in our community by offering them a summer enrichment experience by continuing and expanding our partnership with the eCLOSE Institute, a nonprofit public charity organization aimed at building teacher-scientist teams for high schools.

9. partnering with the Interdisciplinary Health Sciences Institute's Community Academic Scholars Initiative to provide undergraduate students opportunities to pursue community-based research projects in the summer.

10. welcoming transfer students from other programs in the College of LAS or college on Campus or another college or university. The School provides an informational meeting and special advising meetings to help guide students through the process and beyond.

11. providing virtual prospective information sessions regarding our majors making it more accessible for low-income students to learn about our programs.

12. recognizing and celebrating first-generation and transfer students through special social events.

Describe program and institution-based high-impact practices and wrap-around student support services ensuring equitable access and success for students enrolled in the proposed program.

The School of MCB has embraced the overall goals of the Campus to increase student graduation rates for high-achieving, low- and moderate-income students by engaging in several efforts to enhance retention in our majors. The School of MCB has a large undergraduate Instructional Program and Advising Center that provides extensive academic advising, career development, and assistance resources, including tutoring, peer mentoring, and cohort-building opportunities.
Additional efforts include:

1. decreasing the barriers for students to access important laboratory research experiences by providing significant support for summer research opportunities. One of the hallmarks for the success of undergraduate students in our majors is the substantial hands-on laboratory skills they gain through both laboratory courses and experiential research experience in laboratories of our faculty. Each year the School and its Departments, through generous donations from friends, alums, and industry partners such as Abbvie, as well as organizations such as the Black Business Network, offer substantial fellowship support for students in our majors to conduct summer laboratory research. A good portion of the 45 fellowships are designated for underrepresented minority students. These opportunities bolster student confidence, enhances retention in the major, and increases student competitiveness in applying for professional or graduate schools and in securing employment.

2. improving the student learning experience by identifying and revising courses in our curricula that have previously contributed to the “sink or swim” connotation through active assessment, instructional training, and improvement by the School’s Instructional Program Leadership and Courses and Curriculum Committee.

3. expanding the undergraduate research laboratory experiences by offering semester-long Course-based Undergraduate Research Experiences (CUREs), which are laboratory courses that provide a broad spectrum of authentic laboratory research exercises and training that better prepare students for future laboratory work.

4. in partnership with the local Champaign-Urbana branch of the American Association of University Women (AAUW-CU), the School of MCB annually co-sponsors high-achieving female students to attend the National Conference for College Women Student Leaders (NCCWSL).

5. in partnership with the Women’s Resource Center, AAUW-CU, and the Campus Career Center, the School of MCB co-sponsors an annual Women’s Career Institute, a career and leadership development workshop for students who identify as female.

6. in partnership with the Women's Resource Center, AAUW-CU, and the Campus Career Center, the School of MCB co-sponsors an annual Women's Career Institute, a career and leadership development workshop for students who identify as female.

7. providing free peer tutoring for our core courses to assist students academically.

8. providing free peer mentoring and peer advising services to help students form community and learn from each other. We encourage diversity in these programs to help retain our underrepresented students and to make sure we make our underrepresented students visible to their peers.

9. identifying students who are struggling in our curriculum early and working with them to develop academic improvement plans for success.

Explain institutional strategies being implemented to increase and retain faculty, staff, and administrators of color and the implications for the proposed program. Explain how progress will be monitored.

To sustain its leadership role as the largest and most successful NIH-supported biomedical enterprise on the campus, and to advance the excellence of our educational and research missions, and to propel its dominance as a world-recognized leader in innovative and transformative science, the School of MCB will continue to recruit multiple tenure-track or tenured faculty members every year. This hiring effort will occur in the critical thrust areas defined by the Strategic Advisory Committee of the School, which will strive to target new faculty members at the forefront of paradigm-shifting discoveries and advances in the biological sciences, including revolutionary innovations in data science and emerging biotechnologies that will shape the way we study biology and interact with our world. These hires will not only contribute to the fundamental understanding of life, but also will have direct or indirect translational implications and applications that strongly alignment with the health-centric strategic planning of the campus.

The School's Strategic Advisory Committee (SAC), composed of eight tenured faculty members from four departments, is responsible for developing a broad vision of SMCB's future research directions and identifying key areas for strategic investments. To date, the SAC has emphasized several top priority areas including brain plasticity, immunology, microbiome, RNA biology, cancer and metabolism, stem cells and regeneration, and emerging infectious diseases, as well as the associated genomics, informatics, and data sciences. The School is committed to achieve gender, racial and ethnic diversity in our faculty ranks by leveraging various mechanisms available to us. The School's faculty has consists of approximately 35% females and approximately 5% from underrepresented groups. Recruitment of outstanding female scientists via the TOP (Targets of Opportunity) mechanism (women underrepresentation in STEM areas) is critical for maintaining gender diversity and academic excellence of the School. Noteworthy is the Early Career Researchers seminar series started by the Departments of Microbiology and Cell and Developmental Biology, which is bringing in outstanding

post-doctoral fellows, targeting members of underrepresented groups, for

Sustainability

Describe strategies and initiatives the institution plans to implement that makes the proposed program and college more generally affordable for students and their families, including those who have been historically underserved.

In addition to participating in and implementing the financial support efforts provided by the Campus and College of LAS, the School of MCB decreases the barriers for our students to access important laboratory research experiences by providing: (1) significant fellowship support for summer research opportunities, (2) work-study opportunities as undergraduate hourly assistants in the Instructional Program curricular and advising offices and as preparatory assistants for laboratory courses, and (3) ample hands-on, course-based laboratory experiences for students to gain laboratory experience, both of which are critical for securing future academic advancement or employment in the competitive job market.

The School of MCB offers several of our courses online during the summer term to accommodate students' needs while they are off campus during the summer months, working at jobs near their hometowns or elsewhere. This allows continued progress toward completion of their degrees in a timely and affordable manner.

Provide tuition cost analysis for comparable programs and institutions in Illinois.

The School of Molecular and Cellular Biology is requesting Chemical & Life Sciences Differential Tuition rate for this degree program as we have for our other existing undergraduate degree programs in the school (BSLAS MCB, BSLAS Neuroscience, BS in Biochemistry). Given that there are currently no similar programs in the State of Illinois, there are no external programs with which to compare. Tuition for other bachelor's degrees in the School of Molecular and Cellular Biology is an excellent indicator of the tuition requested for this proposed program. The tuition for BSLAS Molecular and Cellular Biology undergraduates who are residents of the State of Illinois for the 2024 Academic year will be $17,866. The same degree program for a non-resident will be $18,181, and tuition for international students will be $19,396.

Growth

Provide a supply and demand analysis for the proposed program that, at minimum, does the following: a) Provides evidence of student interest in the proposed program including any strategies to incentivize students to stay in Illinois. b) Identifies and provides evidence of a high-quality credential with viability for future careers.

The MCB + DS degree program, like other X + Data Science degree programs, is an innovative approach to providing additional support for the tremendous and rapidly growing demand for employees with capabilities in data and computation but also in the fields where the data is being generated and applied, especially at the interface of biology, medicine, pharmaceutical and other health-related fields.

As noted above, a 2017 study by researchers at IBM and Burning Glass Technologies predicted the demand for Data Scientists will grow by 28% by 2020. The U.S. Bureau of Labor Statistics, in their "Job Outlook, 2021-31" says that the average growth rate for all occupations is 5%. They currently project that the employment of Data Scientists is projected to grow 36% from 2021 to 2031 (https://www.bls.gov/ooh/math/data-scientists.htm). Enrollment in the undergraduate majors of “Statistics” and “Statistics and Computer Science,” which provide students access to some of the competencies of data science, have grown by a factor of six in the last ten years. For example, health data science is an emerging discipline that combines mathematics, statistics, epidemiology, microbial and human genomics, and bioinformatics. Not only are hospitals and government health organizations such as NIH, CDC, WHO, and USDA urgently seeking graduates with backgrounds in health data science, but also the global pharmaceutical, food, and agricultural industries. About 13,500 openings for data scientists are projected each year, on average, over the next decade. Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire. The median annual wage for data scientists was $100,910 in May 2021. We expect graduates from this proposed degree program to enter a strong job market with a very sought-after skillset.

As mentioned above, there is an urgent and growing need for graduates with a degree in MCB + DS in medicine, healthcare, and pharmaceutical industries. There is already a high need for these individuals as medical image and data analysts, predictive analytics modelers, drug research and data analysts, virtual assistance platform developers, and researchers in the areas of microbial and human genomics, epidemiology and disease transmission, environmental impacts, data management, and other technological advancements involving big datasets. In addition to medical organizations and health industry, research institutions are also clambering for graduates at the interface of biology and data science to fill academic professional positions in biotechnology centers, genome centers, and bioinformatics centers.

Current job opportunities boards indicate that there is a wealth of opportunities for data science and biology positions with salaries that range from $70,000 to $170,000 depending on the level of further education obtained. Job descriptions for recent graduates with BS degrees include: “training in data analysis and expertise and intuition in biology,” “data scientists, computational biology, mine and analyze large datasets, develop statistical and predictive models on genomic and health related data

datasets, develop statistical and predictive models on genomic and health related data sets" and "evaluate and develop state-of-the-art computational methods to analyze molecular biology data." The proposed MCB + DS degree program will provide our graduates with the necessary background to excel at securing these types of positions.

Explain how the program engaged with business and industry in its development and how it will spur the state's economy by leveraging partnerships with local, regional, and state industry, business leaders and employers.

The School of MCB engages in Campus and College of LAS level industry engagement activities such as the DPI and Research Park in several ways. Notably, many MCB faculty have translational research projects funded by the DPI that seek to bridge the academic-industry application divide. Many School faculty members and current or graduated students have connections with startup companies associated with the EnterpriseWorks incubator located in the Campus Research Park. Over 70% of startup companies that graduate from EnterpriseWorks remain within the State of Illinois. In addition, many of the School's current students and graduates find employment in the myriad of corporations located in Research Park.

Describe how the proposed program will expand access and opportunities for students through high-impact practices including research opportunities, internships, apprenticeships, career pathways, and other field experiences.

The School of MCB provides extensive undergraduate laboratory research experience for all students in our majors, both in the form of course-based laboratory research experiences and in the form of experiential training in faculty research laboratories, including study abroad, and through internships at various local or regional hospitals, clinical laboratories, industries, and governmental or nongovernmental organizations. As mentioned above, the School and its Departments provide approximately forty-five summer research fellowships to work in faculty laboratories. As part of this experience, students also participate in laboratory meetings, journal clubs, seminars, and research conferences where they present posters or talks about their research. Many students choose to submit a senior thesis for consideration of graduating with high or highest distinction.

In addition, just as our current students, students in the MCB + DS program will have access to the same opportunities to engage with these local companies or even form their own startups. University faculty and student entrepreneurs also have opportunities to participate in the Illinois I-CORPS training program, which is part of the NSF Great Lakes Regional I-CORPS Hub. This training helps researchers to gain valuable insight into entrepreneurship, starting a business, industry requirements, and challenges associated with moving promising research ideas from the laboratory to the marketplace. Some School faculty have also participated as mentors or technical advisors for local, regional, or national I-CORPS programs.

Explain how the proposed program will expand its models of teaching and learning, research, and/or public service and outreach that provide opportunity for students to succeed in the work of the future.

The School of MCB offers several of our courses online during the summer term to accommodate students' needs while they are off campus during the summer months, working at jobs near their hometowns or elsewhere. This allows continued progress toward completion of their degrees in a timely and affordable manner.
The School participates in the campus-wide recruiting platform Handshake, where students can find jobs, internships, upcoming career fairs, on-campus recruiting events, networking opportunities, workshops, and other career develop event. Each fall term, the School hosts a Career Symposium for our majors, where alumni and professional mentors come to campus to share their experiences and career paths and connect with our students.

Beyond workforce need, describe how the program broadly addresses societal needs (e.g., cultural or liberal arts contribution, lifelong learning of Illinois residents, or civic participation).

Data science is one of the fastest growing domains of medical and pharmaceutical information technology today. Medical enterprises, private and public healthcare organizations, government health agencies, and pharmaceutical companies all over the world are scrambling to adopt and integrate data science technologies and approaches into their systems. We anticipate that graduate from our proposed MCB + DS degree program will be well equipped to tackle this urgent need for leaders at the interface between life sciences and big data. Our graduates will be both data scientists and subject matter experts. While data scientists alone can generate algorithms, codes, and models, subject matter experts are needed to identify problems and challenges and tease out underlying intricacies and validate the models so that they accurately reflect the datasets and are accurately interpreted. These individuals will be key to building a foundation of public trust regarding big data and its interpretation and will play a vital role in conversing with media and the public regarding complex science-based topics.

A Thriving Illinois:
Higher Education
Paths to Equity,
Sustainability, and
Growth - Attach
Documents

Program Description and Requirements

Illinois Administrative Code:

1050.30(b)(1) A) The caliber and content to the curriculum assure that the objectives of the unit of instruction will be achieved; B) The breadth and depth of the curriculum are consistent with what the title of the unit of instruction implies; C) The admission and graduation requirements for the unit of instruction are consistent with the stated objectives of the unit of instruction.

1050.30(b)(3): Appropriate steps shall be taken to assure that professional accreditation needed for licensure or entry into a

profession as specified in the objectives of the unit of instruction is maintained or will be granted in a reasonable period of time.

1050.50 (a)(2)(C) Requirement for Programs in which State Licensure is Required for Employment in the Field: In the case of a program in which State licensure is required for employment in the field, a program can be found to be in good standing if the institution is able to provide evidence that program graduates are eligible to take the appropriate licensure examination and pass rates are maintained as specified in the objectives of the unit of instruction. If there is no such evidence, the institution shall report the program as flagged for review.

Program Description

Provide a description of the proposed program and its curriculum, including a list of the required core courses and short ("catalog") descriptions of each one. (This list should identify all courses newly developed for the program).

Provide Program Description here:

The Molecular and Cellular Biology (MCB) + Data Science (DS) degree plan incorporates simultaneously a strong foundation in data science with a program of study in Molecular and Cellular Biology, including research or discovery experiences as part of the degree.

The degree is comprised of three different components:
1. The data science core coursework (29–30 cr. hrs.)
a. This coursework is comprised of:
i. Two (2) courses from Statistics, 8 credit hours
ii. Two (2) courses from Computer Science, 8 credit hours
iii. Two (2) courses from the iSchool, 6 credit hours
iv. Two (2) courses from Mathematics, 7–8 credit hours

2. MCB and Chemistry coursework (47–49 cr. hrs.)
a. MCB coursework (37–39 cr. hrs.)
MCB Core Courses MCB 150, MCB 250/251, MCB 252/253, MCB 354 (17 cr. hrs.)
MCB Advanced Lab Course (2–4 cr. hrs.)
MCB + Data Science Course List A: Minimum of three courses (9 cr. hrs.)
MCB + Data Science Course List B: Minimum of three courses (9 cr. hrs.)
b. Chemistry coursework (10 cr. hrs.)

3. One or more research or discovery experiences of at least 6 total credit hours. MCB + DS majors will have access to a research experience documented by enrollment in MCB 290: Undergraduate Research (1–5 cr. hrs.) and MCB 492: Senior Thesis (3 cr. hrs.), wherein the student integrates molecular and cellular biology and data science. Students may also elect to fulfill this requirement through participation in MCB 292: Experiential Learning (1 or 2 cr. hrs.) or completion of a minimum of one semester-long MCB-develped Study Abroad experience at an international university. Students return from one semester abroad with with a full complement of pre-articulated course credit in Molecular and Cellular Biology with an integrated element of data science. Currently MCB has residential programs at the following institutions: Newcastle University, Newcastle upon Tyne, England; Stockholm University, Stockholm, Sweden; University of Pavia, Pavia, Italy; and Illinois in Vienna Program courses at University of Vienna and University of Natural Resources and Life Sciences, Vienna.

The main delivery method for this degree program will be face-to-face.

Attach Program Description Files if needed: MCB + DS Course List.pdf

Graduation Requirements

Provide a brief narrative description of all graduation requirements, including, but not limited to, credit hour requirements, and, where relevant, requirements for internship, practicum, or clinical. For a graduate program, summarize information about the requirements for completion of the thesis or dissertation, including the thesis committees, and the final defense of the thesis or dissertation. If a thesis or dissertation is not required in a graduate program, explain how the functional equivalent is achieved.

Minimum hours required for graduation is 120, to include a minimum of 40 hours of upper-division coursework. These hours can be drawn from all elements of the degree. Upper-division courses are those whose content and teaching are appropriate for junior- and senior-year students in a baccalaureate program or other students with experience in the subject.

The proposed MCB + DS degree program requires a minimum of 120 credit hours of which 40 credit hours of advanced courses. Of those, 33 credit hours are at the 300- or 400-level. Seven (7) credit hours come from 200-level courses with multiple prerequisites. The courses fall into the categories listed below.

The proposed MCB + DS degree program will contain 40 credit hours of advanced courses. Of those, 33 credit hours are at the 300- or 400-level. Seven (7) credit hours come from 200-level courses with multiple prerequisites. The courses fall into the categories listed below.

Advanced Data Science Coursework: Total of 10 cr. hrs.
CS 307: Modeling and Learning in Data Science (4 cr. hrs.)
IS 467: Ethics and Policy for Data Science (3 cr. hrs.)
IS 477: Data Management, Curation & Reproducibility (3 cr. hrs.)

Advanced Non-Laboratory MCB Coursework (21-22 cr. hrs.)
MCB 354: Biochemical and Physical Basis of Life (3)
Six Advanced Elective Courses at 3 or 4 credit hours each (18-19)

Advanced MCB Laboratory Course (2-4 cr. hrs.)
MCB 301: Experimental Microbiology (3 cr. hrs.)
MCB 364: Eukaryotic Cell Biology Laboratory (4 cr. hrs.)
MCB 428: Microbial Pathogens Laboratory (2 cr. hrs.)
MCB 460: Neuroanatomy Laboratory (2 cr. hrs.)
BIOC 455: Techniques in Biochemistry and Biotechnology (4 cr. hrs.)

Advanced Research or Discovery Experience Coursework (3-5 cr. hrs.)
MCB 492: Senior Thesis (3 to 5 cr. hrs.)
Advanced courses articulated from institutions abroad would fit in one of the prior categories.

200-level Coursework with Multiple Pre-Requisites (7 cr. hrs.)
CS 277: Algorithms and Data Structures for Data Science (4 cr. hrs.)
MCB 250: Molecular Genetics (3 cr. hrs.)

MCB 250: Molecular Genetics (3 cr. hrs.)

One or more research or discovery experiences of at least 6 total credit hours. MCB + DS majors will have access to a research experience documented by enrollment in MCB 290: Undergraduate Research (1–5 cr. hrs.) and MCB 492: Senior Thesis (3 cr. hrs.), wherein the student integrates molecular and cellular biology and data science. Students may also elect to fulfill this requirement through participation in MCB 292: Experiential Learning (1 or 2 cr. hrs.) or completion of a minimum of one semester-long MCB-develped Study Abroad experience at an international university. Students return from one semester abroad with with a full complement of pre-articulated course credit in Molecular and Cellular Biology with an integrated element of data science. Currently MCB has residential programs at the following institutions: Newcastle University, Newcastle upon Tyne, England; Stockholm University, Stockholm, Sweden; University of Pavia, Pavia, Italy; and Illinois in Vienna Program courses at University of Vienna and University of Natural Resources and Life Sciences, Vienna.

Specialized Program Accreditation

Describe the institution’s plan for seeking specialized accreditation for this program. Indicate if there is no specialized accreditation for this program or if it is not applicable.

N/A

Licensure or Certification for Graduates of the Program

If this program prepares graduates for entry into a career or profession that is regulated by the State of Illinois, describe how it is aligned with or meets licensure, certification, and/or entitlement requirements.

N/A

Plan to Evaluate and Improve the Program

Describe the program's evaluation plan.

The program learning objectives will be assessed in groups of three or four each academic year. The School of Molecular and Cellular Biology Instructional Program Leadership Team will produce a learning objectives map that will identify which courses support each learning objective. The Degree Program Curriculum Map will be used to assist in understanding how students move through the program and gain knowledge and skills that can be measured. Performance on selected questions on final exams in required courses will be monitored, and checks will take placed each academic year to be certain that students are meeting the objectives. Evidence of integrated knowledge and skills will be collected by monitoring progress in projects that are part of our collection of five (5) advanced laboratory courses which are student-centered and inquiry-based. Every student in the degree program is required to take a minimum of one of these courses which provides us with a metric that can be used for all students. Instructors in these courses work closely with the SMCB Instructional Program leadership such that project requirements are as close to identical as is possible. Using defined rubrics, it can be determined whether, and at what level, students have attained the learning outcomes. These laboratory courses will serve as capstone experiences for the degree program. Annual focus groups with students will be conducted to better understand the student experience in the program. Where students conduct undergraduate research or participate in experiential learning experiences such as internships or study abroad, evidence of content and skills mastery will be sought in written research documents, such as posters and papers. First destination data for graduates will be collected with special effort to identify specifically where the graduates go after the BSLAS, such as professional school, graduate school, industry, or other. Patterns in matriculation to institutions and degree programs will be monitored to better understand how the program connects students to their future profession and/or career.

Plan to Evaluate and Improve the Program

Attachments

Budget Narrative

Fiscal and Personnel Resources

Illinois Administrative Code: 1050.30(a)(5): A) The financial commitments to support the unit of instruction, research or public service are sufficient to ensure that the faculty and staff and support services necessary to offer the unit of instruction, research or public service can be acquired and maintained; B) Projections of revenues necessary to support the unit of instruction, research or public service are based on supportable estimates of state appropriations, local tax support, student tuition and fees, private gifts, and/or governmental grants and contracts.

Budget Rationale

Provide financial data that document the university's capacity to implement and sustain the proposed program and describe the program's sources of funding.

Is the unit’s (Department, College, School) current budget adequate to support the program when fully implemented? If new resources are to be provided to the unit to support the program, what will be the source(s) of these funds? Is the program requesting new state funds? (During recent years, no new funds have been available from the state (IBHE) to support new degree programs).

The School of Molecular and Cellular Biology will not request, from the College of Liberal Arts and Sciences, additional funding due to the deployment of this degree program. Existing revenue streams, such as differential tuition from existing undergraduate degree programs, will be used to support this proposal until it is generating revenue on its own. The School of Molecular and Cellular Biology will seek differential tuition for this degree program as we have for our other Bachelor of Science (BS) and Bachelor of Science Liberal Arts and Sciences (BSLAS) degree programs.

The Departments of Mathematics, Statistics, and Computer Science, and the i-School are coordinating to provide support for advising in data science.

Faculty Resources

Will current faculty be adequate to provide instruction for the new program or will additional faculty need to be hired? If additional hires will be made, please elaborate.

The School of Molecular and Cellular Biology's hiring plan has recently included a handful of individuals who will provide instruction in courses required by this degree program. We do not expect to request additional faculty positions solely to support this degree program. The School of Molecular and Cellular Biology is already searching for two new faculty in RNA Biology, Genomics, and Informatics. The faculty hired in this search will be uniquely qualified to contribute to this degree program due to their areas of expertise lying at the interface of modern biology and bimolecular medicine and Data Science. The MCB courses required for this degree program are currently operational and have capacity to accommodate MCB + Data Science students. Faculty teaching load will not change because of this proposed degree program because the MCB required courses for this degree program currently have capacity to seat additional students or are delivered in sections and can scale. The student-faculty ratio may shift slightly, but given our current capacity, the addition of 30 students per cohort will not affect any one course in a significant way. Further, we expect that some of the students who will choose this major are likely to come from the group who would have selected MCB, Biochemistry, or Neuroscience in the absence of this degree program. This further reduces the overall effect on student to faculty ratios and class size. If any individual course sees increased enrollment pressure, the School of Molecular and Cellular Biology will work with our faculty to find solutions so that the course can move forward with undiminished quality. These solutions may include the service of a course coordinator/instructional specialist or additional graduate teaching assistants being assigned. SMCB will use existing revenue streams to meet these needs, and will not ask the College of Liberal Arts and Sciences for additional funding for additional funding.

Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc.

The MCB courses required for this degree program are currently operational and have capacity to accommodate MCB + Data Science students. Faculty teaching load will not change because of this proposed degree program because the MCB required courses for this degree program currently have capacity to seat additional students or are delivered in sections and can scale. The student-faculty ratio may shift up slightly, but given our current capacity, the addition of thirty students per cohort will not affect any one course in a significant way. Further, the School of Molecular and Cellular Biology expects that some of the students who will choose this major are likely to come from the group who would have selected undergraduate degree programs in Molecular and Cellular Biology, Biochemistry, or Neuroscience in the absence of this degree program. This further reduces the overall effect on student to faculty ratios and class size. If any individual course sees increased enrollment pressure, the School of Molecular and Cellular Biology will work with the faculty instructor to find solutions so that the course can move forward with undiminished quality. These solutions may include the service of a course coordinator or additional graduate teaching assistants being assigned. The School of Molecular and Cellular Biology will use existing revenue streams to meet these needs, SMCB will not ask the College of LAS for additional funding for these positions.

Describe how the unit will support student advising, including job placement and/or admission to advanced studies. Will current staff be adequate to implement and maintain the new program or will additional staff be hired? Will current advising staff be adequate to provide student support and advisement, including job placement and or admission to advanced studies? If additional hires will be made, please elaborate.

The School of MCB Instructional Program has a large advising group (six full-time advisors, three half-time advisors), which provides a welcoming and inclusive community of support to empower all our students to take ownership of their education, enriching their experiences, achieving their academic, professional, and personal goals. The School of Molecular and Cellular Biology offers a variety of research, pre-medicine/pre-health mentorship, study abroad, honors, merit, tutoring, leadership, and other professional development programs. The School of Molecular and Cellular Biology provides individualized advising for all our students, and students in the proposed MCB + DS would have access to the same level of care. Among the academic advising team are two individuals who are also certified as Career Coaches. These coaches assist students in finding a path for themselves that is well-aligned to the student's objectives. There are also faculty who frequently volunteer at workshops and career development activities for our students, and the School of Molecular and Cellular Biology reaches out to these faculty when appropriate for the students in this program.

Our current level of Academic Advising staff are adequate to serve new students in this major at the admission levels we have proposed. Thirty additional students would be admitted each academic year with a full enrollment of 120 students. This would add about sixteen students per academic advisor which is a very manageable number that would not decrease advisor availability. Should the program outgrow our proposed numbers, the School of Molecular and Cellular Biology may be in a position to request permission to hire one academic advisor/program coordinator to advise students, track student success, work on program assessment among other degree-program essentials.

Are the unit’s current facilities adequate to support the program when fully implemented? Will there need to be facility renovation or new construction to house the program?

The School of Molecular and Cellular Biology has no plan to renovate space as a result of the creation of this degree program. The School of Molecular and Cellular Biology currently updates instructional spaces on a regular basis and uses differential tuition funding in order to do so. We would continue this usual practice with our unchanged goal of providing our students with the finest educational experience available in modern and welcoming facilities.

The School of Molecular and Cellular Biology Administrative Office
387 Morrill Hall; MC-119
505 South Goodwin Avenue
Urbana, IL 61801

The School of Molecular and Cellular Biology Instructional Program Office
127 Burrill Hall; MC-119
407 South Goodwin Avenue
Urbana, IL 61801

The School of Molecular and Cellular Biology Learning Center for Instruction and Academic Advising
101 Burrill Hall, MC-119
407 South Goodwin Avenue
Urbana, IL 61801

Approximately 29,337 square feet of School of Molecular and Cellular Biology instructional space is located in Burrill Hall.
407 South Goodwin Avenue
Urbana, IL 61801

An additional 5,065 square feet of School of Molecular and Cellular Biology instructional space is located in Noyes Laboratory.
505 South Mathews Avenue
Urbana, IL 61801

Many School of Molecular and Cellular Biology courses are delivered in campus-scheduled classrooms on the University of Illinois at Urbana-Champaign campus in Urbana, Illinois.

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

This proposal will represent little to no new impact on the University Library's resources because every course in the degree program is currently active on this campus. This degree program will involve bringing some new students to campus, but also will attract students already on campus in other degree programs. Current library collections, resources and services are sufficient to support the students in the proposed degree program. The Biological Sciences are supported by the Funk Library on the campus of the University of Illinois at Urbana-Champaign. The resident Biosciences Librarian supports both research and educational needs of faculty, staff, and students.

Summarize information about library resources for the program, including a list of key textbooks, a list of key text and electronic journals that will support this program, and a short summary of general library resources of the University that will be used by the program's faculty, students, and staff.

Extensive library print and electronic resources are available through the University of Illinois Urbana-Champaign Library system, including the outstanding Biology Virtual Library (https://www.library.illinois.edu/biology/)). Resources not available through the University of Illinois Urbana-Champaign collection may be requested through interlibrary loan or from partner research libraries throughout Illinois. The Funk Library offers outstanding learning resources for students in all of the undergraduate degree programs in the School of Molecular & Cellular Biology. The Biology Virtual Library maintains access to a comprehensive set of Biology Databases through which students and faculty can access a massive amount of information. The most frequently used databases follow:NCBI Databases, PubMed, Scopus, and Web of Science. Also found there are course and subject guides, access to online journals along with access to journal articles from journals that Illinois does not own.

Perhaps of the highest interest to students in this proposed degree program is the Research Data Service. The Research Data Service (RDS) is a campus-wide program that provides the Illinois research community with the expertise, tools, and infrastructure necessary to manage and steward research data. The RDS provides a suite of data management services including workshops, presentations, and individual consultations. On the behalf of campus, the RDS maintains and operates the Illinois Data Bank, which is a public access repository for publishing research data from the University of Illinois at Urbana-Champaign.

Key textbooks that will support the BSLAS Molecular and Cellular Biology +Data Science include:

Brooker, R. and Widmaier, et. al. Biology, 6th Edition: McGraw-Hill, New York, NY, 2022.

Watson, et. al. Molecular Biology of the Gene, 7th Edition: Pearson Education, San Francisco, CA, 2016.

Lodish, H. et. al. Molecular Cell Biology, 8th Edition: W.H. Freeman Publishers, New York, NY 2016.

Nelson, D. Lehninger Principles of Biochemistry, 8th Edition: Macmillan Learning, New York, NY, 2021.

Madigan, M. et. al. Brock: Biology of Microorganisms, 16th Edition: Pearson Education, San Francisco, CA, 2021.

Bear, M. et. al. Neuroscience: Exploring the Brain, 4th Edition: Jones & Bartlett Learning, Burlington, MA, 2016.

Learning, Burlington, MA, 2010.

Snustad, D. Principles of Genetics, 7th Edition: John Wiley Publishing, Hoboken, New Jersey, 2019.

Boron, W. et. al. Medical Physiology, 3rd Edition: Elsevier, New York, NY, 2016.

Punt, J., Stanford, P. et. al. Kuby Immunology, 8th Edition: W.H. Freeman, New York, NY, 2023.

Are any sources of funding temporary (e.g., grant funding)? If so, how will the program be sustained once these funds are exhausted?

This program will be supported by current revenue streams including differential tuition from our existing BSLAS degree programs in Molecular and Cellular Biology and Neuroscience, and the BS in Biochemistry. There are no temporary funding sources being used.

Personnel Budget

Please complete all lines below; all fields are required. For fields where there is no anticipated cost or need, enter 0 or NA.

Category Year One Year Five Notes

Faculty (FTE)

Faculty FTE Year1	Faculty FTE Year 5	Faculty FTE Notes
0	0	N/A

Faculty ($)

Faculty Year 1	Faculty Year 5	Faculty Notes
0	0	N/A

Advising Staff ($)

Advising Staff Year 1	Advising Staff Year 5	Advising Staff Notes
0	0	N/A

Graduate Students ($)

Graduate Students Year 1	Graduate Students Year 5	Graduate Students Notes
0	0	N/A

Other Personnel
Costs

Other Personnel Costs Year 1	Other Personnel Costs Year 5	Other Personnel Costs Notes
0	0	N/A

Budget Narrative
Attachments

Facilities and Equipment

Illinois Administrative Code: 1050.30(a)(4): A) Facilities, equipment and instructional resources (e.g., laboratory supplies and equipment, instructional materials, computational equipment) necessary to support high quality academic work in the unit of instruction, research or public service are available and maintained;

B) Clinical sites necessary to meet the objectives of the unit of instruction, research or public service;

C) Library holdings and acquisitions, owned or contracted for by the institution, that are necessary to support high quality instruction and scholarship in the unit of instruction, research and public service, are conveniently available and accessible, and can be maintained.

Describe the facilities and equipment that are available, or that will be available, to develop and maintain high quality in this program. Summarize information about buildings, classrooms, office space, laboratories and equipment, and other instructional technologies for the program.

The School of Molecular and Cellular Biology has no plan to renovate space as a result of the creation of this degree program. The School of Molecular and Cellular Biology currently updates instructional spaces on a regular basis and uses differential tuition funding in order to do so. We would continue this usual practice with our unchanged goal of providing our students with the finest educational experience available in modern and welcoming facilities. The following are details about physical spaces in which various aspects of this degree program would be conducted.

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Research laboratories for School of Molecular and Cellular Biology faculty are located in the following buildings and would be the locations in which undergraduate students in this proposed degree program would conduct undergraduate research: Burrill Hall, Chemical and Life Sciences Laboratory, Roger Adams Laboratory, Beckman Institute, and Carl R. Woese Institute for Genomic Biology.

Many School of Molecular and Cellular Biology courses are delivered in campus-scheduled classrooms on the University of Illinois at Urbana-Champaign campus in Urbana, Illinois.

Urbana, Illinois.

The School of Molecular and Cellular Biology uses differential tuition to assure that all equipment needed to deliver the School's undergraduate degree programs are modern and plentiful. Because the courses in this degree program already exist the equipment needed is already in our possession. This degree program would require the purchase of additional consumable items for the laboratory courses. Differential tuition from existing degree programs will cover this cost until this degree program is generating revenue.

Will the program require new or additional facilities or significant improvements to already existing facilities?

No

Will the program need additional technology beyond what is currently available for the unit?

No

Are there other costs associated with implementing the program?	No
Facilities and Equipment Attachments	

Faculty and Staff

Illinois Administrative Code: 1050.30(a)(3): A) The academic preparation and experience of faculty and staff ensure that the objectives of the unit of instruction, research or public service are met; B) The academic preparation and experience of faculty and staff, as evidenced by level of degrees held, professional experience in the field of study and demonstrated knowledge of the field, ensure that they are able to fulfill their academic responsibilities; C) The involvement of faculty in the unit of instruction, research or public service is sufficient to cover the various fields of knowledge encompassed by the unit, to sustain scholarship appropriate to the unit, and to assure curricular continuity and consistency in student evaluation; D) Support personnel, including but not limited to counselors, administrators, clinical supervisors, and technical staff, which are directly assigned to the unit of instruction, research or public service, have the educational background and experience necessary to carry out their assigned responsibilities.

Describe the personnel resources available to develop and maintain a high quality program, including faculty (full- and part-time, current and new), staff (full- and part-time, current and new), and the administrative structure that will be in place to oversee the program. Also include a description of faculty qualifications, the faculty evaluation and reward structure, and student support services that will be provided by faculty and staff.

The School of MCB considers student instruction one of our highest priorities, with the major academic mission of delivering undergraduate and graduate education through not only the MCB, Neuroscience, and Biochemistry undergraduate majors and graduate students in our MS and PhD graduate programs, but also a large instructional service for other units on Campus. The MCB Instructional Program leadership will have direct oversight of the BSLAS in MCB + Data Science degree program, advising and monitoring student progress, providing support services, and evaluating the program. The faculty and instructional coordinators will interact with those students who are enrolled in their respective courses.

Currently within the School of MCB, there are sixty-two tenured or tenure-track faculty members in four departments (Biochemistry, Cell and Developmental Biology, Microbiology, Molecular and Integrative Physiology), twenty-eight Instructional Program Staff serving the school's undergraduate degree programs. Included are two associate directors, two assistant directors, two Instructional Program coordinators, twenty-two non-tenure specialized faculty instructors, course coordinators, academic advisors, and office support staff; plus a number of part-time hourly student helpers. Two associate directors and one assistant director oversee each of the respective undergraduate and graduate instructional programs, respectively. The undergraduate Instructional Program assistant director interacts directly with the office staff and the two Instructional Program coordinators, one of which oversees the lecturers, instructors and coordinators and the other oversees the academic advisors.

Faculty in the School of MCB, have appointments at the level of assistant professor, associate professor or full professor. The qualifications include a PhD degree in biochemistry, cell and developmental biology, microbiology, molecular and integrative physiology, or a closely related field, an MD degree, or an equivalent degree; an excellent track record of research, creativity and productivity; and evidence of strong potential for future independent research and effective teaching. Each faculty member undergoes an annual performance evaluation by the respective department head and the director of the School; and assistant and associate professors are also evaluated by departmental Promotion and Tenure and mentoring committees. Incentives for performance excellence include annual merit raises when available and recognition through nomination for appropriate awards. The School of MCB and each of the Departments have award nomination and selection committees that provide recognition of excellence in research, teaching and service at the departmental and school levels, and nominating committees that select individuals for special recognition at the College, Campus and external levels.

Summarize the major accomplishments of each key faculty member, including research/scholarship, publications, grant awards, honors and awards, etc. Include an abbreviated curriculum vitae or a short description.

The School of MCB (http://mcb.illinois.edu) is comprised of 4 departments with 62 top-notch, world-recognized tenured or tenure-track faculty, whose cutting-edge research, laudable academic scholarship, service recognition and impressive award profiles can be found summarized at the following URLs. School of MCB faculty, including their degrees, titles, and areas of specialization, are provided below. Every course in this degree program with the rubrics of MCB, BIOC, and BIOP are taught by these scholars.

15 Biochemistry faculty (http://mcb.illinois.edu/departments/biochemistry/directory/faculty)
Cui, Chang, PhD, Assistant Professor of Biochemistry
Lin-Feng Chen, PhD, Professor of Biochemistry
Rutilio A Fratti, PhD, Associate Professor of Biochemistry
Raven H Huang, PhD, Professor of Biochemistry
Hong Jin, PhD, Associate Professor of Biochemistry
Auinash Kalsotra, PhD, Associate Professor of Biochemistry
Chu-Young Kim, PhD, Associate Professor of Biochemistry
Satish K Nair, PhD, Professor of Biochemistry
Joe Sanfilippo, PhD, Assistant Professor of Biochemistry
David J Shapiro, PhD, Professor of Biochemistry
Beth Stadtmueller, PhD, Assistant Professor of Biochemistry
Emad Tajkhorshid, PhD, Professor of Biochemistry
Nicholas C Wu, PhD, Assistant Professor of Biochemistry
Kai Zhang, PhD, Associate Professor of Biochemistry
Yan Zhang, PhD, Assistant Professor of Biochemistry

16 Cell and Developmental Biology faculty (http://mcb.illinois.edu/departments/cell-developmental-biology/directory/faculty)
Andrew S Belmont, MD/PhD, Professor of Cell and Developmental Biology
William M Brieher, PhD, Professor of Cell and Developmental Biology
Stephanie Ceman, PhD, Professor of Cell and Developmental Biology
Jie Chen, PhD, Professor of Cell and Developmental Biology
Brian C. Freeman, PhD, Professor of Cell and Developmental Biology
Martha U Gillette, PhD, Professor of Cell and Developmental Biology
Xin Li, PhD, Assistant Professor of Cell and Developmental Biology
Haiting Ma, PhD, Assistant Professor of Cell and Developmental Biology
Kannanganattu V Prasanth, PhD, Professor of Cell and Developmental Biology
Supriya Prasanth, PhD, Professor of Cell and Developmental Biology
David H River, PhD, Associate Professor of Cell and Developmental Biology
Mary A Schuler, PhD, Professor of Cell and Developmental Biology
Rachel Smith-Bolton, PhD, Associate Professor of Cell and Developmental Biology
Anna Marie Sokac, PhD, Associate Professor of Cell and Developmental Biology
Kevin Van Bortle, PhD, Assistant Professor of Cell and Developmental Biology
Boxuan Zhao, PhD, Assistant Professor of Cell and Developmental Biology

Boxuan Zhao, PhD, Assistant Professor of Cell and Developmental Biology

17 Microbiology faculty (http://mcb.illinois.edu/departments/microbiology/directory/faculty)
Steven R Blanke, PhD, Professor of Microbiology
Christopher B Brooke, PhD, Associate Professor of Microbiology
John E Cronan, PhD, Professor of Microbiology
Nkrumah A Grant, PhD, Assistant Professor of Microbiology
Asma Hatoum-Aslan, PhD, Assistant Professor Microbiology
James A Imlay, PhD, Professor of Microbiology
Thomas E Kehl-Fie, PhD, Associate Professor of Microbiology
Collin Kieffer, PhD, Assistant Professor of Microbiology
Andrei Kuzminov, PhD, Professor of Microbiology
Pamela P Martiniz, PhD, Assistant Professor of Microbiology
Paola Mera, PhD, Assistant Professor of Microbiology
William W Metcalf, PhD, Professor of Microbiology
Gary J Olsen, PhD, Professor of Microbiology
James M Slauch, PhD, Professor of Microbiology
Cari Vanderpool, PhD, Professor of Microbiology
Rachel J Whitaker, PhD, Professor of Microbiology
Brenda A Wilson, PhD, Professor of Microbiology

14 Molecular and Integrative Physiology faculty (http://mcb.illinois.edu/departments/molecular-integrative-physiology/directory/faculty)
Sayeepriyadarshini Anakk, PhD, Associate Professor of Molecular and Integrative Physiology
Benjamin D Auerbach, PhD, Assistant Professor of Molecular and Integrative Physiology
Milan Bagchi, PhD, Professor of Molecular and Integrative Physiology
Eric C Bolton, PhD, Associate Professor of Molecular and Integrative Physiology
Catherine A Christian-Hinman, PhD, Associate Professor of Molecular and Integrative Physiology
Hee Jung Chung, PhD, Associate Professor of Molecular and Integrative Physiology
Claudio Grosman, PhD, Professor of Molecular and Integrative Physiology
Daniel Llano, PhD, Associate Professor of Molecular and Integrative Physiology
Erik R Nelson, PhD, Associate Professor of Molecular and Integrative Physiology
Lori T Raetzman, PhD, Associate Professor of Molecular and Integrative Physiology
Patrick Sweeney, PhD, Assistant Professor of Molecular and Integrative Physiology
Nien-Pei Tsai, PhD, Associate Professor of Molecular and Integrative Physiology
Xinzhu Yu, PhD, Assistant Professor of Molecular and Integrative Physiology

Faculty and Staff
Attachments
SMCB BIOC Faculty.pdf
SMCB MIP Faculty.pdf
SMCB MICR Faculty.pdf
SMCB CDB Faculty.pdf

HLC Section

Credit Hours

Existing or repackaged curricula (Courses from existing inventory of courses):	Number of Credit Hours: 100	120 Percent of Total:
Revised or redesigned curricula (Courses for which content has been revised for the new program):	Number of Credit Hours: N/A	0 Percent of Total:
New curricula (Courses developed for the new program that have never been offered):	Number of Credit Hours: N/A	0 Percent of Total:
Total Credit Hours of the Program: 100	Number of Credit Hours:	120 Percent of Total:

New Faculty Required

Will new faculty expertise or new faculty members be needed to launch this program?

No

Please explain
existing coverage:

The faculty in the School of Molecular and Cellular Biology are perfectly positioned to deliver MCB courses in this degree program because School of MCB faculty research disciplines are experimental and therefore data collection, interpretation, maintenance, and presentation are foundational in all instructional and research endeavors. Almost every MCB course contains some element associated with data and data collection, interpretation, and presentation. The School of Molecular and Cellular Biology is currently searching for two positions in RNA Biology, Genomics and Informatics which is one of the most influential emerging areas in modern biology and bimolecular medicine. It is also a perfect fit to help propel this degree program into the future with additional new courses in the area. The Data Science part of the degree program is provided by experts in each of the four Data Science areas: Statistics, Computer Science, Mathematics, and Information Science.

Additional Funds

Will the proposed program require a large outlay of additional funds by the institution?

No

Institutional Funding

Please explain institutional funding for proposed program:

The School of Molecular and Cellular Biology will not ask the College of Liberal Arts and Sciences for additional funding due to the deployment of this degree program. We will use existing revenue streams, such as differential tuition in existing degree programs, to support this proposal until it is generating revenue on its own. The School of Molecular and Cellular Biology will seek differential tuition for this degree program as we have for our other BS and BSLAS degree programs.

EP Documentation

EP Control Number	EP.24.112
Attach Rollback/Approval Notices	
This proposal requires HLC inquiry	No

DMI Documentation

Attach Final Approval Notices	
Banner/Codebook Name	

Program Code:

Minor Code	Conc Code	Degree Code	Major Code

Senate Approval Date	
Senate Conference Approval Date	
BOT Approval Date	
IBHE Approval Date	
HLC Approval	

Date

DOE Approval
Date

Effective Date:

Attached
Document

Justification for
this request

Program Reviewer
Comments

Brooke Newell (bsnewell) (09/15/23 12:32 pm): Rollback: Email sent to Melissa.
Brooke Newell (bsnewell) (01/05/24 2:26 pm): Per request from Andrea, updated Sample Sequence document
Barbara Lehman (bjlehman) (04/19/24 11:20 am): Rollback: attachments
Barbara Lehman (bjlehman) (04/19/24 2:00 pm): Rollback: attachments

Key: 1162

UNIVERSITY OF ILLINOIS
AT URBANA–CHAMPAIGN

Department of Statistics
101 Illini Hall
725 South Wright Street
Champaign, IL 61820

March 7, 2023

To Whom It May Concern,

I am writing to indicate the support of the Department of Statistics for the following proposal:

• Molecular and Cellular Biology + Data Science

These programs will provide students across the university with the opportunity to study data science along with a disciplinary specialization.

The Department of Statistics supports including STAT/CS/IS 107 (to be co-taught by Statistics and Computer Science) and STAT/CS 207 or STAT 212 in the data science core curriculum. We will provide seats for MCB + DS students in these courses starting in Fall 2023. We intend to offer STAT/CS/IS 107 every semester and other courses at least once a year.

Sincerely,

Bo Li
Professor and Chair
Department of Statistics

telephone 217-333-2167 • *fax* 217-244-7190

ILLINOIS

DEPARTMENT OF COMPUTER SCIENCE
Thomas M. Siebel Center for Computer Science
201 N. Goodwin Ave.
Urbana, IL 61801-2302 USA

NANCY M. AMATO
Abel Bliss Professor and Head
2248 Siebel Center
namato@illinois.edu

March 7, 2023

Dear Director Bagchi,

I am writing to indicate the strong support of the Department of Computer Science for the proposal to create a BSLAS in Molecular and Cellular Biology (MCB) + Data Science

Blended degree programs like this have proven to be extremely popular and given the demand for data science education amongst students, this new degree will meet an urgent need.

The Department of Computer Science agrees to provide seats for students in this program in the following courses:

- STAT/CS 107 (co-taught with Statistics)
- CS 277
- CS 307

We intend to offer STAT/CS 107 (with Statistics) every Fall and Spring semester and CS 277 and CS 307 at least once a year to meet student demand.

Sincerely,

Nancy M. Amato
Abel Bliss Professor and Head
Department of Computer Science

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Liberal Arts & Sciences
Department of Chemistry
109 Noyes Laboratory, Box D-1, MC-712
600 S. Mathews Ave.
Urbana, IL 61801-3602

March 28, 2023

Professor Milan Bagchi
Director, School of Molecular and Cellular Biology

Dear Milan,

The Department of Chemistry (CHEM) is supportive of the proposed new degree of Bachelor of Science in Liberal Arts and Sciences in Molecular and Cellular Biology + Data Science. CHEM is happy to provide access to the following:

- CHEM 102: General Chemistry I as a science requirement with the possible addition of 30 students per cohort.
- CHEM 104: General Chemistry II as a science requirement with the possible addition of 30 students per cohort.
- CHEM 232: Elementary Organic Chemistry I as a science requirement, with the possible addition of 30 students per cohort.

In the event that the numbers grow far larger than this, we may ask your School to sponsor a discussion section, as other units do (discussion sections usually have one teaching assistant per 24 students).

Congratulations on your exciting proposal. If you need more information, please contact me at 333-7680 or at murphycj@illinois.edu.

Best Regards,

Catherine J. Murphy
Head, Department of Chemistry
Larry R. Faulkner Endowed Chair in Chemistry

ILLINOIS

SCHOOL OF INFORMATION SCIENCES
501 E. Daniel St., MC-493
Champaign, IL 61820-6211

Ted Underwood

March 29, 2023

Members of the Education Policy Committee:

I am writing to indicate our support for an X + DS degree in Molecular and Cellular Biology + Data Science.

This program will provide students across the university with the opportunity to study data science along with a disciplinary specialization. In particular, we support including IS 467 and IS 477 in the new degree, as is customary in the X + DS framework.

The School of Information Sciences will provide seats for all X + DS students in these courses, and each course will be offered at least once per academic year.

Sincerely,

Ted Underwood
Professor of Information Sciences and English
Associate Dean of Academic Affairs, School of Information Sciences
University of Illinois, Urbana-Champaign
Champaign, Illinois, USA

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Liberal Arts & Sciences
Department of Mathematics
273 Altgeld Hall, MC-382
1409 W. Green St.
Urbana, IL 61801 USA

April 17, 2023

To whom it may concern:

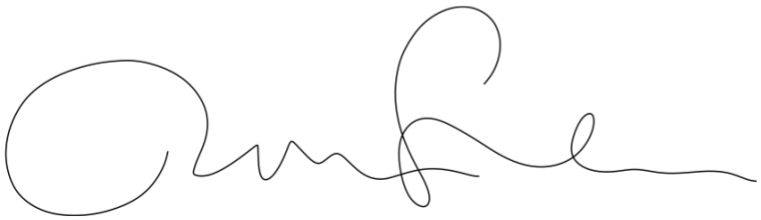
I am writing to indicate the support of the Department of Mathematics for the MCB+DS proposal. These programs will provide students across the university with the opportunity to study data science along with a disciplinary specialization.

The Department of Mathematics supports the inclusion of the following courses in these proposals:

- MATH 220
- MATH 221
- MATH 227
- MATH 257

We will provide seats for X+DS students in these courses to meet demand. We are currently in the practice of running MATH 220 and 257 every semester, MATH 221 every Fall, and MATH 227 every Spring, and expect that we will continue to do so.

Sincerely,



Vera Hur

Professor and Chair

ILLINOIS

COLLEGE OF LIBERAL ARTS & SCIENCES
Department of Biochemistry
417 Roger Adams Laboratory, MC-712
600 S. Mathews Ave.
Urbana, IL 61801

Satish K. Nair, Ph.D.
Head and Weber Chair, Biochemistry
Director, Center for Biophysics & Quant. Biol.
Member, Institute for Genomic Biology

October 9, 2023

Professor Milan Bagchi
Director, School of Molecular and Cellular Biology

Dear Milan,

The Department of Biochemistry (BIOC) is supportive of the proposed new degree of Bachelor of Science in Liberal Arts and Sciences in Molecular and Cellular Biology + Data Science. Biochemistry is happy to provide access to the following:

BIOC 455: Techniques in Biochemistry & Biotechnology

BIOC 446: Physical Biochemistry

We understand that you intend to admit no more than thirty students per cohort, and if the numbers rise, we agree to work with SMCB to accommodate the students in this degree program, in the form of additional TAs. Congratulations on your exciting proposal.

Sincerely,

Satish Nair

Satish K. Nair
Head, Dept. of Biochemistry

Sample Sequence for Molecular & Cellular Biology + Data Science, BSLAS

First Year			
First Semester Courses	**Hours**	**Second Semester Courses**	**Hours**
LAS 101	1	MATH 227 or MATH 257	4
MCB 150 (Gen Ed: NST) or Composition I	4	Composition I or MCB 150 (Gen Ed: NST)	3
MATH 220 or MATH 221 (Gen Ed: QR1)	4-5 (use 4)	CHEM 104 (Gen Ed: NST)	3
STAT 107 (Gen Ed: QR1)	4	General Education course	3
CHEM 102 (Gen Ed: NST)	3	Free elective course	1
semester sum	16	semester sum	14
Second Year			
First Semester Courses	**Hours**	**Second Semester Courses**	**Hours**
MCB 250	3	MCB 252	3
MCB 251	2	MCB 253	2
CHEM 232	3-4 (use 4)	CS 277	4
STAT 207 (Gen Ed: QR2)	4	General Education course	3
Language Other Than English (3rd level)	4	Language Other Than English (4th level)	4
semester sum	17	semester sum	16

Continued on next page

Third Year			
First Semester Courses	**Hours**	**Second Semester Courses**	**Hours**
MCB 354	3	Advanced Group B course	3
Advanced Group A course	3	Advanced MCB Lab	2-4 (use 2)
CS 307	4	Research or Discovery Experience	2-3 (use 2)
General Education course	3	General Education course	3
General Education course	3	General Education course	3
semester sum	16	semester sum	13
Fourth Year			
First Semester Courses	**Hours**	**Second Semester Courses**	**Hours**
Advanced Group A course	3	Advanced Group A course	3
Advanced Group B course	3	Advanced Group B course	3
IS 467	3	IS 477	3
Research or Discovery Experience	2-3 (use 2)	Research or Discovery Experience	2-3 (use 2)
General Education course	3	General Education course	3
semester sum	14	semester sum	14
Total Hours : _____120_____ (Add up individual semester sums. Must **equal** degree total minimum hours requirement listed on the degree's requirements page in the catalog.)			

MCB + DS Courses (listed alphabetically by subject)

BIOC 455 Technqs Biochem & Biotech credit: 4 Hours.
Introduction to modern methods of experimentation with biochemical experimentation. Lectures and labs on the theory and practices underlying various methods and instrumentation. Includes protein purification and quantitative analyses, immunoassays, enzymology, peptide sequencing, lipid analysis, carbohydrate analysis, and bioinformatics. 4 undergraduate hours. 4 graduate hours.
Prerequisite: CHEM 232 or CHEM 236, or equivalent; credit in MCB 251 or equivalent, and MCB 354 or MCB 450 or equivalent, or consent of instructor.

BIOC 446 Physical Biochemistry credit: 3 Hours.
Physical properties of biological macromolecules, with the emphasis on spectroscopic methods, including UV, visible and FTTR spectroscopies, magnetic resonance techniques as well as X-ray diffraction methods. Same as CHEM 472 and MCB 446. 3 undergraduate hours. 3 graduate hours.
Prerequisite: It is strongly recommended to take CHEM 440 (section B) prior to this course. MCB 354 or MCB 450 or equivalent background in biochemistry is also recommended.

BIOP 401 Introduction to Biophysics credit: 3 Hours.
Topics include equilibrium thermodynamics, kinetics, and quantum mechanics with applications to biological and chemical systems. 3 undergraduate hours. 3 graduate hours.
Prerequisite: MCB 354 or MCB 450, or equivalent, or consent of instructor.

CHEM 102 General Chemistry I credit: 3 Hours.
For students who have some prior knowledge of chemistry. Principles governing atomic structure, bonding, states of matter, stoichiometry, and chemical equilibrium. Credit is not given for both CHEM 102 and CHEM 202. CHEM 102 and CHEM 103 are approved for General Education credit only as a sequence. Both courses must be completed to receive Natural Science and Technology credit.
Prerequisite: Credit in or exemption from MATH 112; one year of high school chemistry or equivalent. All students enrolled in CHEM 102 should also enroll in CHEM 103.
This course satisfies the General Education Criteria for:
Nat Sci & Tech - Phys Sciences

CHEM 104 General Chemistry II credit: 3 Hours.
Lecture and discussions. Chemistry of materials, including organic and biological substances, chemical energetics and equilibrium, chemical kinetics, and electrochemistry. Credit is not given for both CHEM 104 and CHEM 204. Prerequisite: CHEM 102 or CHEM 202 or advanced placement credit for one semester of college-level chemistry.
This course satisfies the General Education Criteria for:
Nat Sci & Tech - Phys Sciences

CHEM 232 Elementary Organic Chemistry I credit: 3 or 4 Hours.
Presents structural and mechanistic chemistry with emphasis on applications of this material to closely related areas. For students in agricultural, nutritional and biological sciences, as well as premedical, predental, and preveterinary programs. One-term survey course; may be followed by CHEM 332. Credit is not given for both CHEM 232 and CHEM 236. 3 hours of credit is an option for those not registered in a discussion-recitation section. 4 hours of credit requires registration in a discussion-recitation section and a live lecture or an online section. Prerequisite: CHEM 104 and CHEM 105, or CHEM 204.

CS 277 Algorithms and Data Structures for Data Science credit: 4 Hours.
Introduction to elementary concepts in algorithms and classical data structures with a focus on their applications in Data Science. Topics include algorithm analysis (ex: Big-O notation), elementary data structures (ex: lists, stacks, queues, trees, and graphs), basics of discrete algorithm design principles (ex: greedy, divide and conquer, dynamic programming), and discussion of discrete and continuous optimization. Credit is not given for CS 277 if credit for CS 225 is earned. Prerequisite: STAT 207; one of MATH 220, MATH 221, MATH 234. CS 277 cannot be taken concurrently with CS 225.

CS 307 Modeling and Learning in Data Science credit: 4 Hours.
Introduction to the use of classical approaches in data modeling and machine learning in the context of solving data-centric problems. A broad coverage of fundamental models is presented, including linear models, unsupervised learning, supervised learning, and deep learning. A significant emphasis is placed on the application of the models in Python and the interpretability of the results. Prerequisite: STAT 207; one of MATH 225, MATH 227, MATH 257, MATH 415, MATH 416, ASRM 406.

IS 467 Ethics and Policy for Data Science credit: 3 or 4 Hours.
The course will address common ethical challenges related to data including privacy, bias, and data access. These challenges will be explored through real-world cases of corporate settings, non-profits, governments, academic research, and healthcare. The course emphasizes the complexity of ethical decision-making and that trade-offs between priorities are often necessary. The course also considers how the burdens of addressing ethical concerns should be distributed among stakeholders. Students will be introduced to a range of relevant policy responses at the organizational, institutional, governmental, and supranational levels. 3 undergraduate hours. 4 graduate hours.

IS 477 Data Management, Curation & Reproducibility credit: 3 or 4 Hours.
Addresses issues in Data Management, Curation & Reproducibility from a Data Science perspective. We discuss definitions of data science, and then introduce and use the Data Science Life Cycle as an intellectual foundation. Topics include Research Artifact Identification and Management, Metadata, Repositories, Economics of Artifact Preservation and Sustainability, and Data Management Plans. We use the case study to ground our discussions in both data sets and in specific data science research. This course requires a final project that applies course knowledge to a data science experiment and creates a data management plan for that experiment. 3 undergraduate hours. 4 graduate hours.
Prerequisite: IS 205 or STAT 207 or equivalent programming experience.

LAS 101: Design Your First Year Experience credit: 1 Hours.
Design Your First Year Experience orients students to the academic environment at Illinois and establishes a useful framework for engaging in learning both inside and outside the classroom and articulating a purpose for their education. Using design-thinking, students explore campus resources, set goals for their academic, personal and professional development during their first year and make multiple (engagement) maps for reaching those goals. Prerequisite: Restricted to first-year students in LAS.

LAS 102: Transfer Advantage credit: 1 Hours.
Introduction for first-term transfer students to the college and campus. Familiarizes transfer student with the resources available to them and helps them connect with other students and form a bond with the college. Prerequisite: For first-term LAS transfer students only.

MATH 220 Calculus credit: 5 Hours.
First course in calculus and analytic geometry; basic techniques of differentiation and integration with applications including curve sketching; antidifferentation, the Riemann integral, fundamental theorem, exponential and trigonometric functions. Credit is not given for both MATH 220 and either MATH 221 or MATH 234. Prerequisite: An adequate ALEKS placement score as described at http://math.illinois.edu/ALEKS/, demonstrating knowledge of topics of MATH 115. Students with previous calculus experience should consider MATH 221.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

MATH 221 Calculus I credit: 4 Hours.
First course in calculus and analytic geometry for students with some calculus background; basic techniques of differentiation and integration with applications including curve sketching; antidifferentation, the Riemann integral, fundamental theorem, exponential and trigonometric functions. Credit is not given for both MATH 221 and either MATH 220 or MATH 234. Prerequisite: An adequate ALEKS placement score as described at http://math.illinois.edu/ALEKS/ and either one year of high school calculus or a minimum score of 2 on the AB Calculus AP exam.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

MATH 227 Linear Algebra for Data Science credit: 3 Hours.
Linear algebra is the main mathematical subject underlying the basic techniques of data science. Provides a practical computer-based introduction to linear algebra, emphasizing its uses in analyzing data, such as linear regression, principal component analysis, and network analysis. Students will also explore some of the strengths and limitations of linear methods. Students will learn how to implement linear algebra methods on a computer, making it possible to apply these techniques to large data sets. Credit is not given for both MATH 227 and any of Math 125, MATH 225, MATH 257, MATH 415, or ASRM 406. Prerequisite: Assumes an introductory knowledge of Python, such as students acquire in STAT 107.

MATH 257 Linear Algebra with Computational Applications credit: 3 Hours.
Introductory course incorporating linear algebra concepts with computational tools, with real world applications to science, engineering and data science. Topics include linear equations, matrix operations, vector spaces, linear transformations, eigenvalues, eigenvectors, inner products and norms, orthogonality, linear regression, equilibrium, linear dynamical systems and the singular value decomposition. Credit is not given for both MATH 257 and any of MATH 125, MATH 225, MATH 227, MATH 415 or ASRM 406. Prerequisite: MATH 220 or MATH 221; CS 101 or equivalent programming experience.

MCB 150 Molec & Cellular Basis of Life credit: 4 Hours.
Introductory course focusing on the basic structure, metabolic, and molecular processes (including membranes, energy metabolism, genes) common to all cells. Emphasis on unique properties that differentiate the major sub-groups of organisms (Archaea, Bacteria, plants, and animals), and will discuss how cells are integrated into tissues and organs in multicellular organisms.
This course satisfies the General Education Criteria for:
Nat Sci & Tech - Life Sciences

MCB 250 Molecular Genetics credit: 3 Hours.
Fundamentals of molecular biology including structure of DNA, RNA and proteins, mechanisms of DNA replication, transcription and translation, gene organization, genetic variation and repair, and regulation of gene expression in Bacteria, and Eukarya. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule.
Prerequisite: MCB 150, CHEM 102 and CHEM 104, or equivalents or consent of instructor.

MCB 251 Exp Techniqs in Molecular Biol credit: 2 Hours.
Laboratory course emphasizing a range of molecular biology questions, and the experimental approaches and methodologies needed to answer these questions. Lectures will accompany labs to explain theoretical background and experimental rationale. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. Credit is not given for both MCB 251 and MCB 151. Prerequisite: Concurrent or prior enrollment in MCB 250 or consent of instructor.

MCB 252 Cells, Tissues & Development credit: 3 Hours.
Functional organization and physiology of cells and tissues, including cellular signaling, cellular interactions, and developmental processes. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule.
Prerequisite: MCB 250 or equivalent with consent of instructor.

MCB 253 Exp Techniqs in Cellular Biol credit: 2 Hours.
Laboratory course emphasizing experimental techniques in cellular biology, cellular physiology, and developmental biology. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. Credit is not given for both MCB 253 and MCB 151. Prerequisite: Concurrent or prior enrollment in MCB 252 or consent of instructor.

MCB 300 Microbiology credit: 3 Hours.
Emphasizes fundamental concepts of microbiology, including nutrition, physiology, genetics, molecular biology, ecology and evolution of microorganisms, and their role in nature, human health and disease. Credit is not given for both MCB 300 and MCB 100. Prerequisite: MCB 250 and credit or concurrent registration in MCB 252 or consent of instructor.

MCB 301 Experimental Microbiology credit: 3 Hours.
Laboratory emphasizing the fundamentals of microbiology. Topics include growth, isolation, and identification of bacteria; restriction endonuclease analysis of DNA, genetic cloning, and gene transfer. Computer methods are used for the identification of microorganisms and for the analysis of recombinant DNA molecules. Prerequisite: MCB 250 and 251 and credit or concurrent registration in MCB 300, or consent of instructor.

MCB 314 Introduction to Neurobiology credit: 3 Hours.
Introduction to functional and organizational principles of the mammalian nervous system. Topics include the function of nerve cells, neural signaling, sensory and motor systems, learning and memory,

attention, motivation, emotions, language, neural development and neurological disorders. A general introduction appropriate for all majors. Same as NEUR 314. Prerequisite: Junior or senior standing.

MCB 316 Genetics and Disease credit: 4 Hours.
Introduction of the structure, expression, and regulation of genes of higher eukaryotes with an emphasis upon animal cells. Specific topics will include chromatin structure and its relation to gene expression, regulation of gene expression during development, recombination, molecular genetic technologies, gene replacement therapy, and the molecular genetics of cancers. Credit is not given for both MCB 316 and MCB 317. Prerequisite: MCB 150 and credit or concurrent registration in MCB 250 or consent of instructor.

MCB 317 Genetics and Genomics credit: 4 Hours.
Study of genetics as a discipline, genetic analysis as a tool to understand biology and the role of genome sciences in biology. Credit is not given for both MCB 317 and MCB 316.
Prerequisite: MCB 250, MCB 251, MCB 252, and MCB 253; or consent of instructor.

MCB 320 Mechanisms of Human Disease credit: 3 Hours.
The advent of molecular biology and the Human Genome Project has dramatically increased our understanding of the mechanisms of human disease. The underlying molecular causes for many diseases have been elucidated. This course examines how abnormalities that occur at the molecular and cellular level manifest as pathologies affecting the structure and function of human tissues and organs. In addition, this course focuses on the pathophysiology of common human diseases and the environmental, genetic and epigenetic causes of specific disease types. Prerequisite: MCB 252 or consent of instructor.

MCB 354 Biochem & Phys Basis of Life credit: 3 Hours.
Introduction to biochemistry and structural biology emphasizing the physical and chemical properties of macromolecules. Credit is not given for both MCB 354 and MCB 450.
Prerequisite: CHEM 232 or CHEM 236, and MCB 250 and MCB 252, or consent of instructor.

MCB 364 Eukaryotic Cell Biology Laboratory credit: 2 Hours.
Laboratory course emphasizing biochemical, immunological and molecular biological techniques used to probe the molecules and processes of eukaryotic cells. Special emphasis will be given to the cell cycle, intracellular trafficking, and cellular differentiation. Students will also learn proper data handling and reporting techniques. Prerequisite: MCB 252 and MCB 253 or consent of instructor. Priority is given to undergraduate MCB and Biochemistry majors.

MCB 400 Cancer Cell Biology credit: 3 Hours.
Principles of eukaryotic cell biology with an emphasis on cancer cell biology; consideration of molecular and fine structural components of the cell with an emphasis on experimental analysis of the relationship of structure to function of gene, membrane, cytoskeleton, and extracellular matrix. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250, MCB 251, MCB 252, MCB 253, and credit or concurrent registration in MCB 354 or MCB 450 or consent of instructor.

MCB 401 Cellular Physiology credit: 3 Hours.
Foundational principles of cellular physiology. Topics include solute/water transport, membrane bio electricity, action potentials, ion channel physiology, neuromuscular transmission, muscle physiology,

and central neurophysiology and plasticity. 3 undergraduate hours. 3 graduate hours.
Prerequisite: MCB 252 or consent of instructor.

MCB 402 Sys & Integrative Physiology credit: 3 Hours.
Examines human systems physiology. Topics to be covered include the nervous and endocrine systems, muscle physiology, cardiac physiology, respiratory physiology, blood and immune homeostasis, renal physiology, and gastrointestinal physiology and energy homeostasis. Special emphasis is on homeostatic control and integration of body systems in both health and disease. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 252 or consent of instructor.

MCB 406 Gene Expression & Regulation credit: 3 Hours.
Provides in-depth and up-to-date coverage of gene expression and regulation. Lectures are centered on the principles of regulating gene expression in eukaryotic cells. The course covers macromolecule structure and function in gene expression; molecular mechanisms of the key gene expression events including transcription, RNA processing, localization and translation. Applications of these principles in medicine and therapeutics such as aging, cancer and drug design are also discussed. Same as BIOC 406. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 354 or consent of instructor.

MCB 408 Immunology credit: 3 Hours.
Introduction to fundamentals of immunology with emphasis on biological application; basic background for understanding immunological responses and techniques applicable to biological research. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250, MCB 251, MCB 252, MCB 253, and MCB 354; or consent of instructor.

MCB 410 Developmental Biology, Stem Cells and Regenerative Medicine credit: 3 Hours.
Survey of molecular and cellular mechanisms involved in development and growth of animals, as well as recent advancement in stem cell and Regenerative medicine research. Topics to be covered include fertilization and early cell lineage, body axis formation, gastrulation, neural induction and patterning, segmentation, and other aspects of pattern formation including organogenesis and limb development, as well as embryonic stem cells, induced pluripotent stem cells, adult stem cells, regeneration and regenerative medicine. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 252 or consent of instructor.

MCB 413 Endocrinology credit: 3 Hours.
Physiology and biochemistry of the endocrine system and its hormones with special reference to vertebrates and to human endocrine disorders. 3 undergraduate hours. 3 graduate hours.
Prerequisite: MCB 252 or consent of instructor. One semester of biochemistry is recommended.

MCB 419 Brain, Behavior & Info Process credit: 3 Hours.
Exploration of the neural basis of animal behavior. Emphasis on the information processing problems that animals face in complex natural environments and how nervous systems have evolved to solve these problems. Introduction to the use of computer modeling and simulation techniques for exploring principles of nervous system design and function. Current literature in computational neurobiology and neuroethology will be incorporated in readings and class discussion. Same as BIOP 419 and NEUR 419. 3 undergraduate hours. 3 graduate hours. Prerequisite: CS 101; and PHYS 102 or PHYS 212; and MCB 252; or equivalent or consent of instructor.

MCB 421 Microbial Genetics credit: 3 Hours.
Prokaryotic microbial genetic systems; emphasis on typical data analyses, together with the basic classes of genetic phenomena. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 or consent of instructor.

MCB 424 Microbial Biochemistry credit: 3 Hours.
Examines the biochemical ecology of diverse microbial groups with emphasis on anaerobic systems. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250 and MCB 354 or MCB 450, or consent of instructor.

MCB 426 Bacterial Pathogenesis credit: 3 Hours.
Emphasizes prokaryotes that cause important diseases in humans and other animals; host-parasite bacteriology; and chemistry and genetics of mechanisms of pathogenesis. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 and MCB 354, or consent of instructor.

MCB 428 Microbial Pathogens Laboratory credit: 2 Hours.
Laboratory study of methods of recognition and differentiation, diagnostic tests, and mechanisms of bacterial and viral pathogenesis. Topics include infections of the urinary tract, respiratory tract, gastrointestinal tract, and sexually transmitted diseases. 2 undergraduate hours. 2 graduate hours. Prerequisite: MCB 300 and MCB 301 or consent of instructor.

MCB 429 Cellular Microbiology &Disease credit: 3 Hours.
Emphasizes cell biology of infectious diseases, using cellular, molecular, and animal models. Will stress molecular cross-talk that drives host-pathogen interactions, state-of-the art approaches for investigating host and microbial cell and molecular biology, latest paradigms in host cell biology, and, the evolutionary basis by which pathogens can manipulate host cell cytoskeleton, membranes, organelles, cell cycle, gene expression, and signaling in eukaryotic cells. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 and MCB 354 or consent of instructor.

MCB 430 Molecular Microbiology credit: 3 Hours.
Modern contributions to the science of microbiology; emphasizes the structure, function, and synthesis of informational macromolecules and on the role microorganisms have played in molecular biology. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 and credit or concurrent registration in MCB 354, or consent of instructor.

MCB 432 Computing in Molecular Biology credit: 3 Hours.
Examination of computational aspects of biology with an emphasis on the relationships between biological questions and their recastings as mathematical or logical problems. Topics are drawn from biochemistry, genetics, molecular sequence analysis, and molecular structure. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250, MCB 252, MCB 354, and calculus I (MATH 220 or MATH 221), and calculus II (MATH 231) or biostatistics (STAT 212); or consent of instructor.

MCB 435 Evolution of Infectious Disease credit: 3 Hours.
Understanding the evolution and ecology of the microbial world is of great importance to human health and the health of our planet. Students will explore the ecology and evolution principles that apply to viruses, microbial eukaryotes, archaea and bacteria. The primary literature on historical and emerging infectious diseases will be used to illustrate critical applications of these basic principles. Examples include applying genomics tools to understand the evolutionary basis for antibiotic resistance, the

spread of emerging pathogens, and the ecology of probiotics and the human microbiome. The objective of this class is to better understand how humans shape the diversity and dynamics of the microbial world living in and around us every day. Same as IB 442. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 or consent of instructor.

MCB 460 Neuroanatomy Laboratory credit: 2 Hours.
Laboratory course emphasizing the fundamentals of neuroanatomy. The major sensory, motor, and integrative neural systems of the human brain are explored. Based on an understanding of normal neural connections and brain function, the anatomical and physiological bases for multiple neurological disorders are also discussed. Primary literature and clinical case studies will inform discussions throughout the course. 2 undergraduate hours. 2 graduate hours. Prerequisite: MCB 314 or consent of instructor.

STAT 107 Data Science Discovery credit: 4 Hours.
Data Science Discovery is the intersection of statistics, computation, and real-world relevance. As a project-driven course, students perform hands-on-analysis of real-world datasets to analyze and discover the impact of the data. Throughout each experience, students reflect on the social issues surrounding data analysis such as privacy and design. Same as CS 107 and IS 107.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

STAT 207 Data Science Exploration credit: 4 Hours.
Explores the data science pipeline from hypothesis formulation, to data collection and management, to analysis and reporting. Topics include data collection, preprocessing and checking for missing data, data summary and visualization, random sampling and probability models, estimating parameters, uncertainty quantification, hypothesis testing, multiple linear and logistic regression modeling, classification, and machine learning approaches for high dimensional data analysis. Students will learn how to implement the methods using Python programming and Git version control.
Prerequisite: STAT 107 or consent of instructor.
This course satisfies the General Education Criteria for:
Quantitative Reasoning II

Chang Cui

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changcui@illinois.edu

Education

09/2008-07/2012 B.S. Department of Chemistry and Molecular Engineering, Peking University

09/2012-08/2018 Ph.D. Department of Chemistry, University of Illinois Urbana-Champaign

Appointment

09/2018-09/2023 Postdoctoral Associate Department of Chemistry, Massachusetts Institute of Technology and Department of Chemistry and Chemical Biology, Harvard University

09/2023-present Assistant Professor Department of Biochemistry, University of Illinois Urbana-Champaign

Publication and manuscripts

(1) Wang, J.; Vilbert, A. C.; **Cui, C.**; Mirts, E. N.; Williams, L. H.; Kim, W.; Zhang, J.; Lu, Y.* Increasing Reduction Potentials of Type 1 Copper Center and Catalytic Efficiency of Small Laccase from Streptomyces coelicolor through Secondary Coordination Sphere Mutations. *Angew. Chem. Int. Ed.* **2023**, e202314019

https://onlinelibrary.wiley.com/doi/epdf/10.1002/anie.202314019

(2) **Cui, C.**; Song, D. Y.; Drennan, C. L.; Stubbe, J. A.*; Nocera, D. G.* Radical Transport Facilitated by a Proton Transfer Network at the Subunit Interface of Ribonucleotide Reductase. *J. Am. Chem. Soc.* **2023,** *145* (9), 5145–5154.

https://pubs.acs.org/doi/10.1021/jacs.2c11483

(3) Meyer, A.; Kehl, A.; **Cui, C.**; Reichardt, F. A. K.; Hecker, F.; Funk, L. M.; Pan, K. T.; Urlaub, H.; Tittmann, K.; Stubbe, J.*; Bennati, M.* ^{19}F Electron-Nuclear Double Resonance Reveals Interaction between Redox-Active Tyrosines across the α/β Interface of *E. Coli* Ribonucleotide Reductase. *J. Am. Chem. Soc.* **2022**. *144* (25), 11270–11282.

https://pubs.acs.org/doi/pdf/10.1021/jacs.2c02906

(4) Narasimhan, J.*; Letinski, S.; Jung, S. P.; Gerasyuto, A.; Wang, J.; Arnold, M.; Chen, G.; Hedrick, J.; Dumble, M.; Ravichandran, K.; Levitz, T.; **Cui, C.**; Drennan, C. L.*; Stubbe J.*; Karp, G.*; Branstrom, A.* Ribonucleotide Reductase, a Novel Drug Target for Gonorrhea. *Elife* **2022**, *11*, e67447.

https://elifesciences.org/articles/67447

(5) **Cui, C.**; Greene, B. L.*; Kang, G.; Drennan, C. L.; Stubbe, J.*; Nocera, D. G.* Gated Proton Release during Radical Transfer at the Subunit Interface of Ribonucleotide Reductase. *J. Am. Chem. Soc.* **2020**, *143* (1), 176–183.

https://pubs.acs.org/doi/pdf/10.1021/jacs.0c07879

(6) Greene, B. L.*; Kang, G.; **Cui, C.**; Bennati, M.; Nocera, D. G.; Drennan, C. L.; Stubbe, J. A. Ribonucleotide Reductases: Structure, Chemistry, and Metabolism Suggest New Therapeutic Targets. *Annu. Rev. Biochem.* **2020**, *89*, 45–75.

https://www.annualreviews.org/doi/pdf/10.1146/annurev-biochem-013118-111843

(7) Yu, S.-S.; Li, J.-J.; **Cui, C.**; Tian, S.; Chen, J.-J.; Yu, H.-Q.; Hou, C.; Nilges, M. J.; Lu, Y.* Structural Basis for a Quadratic Relationship between Electronic Absorption and Electronic Paramagnetic Resonance Parameters of Type 1 Copper Proteins. *Inorg. Chem.* **2020**, *59* (15), 10620–10627.

https://pubs.acs.org/doi/pdf/10.1021/acs.inorgchem.0c01065

(8) **Cui, C.**; Reed, J. R.; Mirts, E. N.; Lu, Y*. *Design and Engineering of Heme Enzymes with O_2-dependent Catalytic Activity. O_2-dependent heme enzymes. ed. Dioxygen-dependent Heme Enzymes.* Edited by Ikeda-Saito, M. and Raven, E. Royal Society of Chemistry. 2018.

https://pubs.rsc.org/en/content/chapter/bk9781782629917-00037/978-1-78262-991-7

(9) Yu, Y.; **Cui, C.**; Wang, J.*; Lu, Y.* Biosynthetic Approach to Modeling and Understanding Metalloproteins Using Unnatural Amino Acids. *Sci. China Chem.* **2017**, *60* (2), 188–200.

https://link.springer.com/article/10.1007/s11426-016-0343-2

(10) Yu, Y.#; **Cui, C.#**; Liu, X.#; Petrik, I. D.; Wang, J.*; Lu, Y.* A Designed Metalloenzyme Achieving the Catalytic Rate of a Native Enzyme. *J. Am. Chem. Soc.* **2015**, *137* (36), 11570–11573.

https://pubs.acs.org/doi/pdf/10.1021/jacs.5b07119

(11) Yu, Y.; Lv, X.; Li, J.; Zhou, Q.; **Cui, C.**; Hosseinzadeh, P.; Mukherjee, A.; Nilges, M. J.; Wang, J.*; Lu, Y.* Defining the Role of Tyrosine and Rational Tuning of Oxidase Activity by Genetic Incorporation of Unnatural Tyrosine Analogs. *J. Am. Chem. Soc.* **2015**, *137* (14), 4594–4597.

https://pubs.acs.org/doi/pdf/10.1021/ja5109936

(12) Zhu, Y.-Y.; **Cui, C.**; Qian, K.; Yin, J.; Wang, B.-W.*; Wang, Z.-M.; Gao, S.* A Family of Enantiopure Fe^{III}_4 Single Molecule Magnets: Fine Tuning of Energy Barrier by Remote Substituent. *Dalt. Trans.* **2014**, *43* (31), 11897–11907.

https://pubs.rsc.org/en/content/articlelanding/2014/dt/c3dt53317d

(13) Zhu, Y.; **Cui, C.**; Li, N.; Wang, B.*; Wang, Z.; Gao, S.* Constructing a Series of Azide-bridged Cu^{II} Magnetic Low-dimensional Coordination Polymers by Using Pybox Ligands. *Eur. J. Inorg. Chem.* **2013**, *2013* (17), 3101–3111.

https://chemistry-europe.onlinelibrary.wiley.com/doi/abs/10.1002/ejic.201300107

(14) Zhu, Y.-Y.; **Cui, C.**; Zhang, Y.-Q.; Jia, J.-H.; Guo, X.; Gao, C.; Qian, K.; Jiang, S.-D.; Wang, B.-W.*; Wang, Z.-M.; Gao, S.* Zero-Field Slow Magnetic Relaxation from Single Co (II) Ion: A Transition Metal Single-Molecule Magnet with High Anisotropy Barrier. *Chem. Sci.* **2013**, *4* (4), 1802–1806.

https://pubs.rsc.org/en/content/articlelanding/2013/sc/c3sc21893g

(15) Zhu, Y.-Y.; Guo, X.; **Cui, C.**; Wang, B.-W.*; Wang, Z.-M.; Gao, S.* An Enantiopure Fe^{III}_4 Single-Molecule Magnet. *Chem. Commun.* **2011**, *47* (28), 8049–8051.

https://pubs.rsc.org/en/Content/ArticleLanding/2011/CC/C1CC12831K

Contributed talks

Probe Conformational Dynamics of Ribonucleotide Reductase Using 3,4-dihydroxyphenylalanine (DOPA). September **2023**. *Midwest Enzyme Chemistry Conference.* Evanston, IL.

Probe Conformational Dynamics of Ribonucleotide Reductase Using 3,4-dihydroxyphenylalanine (DOPA). July **2023**. *Enzymes, Coenzymes and Metabolic Pathways. Gordon Research Seminar*. Waterville Valley, NH.

A water network gates the interfacial proton transfer in *E. coli* ribonucleotide reductase. July **2022**. *Enzymes, Coenzymes and Metabolic Pathways. Gordon Research Conference*. Waterville Valley, NH.

A Designed Metalloenzyme Achieving the Catalytic Rate of a Native Enzyme. January **2017**. *Bioinorganic chemistry. Gordon Research Seminar*. Ventura, CA

A Designed Metalloenzyme Achieving the Catalytic Rate of a Native Enzyme. October **2016**. *The 36th Midwest Enzyme Chemistry Conference*. Chicago, IL

Honors and Awards

2016 Graduate College Conference Travel Award, University of Illinois at Urbana-Champaign

2013 Ullyot Fellowship, University of Illinois at Urbana-Champaign

2012 Virginia Bartow Scholar, University of Illinois at Urbana-Champaign

2010 Hui-Chun Chin and Tsung-Dao Lee Chinese Undergraduate Research Scholar

CURRICULUM VITAE

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Education

B.S. - Microbiology, Xiamen University, China, 1987
M.S. - Microbial Genetics, Peking Union Medical College, China 1990
Ph.D. - Molecular Biology, Kyoto University, Japan, 1999 (Mentor: Dr. Yoshiaki Ito)

Professional Experience

1990–1994	Lecturer, Fujian Medical University, Fuzhou, China
1999–2003	Postdoctoral fellow, Gladstone Institute of Virology and Immunology, University of California, San Francisco (Mentor: Dr. Warner Greene)
2003–2005	Staff Scientist, Gladstone Institute of Virology and Immunology, University of California, San Francisco
2005-2012:	Assistant Professor, Department of Biochemistry, College of Medicine, University of Illinois Urbana-Champaign (UIUC)
2012-2017	Associate Professor with Tenure, Department of Biochemistry, College of Medicine, University of Illinois Urbana-Champaign
2017-present	Professor, Department of Biochemistry, University of Illinois Urbana-Champaign
2018-present	Faculty Member, Carl R. Woese Institute for Genomic Biology, UIUC

Honors or Recognition

1994–1995	Sasagawa Medical Fellowship, Sino-Japan Medical Association, Japan
1996–1999	Japanese Government Student Fellowship, Kyoto University, Japan.
1997	International Exchange Fellowship, Japan Cell and Science Research Foundation, Japan.
2003	Novartis Foundation Bursaries. The Novartis Foundation, London, UK
2003–2008	Arthritis Investigator Award, Arthritis Foundation.
2008-2010	Biomedical Research Award, American Lung Association
2017, 2020, 2022	Arnold O. Beckman Research Award, UIUC

Membership in Professional Societies

Member of AAAS (The American Association for the Advancement of Science)
Member of American Society of Microbiology
Member of ASBMB (The American Society of Biochemistry and Molecular Biology)
Member of AACR (American Association for Cancer Research)
Member of AGA (American Gastroenterological association)

Editorial Functions

Contributing Associate Editors-in-Chief, *World Journal of Gastroenterology* (2011-2013)
Editorial Board Member, *Journal of Biological Chemistry* (2015-2025)
Editorial Board Member, Frontiers in Oncology and Frontiers in Cell and Developmental Biology (2021-present)

Professional Service

Grant Ad Hoc reviewer:
Arthritis Foundation, Molecular Biology Study Section (2008)
Wellcome Trust, Molecules, Genes and Cells Study Section (2010)
National Science Foundation, Genes and Genome Systems (2010)

UIUC Campus Research Board Grant (2010) (2012)(2013)
NIH Cellular Signaling and Regulatory Systems (CSRS) study section (2013)(2014)
National Science Foundation, Division of Molecular and Cellular Biosciences (2014)
NHI/NCI Special Emphasis Panel ZCA1 RTRB-A (2014)
NIH Genetics of Health and Disease (GHD) study section (2016)
VA INFB study section (2017)
MRC (UK, 2018, 2020)

Journal Ad Hoc reviewer: *Science; Science Signaling*; *Oncogene; Oncotarget; Molecular and Cellular Biology; Journal of Cellular Biochemistry; Journal of Cellular Physiology; Journal of Biological Chemistry; Journal of Immunology, Journal of Leukocyte Biology; BBA - Molecular Cell Research; Trends in Microbiology; Molecular Biology of the Cell; World Journal of Gastroenterology, PlosOne, Infection and Immunity; Cell Death & Disease; JCI, Frontiers in Cell and Developmental Biology, Cell Research, Frontiers in Oncology*

Major University Services

2007-2012	Graduate Admissions Committee at Department of Biochemistry, UIUC
2010-2013	Executive Committee, College of Medicine (Urbana-Champaign), UIUC
2011-2013	Executive Committee at Graduate College, UIUC
2015-2017	Chair, Rutter Chair Search Committee, Department of Biochemistry, UIUC
2015-2017	Executive Committee, College of Medicine (Urbana-Champaign), UIUC
2017-2020	Promotion and tenure committee (SMCB), UIUC
2020-2022	Distinction committee (SMCB), UIUC
2021-present	Graduate admissions/graduate programs committee (SMCB), UIUC
2022-present	Course curriculum committee (SMCB), UIUC

Research Interests

1. Molecular mechanisms for *H. pylori*-associated gastric diseases and therapies
2. Epigenetic regulation of metabolism by Brd4
3. Regulation and functions of NF-κB/Brd4 axis in immunity and cancer

Grants Received

Active:

1. UIUC campus research board (Arnold O. Beckman Research Award), 4/01/2022-11/30/2023, role: PI
   "*Epigenetic Regulation of Phagocytosis and Inflammation in Sepsis*"
   The major goal of this project is to investigate the regulation of NLRC4 expression by Brd4 in macrophages upon Salmonella infection.

2. R01 NS109816-01A1, 7/01/2019-6/30/2024, role: co-I (PI: Eduardo Candelario-Jalil)
   "Multi-pronged Approach to Recalibrating the Inflammatory Cascade in Ischemic Stroke with BET blockade"
   The major goals of this project are to evaluate the potential protective role of Brd4 inhibition during ischemic stroke.

3. R03AI163932, 02/01/2022 - 01/31/2024, role: PI
   "*Transcriptional Regulation of NLRC4 Inflammasome Activation*"

The goal of this project is to understand how the NLRC4 inflammasome components are regulated at the epigenetic level.

Submitted and Pending:

1. R01AI175549, 07/01/2023 - 06/30/2028, role: PI
   "Regulation of Helicobacter pylori-mediated inflammatory response"
   The goal of this project is to understand the inflammatory response and the development of H. pylori-mediated gastric diseases.

2. R21, 10/01/2023 - 09/30/2025, role: PI,
   "Regulation of innate immune response in sepsis"
   The goal of this project is to understand how Brd4-mediated innate immune response regulates polymicrobial sepsis.

3. CCIL, UIUC seed grant 06/01/2023-05/31/2025, role: co-PI
   "Reprogramming tumor-associated macrophages by targeting BRD4 in tumor microenvironment of colorectal cancer."
   The goal of this project is to target Brd4 in tumor-associated macrophages for the treatment of colorectal cancer.

Completed:

1. NIH/NCI 1R01CA179511-01, 08/01/2013-07/30/2017, role: PI
   "*Transcriptional regulation of H. pylori-mediated gastric inflammation and cancer*",
   The goal of this project is to study the transcriptional regulation of *H. pylori*-mediated inflammatory response.

2. NIH/NIAID R21AI117080-01, 5/01/2015-4/30/2017, role: PI
   "Antimicrobial activity of pH-activated polypeptides toward H. pylori"
   The major goal of this project is to understand the molecular mechanism and potential application of pH-activated polypeptides in killing *H. pylori*.

3. NIH/NIDDK R01DK085158, 4/01/2010-1/31/2015, role: PI
   "NF-κB signaling and Helicobacter pylori-mediated gastric disease"
   The goal of this project is to investigate the mechanism by which *H. pylori* activates NF-κB and NF-κB-mediated inflammatory response.

4. NIH/NIDDK 1R21DK-093865-01, 2011-2013, role: PI
   "Inactivation of RUNX3 by Helicobacter pylori and gastric cancer"
   The goal of this project is to investigate the mechanism by which *H. pylori* inactivates gastric tumor suppressor RUNX3 and induces gastric cancer.

5. UIUC campus research board (Arnold O. Beckman Research Award), 5/01/2020-12/30/2021, role: PI
   "*Regulation of diet-induced obesity by Brd4-mediated innate immune response*".

Major Scientific Contributions

1. ***Demonstration of the pathophysiological functions of Brd4 in innate immunity and metabolism.***
   Using tissue-specific Brd4 knockout animals and different mouse disease models, we identified several

novel functions of Brd4 in vivo. We demonstrate that Brd4 regulates NLRC4 inflammasome activation by facilitating IRF8-mediated transcription of *Naips* in response to *Salmonella* infection (Dong et al, ***J Cell Biol***., 2021). We also show that Brd4 is a key regulator of diet-induced obesity by controlling the expression of the antilipolytic factor Gdf3 expression in adipose tissue macrophages (Hu et al, ***JCI Insight,*** 2021). Furthermore, we demonstrate that Brd4 regulates the bile acid homeostasis and is implicated in the development of cholestasis (Jung et al, ***JCI Insight,*** 2020). These studies unveil several physiological functions of Brd4 in inflammation and metabolism and indicate that Brd4 could be a target of therapy for inflammatory and metabolic diseases.

2. ***Demonstration of reversible acetylation of NF-κB as a molecular switch dictating NF-κB activation in cancer and inflammatory response.*** My earlier studies in the transcription regulation of NF-κB signaling demonstrate that acetylation of the RelA subunit of NF-κB functions as a molecular switch that dictates the strength and duration of the nuclear activity of NF-κB (Chen *et al,* ***Science,*** 2001). We also demonstrate that acetylation at different lysine residues regulates distinct functions of NF-κB (Chen *et al,* ***EMBO,*** 2002). Furthermore, we demonstrate that acetylation of NF-κB is essential for bacteria-induced inflammatory response (Ishinaga *et al*, ***EMBO J***, 2007). These studies open a new chapter in NF-κB biology and facilitate the understanding of diverse roles of various posttranslational modifications of NF-κB in NF-κB-mediated inflammatory response and cancer.
3. ***Identification of Brd4 as a novel regulator of NF-κB-mediated inflammatory response and cancer.*** By examining the role of acetylation of RelA in the transcriptional activation of NF-κB, my lab first reported that bromodomain-containing factor Brd4 specifically binds to acetylated lysine-310 via its two bromodomains. This binding stimulates the recruitment of the elongation factor P-TEFb (complex of cyclin T1 and Cdk9) to enhance RNA polymerase II-dependent transcription of a subset of NF-κB target genes (Huang et al, ***MCB***, 2009). We also identify a role of Brd4 in maintaining the constitutively active NF-κB in cancer. Brd4 binds to acetylated lysine-310 in cancer cells and this binding stabilizes NF-κB by preventing its ubiquitination and degradation. Inhibiting the specific interaction between Brd4 and NF-κB by a small molecule inhibitor JQ1 induces the ubiquitination and degradation of NF-κB and prevents NF-κB-mediated cancer cell proliferation and tumorigenesis (Zhou et al, ***Oncogene***, 2013; Wu, et al, ***JBC***, 2014)). We have also demonstrated that Brd4 is essential for the synthesis of enhancer RNA of NF-κB-dependent inflammatory genes (Chen et al, ***J. Immunology***, 2016). Our most recent studies using Brd4 conditional knockout mice demonstrate that Brd4 regulates the innate immune response via translational control of inflammatory genes (Bao et al, ***PNAS***, 2017).
4. ***Demonstration* of molecular mechanisms for *H. pylori*-mediated gastritis and gastric cancer.** Infection with *H. pylori* causes gastritis and peptic ulceration and is the strongest risk factor for the development of gastric cancer. Studies from my laboratory demonstrate that *H. pylori* infection stimulates the catalytic activity of TAK1 and the TRAF6-mediated ubiquitination of TAK1 in a *H. pylori* virulence factor CagA-dependent fashion. CagA physically associates with TAK1 during *H. pylori* infection, and it enhances the kinase activity of TAK1 and the TAK1-induced activation of NF-κB through the TRAF6-mediated K63-linked ubiquitination of TAK1. These findings reveal that polyubiquitination of TAK1 regulates the activation of NF-κB and is utilized by *H. pylori* CagA for the *H. pylori*-induced inflammatory response (Lamb et al, ***EMBO Reports***, 2009). We also show that expression of RUNX3 is inhibited by *H. pylori* infection at the protein level in a CagA-dependent manner. CagA directly associates with RUNX3 and induces the proteasome-mediated degradation of RUNX3. These studies reveal a novel mechanism by which *H. pylori* promotes gastric cancer by inhibiting the tumor suppressor RUNX3 (Tsang et al, ***Oncogene***, 2010).
5. ***Design a new class of polypeptides that would selectively kill H. pylori under acidic conditions.*** Eradication of *H. pylori* with more than one antibiotic is recommended for infected patients and has become the first line treatment for *H. pylori* infection. However, antibiotic resistance is the major cause of treatment failure and has become the most evident challenge to treatment of *H. pylori* infection. Synthetic antimicrobial oligo-peptides (AMP) have recently emerged as novel antimicrobial agents in

combating multidrug resistant microbes. In collaboration with Dr. Jianjun Cheng's lab (Department of Materials Science and Engineering, UIUC), we have designed several polypeptides that can be converted from a non-helical structure to a helical structure under acidic pH to selectively kill *H. pylori*. In vitro and in vivo experiments demonstrate that these peptides are able to kill *H. pylori* only under acidic condition and possess no bactericidal activity under normal pH, suggesting the therapeutic potentials of the pH-activated peptides (Xiong et al, ***PNAS*****,** 2015, Xiong et al, ***PNAS*****,** 2017).

6. ***Negative regulation of NF-κB activity by Set9-mediated lysine methylation.*** Activation of NF-κB plays a key role in regulating immune and inflammatory responses, cell proliferation and differentiation, and tumorigenesis. Activated NF-κB needs to be turned off in a timely manner because a sustained activation of NF-κB leads to inflammatory diseases and contributes to the progression of cancer. My lab has demonstrated that methylation of RelA at lysines 314 and 315 by lysine methyltransferase Set9 negatively regulates the transcriptional activation of NF-κB by triggering the ubiquitination and proteasome-mediated degradation of promoter-bound RelA (Yang et al, ***EMBO J***., 2009). These findings provide a novel mechanism for the termination of NF-κB function. Since constitutively active NF-κB is frequently encountered in a wide variety of tumors and in some rheumatic conditions, these findings also provide potential approaches to developing new drugs for the treatment of many diseases. By exploring the potential interplay between various posttranslational modifications of NF-κB, we have demonstrated that acetylation specifically inhibits the methylation of RelA and have provided a molecular model for understanding this inhibition (Yang et al, ***MCB*****,** 2010).

Invited Lectures and Conference Presentations after UIUC Position

1. "Post-translational Modifications of NF-κB". Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences, China. July, 2007
2. "Brd4 coactivates NF-κB-mediated inflammatory response via specifically binding to acetylated RelA". NF-κB Keystone Symposia, Banff, Canada. February, 2008
3. "Epigenetic regulation of NF-κB Signaling". Department of Medicine and Pathology, School of Medicine, Washington University. May, 2009
4. "Epigenetic Regulation of NF-κB in Immunity and Cancer". Department of Microbiology and Molecular Genetics, University of Pittsburg. July, 2009
5. "Deciphering the NF-κB Code". Department of Oncology, McArdle Laboratory for Cancer Research, University of Wisconsin-Madison. September, 2009
6. "Epigenetic Regulation of NF-κB in Immunity and Cancer". Center for Cellular Mechanic, University of Illinois at Urbana-Champaign. October, 2009
7. "NF-κB signaling and the inflammatory diseases", Fujian Medical University. December, 2009
8. "Deciphering the NF-κB transcription factor code", Xiamen University. December, 2009
9. "Epigenetic regulation of NF-κB signaling in inflammation and cancer". Rochester University. April, 2010
10. "NF-κB, a therapeutic target for inflammatory disease and cancer", GlaxoSmithKline. May, 2010
11. "The role of virulent factor CagA in NF-κB activation and *Helicobacter pylori*-mediated gastric cancer", Beijing, BIT's 1st Annual World Congress of Immunodiseases. May, 2010
12. "Epigenetic regulation of NF-κB signaling", Peking University. May, 2010
13. "Epigenetic regulation of NF-κB in Cancer", University of Cincinnati Medical Center. June, 2010
14. "*Helicobacter pylori* CagA targets gastric tumor suppressor RUNX3 for proteasome-mediated degradation", The 17th international RUNX workshop, RUNX 2010. Hiroshima, Japan. July, 2010
15. "Molecular mechanism of *Helicobacter pylori*-mediated gastric disease", Wadsworth Center, New York State Department of Health. September, 2010
16. "Epigenetic regulation of NF-κB in Immunity and Cancer", Center for Biochemical & Biophysical Studies, Northern Illinois University. October, 2010

17. "Epigenetic regulation of NF-κB in Immunity and Cancer", College of Medicine, University of Illinois at Chicago. October, 2010
18. "Epigenetic regulation of NF-κB in Immunity and Cancer", Department of Medicine, University of Chicago. June, 2011
19. "Posttranslational modifications of NF-κB: another layer of regulation for NF-κB signaling", 13th SCBA International Symposium on Bioscience for the 21st century: Emerging Frontiers and Evolving Concepts, GuangZhou, China. July, 2011
20. "Regulation of NF-κB in Immunity and Cancer", Department of Biochemistry, Sun Yat-Sen University. July, 2011
21. "Regulation and functions of tumor suppressor RUNX3 in breast cancer". Fujian provincial cancer center, Fuzhou. July, 2011
22. "Mechanism of *Helicobacter pylori*-induced gastric cancer: Role of virulence factor CagA". Institute of Pasteur Shanghai, Chinese Academy of Sciences. July, 2011
23. "RUNX3, a new tumor suppressor in breast cancer", The 18th international RUNX workshop, RUNX 2010. San Diego, UCSD. August, 2011
24. "Regulation of NF-κB Signaling in Immunity and Cancer", University of Illinois at Urbana-Champaign September, 2011
25. "Epigenetic regulation of NF-κB in Immunity and Cancer", Tulane University. September, 2011
26. "Host and pathogen interaction: *H. pylori* and inflammatory response", Georgia State University. September, 2011
27. "Molecular mechanism of *Helicobacter pylori*-mediated gastric diseases", Department of Microbiology and Immunology, Indiana University. October, 2011
28. "Molecular mechanism of *Helicobacter pylori*-mediated gastric diseases", College of Life Sciences, Xiamen University. May, 2012
29. "Regulation of NF-κB by bromodomain-containing factor 4", Keystone meeting on Epigenetic Marks and Cancer, Santa Fe, NM. March, 2013
30. "Epigenetic regulation of NF-κB in Immunity and Cancer", University of North Carolina at Chapel Hill. October, 2013
31. "Molecular mechanism of *H. pylori*-mediated gastric cancer and cancer therapy". Department of Gastrointestinal Surgery, The First Affiliated Hospital to Fujian Medical University. June, 2015
32. "Regulation and functions of Brd4 in inflammation and cancer", Xiamen University. June 2015
33. "Regulation and functions of Brd4 in inflammation and cancer", Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences, China. June, 2015
34. "Epigenetic regulation of NF-κB in Immunity and Cancer", University of Colorado Denver. August, 2015
35. "Transcriptional regulation of NF-κB in Immunity and Cancer", University of Kentucky. October, 2015
36. "Brd4 in inflammation and cancer", Ohio State University. October, 2015
37. "Molecular mechanism of *H. pylori*-mediated gastric cancer and cancer therapy". College of Veterinary Medicine, University of Illinois. February, 2016
38. "Transcriptional Regulation of NF-κB Signaling in Cancer and Immunity". University of Chicago. April, 2016
39. "Brd4 and NF-κB signaling in inflammation and cancer". University of Californian at San Diego. April, 2016
40. "Diverse role of Brd4 in inflammation and cancer". Northwestern University. May, 2016
41. "Epigenetic regulation of NF-κB in Immunity and Cancer". Shanghai Institute of Immunology, Shanghai JiaoTong University School of Medicine. July, 2016
42. "Regulation of NF-κB signaling by bromodomain-containing factor 4", The 11th biennial 2016 CBIS meeting. August, 2016

43. From Bench to BETside: Regulation of NF-kB signaling in cancer and Immunity. University of Illinois at Urbana-Champaign, September, 2016
44. "Regulation of NF-κB signaling in Cancer and Inflammatory Response". University of Illinois at Chicago, September, 2016
45. "Regulation of Brd4 by prolyl-peptidyl isomerase Pin1 in gastric cancer", 2017 International Symposium on Pin1 and Signal Transduction. July, 2017
46. "Epigenetic regulation of NF-κB in Immunity and Cancer". Penn State University. August, 2017
47. "Role of Brd4 in Immunity and Cancer". Nuclear Receptors: From Structure to Disease. The 8th Xiamen Winter Symposium, December, 2017
48. "From bench to "BET"side: Regulation of NF-κB signaling in cancer", UIUC Cancer Center, April, 2018
49. "Bromodomain-containing Proteins in Cancer and Inflammatory Diseases". Guangzhou Medial University, July, 2019

Publications (total citation:12627; h-index:42; i10-index:58 as of 06/27/2022)
A. Chapters in Books:

1. O'Mahony A, **Chen LF**, Greene WC. New insights into the regulation of NF-κB: Roles for phosphorylation and acetylation of NF-κB subunits. 2003. In *Nuclear Factor κB: Regulation and Role in Disease* (Edited by Rudi Beyaert). Kluwer Academic Publishers, Netherlands, pp161–178.
2. Greene WC**, Chen LF**. Regulation of NF-κB by reversible acetylation. 2004. In *Reversible Protein Acetylation* (Edited by Eric Verdin). John Wiley & Sons, Ltd, UK, Novartis Foundation Symp. 259: pp208-217.
3. **Chen LF**, Greene WC. Regulation of Nuclear NF-κB Action: A key role for Posttranslational modification. 2007. In *Handbook of Transcription Factor NF-κB* (Edited by Sankar Ghosh). CRC Press pp87-106.
4. Chen JJ and **Chen LF**. 2015. Methods to detect NF-κB acetylation and methylation. *Methods in Molecular Biology*. 1280:395-409.
5. Modi N and **Chen LF.** 2021. Measuring NF-κB phosphorylation and acetylation. *Methods in Molecular Biology*. 2021;2366:3-17.

B. Articles in Journals (total citation ~12,536, h-index:42, as of May 2022):

1. Kanno T, Kanno Y, **Chen LF**, Ogawa E, Kim WY, Ito Y. 1998. Intrinsic transcriptional activation-inhibition domains of the polyomavirus enhancer binding protein 2/Core binding factor α subunit revealed in the presence of the α subunit. *Mol. Cell. Biol*. 18:2444-2454.
2. **Chen LF**, Ito K, Murakami Y, Ito Y. 1998.The capacity of polyomavirus enhancer binding protein 2αB1(AML1/Cbfa2) to stimulate polyomavirus DNA replication is related to its affinity for the nuclear matrix. *Mol. Cell. Biol*.18: 4165-4176.
3. Yagi R, **Chen LF**, Shigesada K, Murakami Y, Ito Y. 1999. A WW domain-containing yes-associated protein (YAP) is a novel transcriptional co-activator. *EMBO J*.18:2551-2562.
4. Hanai J[§], **Chen LF**[§], Kanno T, Ohtani-Fujita N, Kim WY, Guo WH, Imamura T, Ishidou Y, Fukuchi M, Shi MJ, Stavnezer J, Kawabata M, Miyazono K, Ito Y. 1999. Interaction and functional cooperation of PEBP2/CBF with Smads. Synergistic induction of the immunoglobulin germline Cα promoter. *J. Biol. Chem.*274:31577-31582 ([§]equal contribution).

5. Foehr ED, Bohuslav J, **Chen LF**, DeNoronha C, Geleziunas R, Lin X, O'Mahony A, Greene WC. 2000. The NF-κB-inducing kinase induces PC12 cell differentiation and prevents apoptosis. *J. Biol. Chem*. 275: 34021-34024.
6. **Chen LF**, Fischle W, Verdin E, Greene WC. 2001. Duration of nuclear NF-κB action regulated by reversible acetylation. *Science* 293:1653-1657 (**Note**: This paper was cited by *Faculty of 1000*; http://f1000.com/1001238#eval18760)
7. **Chen LF**, Mu Y, Greene WC. 2002. Acetylation of RelA at discrete sites regulates distinct nuclear functions of NF-κB. *EMBO J*. 21: 6539-6548.
8. Guo WH, Weng LQ, Ito K, **Chen LF**, Nakanishi H, Tatematsu M, Ito Y. 2002. Inhibition of growth of mouse gastric cancer cells by RUNX3, a novel tumor suppressor. *Oncogene*. 21:8351-5.
9. **Chen LF**, Greene WC. 2003. Regulation of distinct biological activities of the NF-κB transcription factor complex by acetylation. *J. Mol. Med*. 81:549-557.
10. O'Mahony A, Montano M, Van Beneden K, **Chen LF**, Greene WC. 2004. HTLV-I Tax induction of biologically active NF-κB requires IKK1-mediated phosphorylation of RelA/p65. *J. Biol. Chem.* 279:18137-18145.
11. Bohuslav J, **Chen LF**, Kwon H, Mu Y, Greene WC. 2004. p53 induces NF-κB activation by an IκB kinase-independent mechanism involving phosphorylation of p65 by ribosomal S6 kinase 1 (RSK1). *J. Biol. Chem*. 279:26115-26125.
12. **Chen LF**, Greene WC. 2004. Shaping the nuclear action of NF-κB. *Nat. Rev. Mol. Cell. Biol.* 5:392-401.
13. Jono H, Lim JH, **Chen LF**, Xu H, Trompouki E, Pan ZK, Mosialos G, Li JD. 2004. NF-κB is essential for induction of CYLD, the negative regulator of NF-κB: Evidence for a novel inducible auto-regulatory feedback pathway. *J. Biol. Chem*.279:36171-36174.
14. Williams S., **Chen LF**, Kwon H, Fenard D, Bisgrove1 D, Verdin E, Greene WC. 2004. Prostratin antagonizes HIV latency by activating NF-κB. *J. Biol. Chem*. 279: 42008-42017.
15. **Chen LF**, Greene WC. 2005. Assessing acetylation of NF-κB. *Methods*.36:368-375
16. **Chen LF**[§], Williams S, Mu Y, Nakano H, Duerr JM, Buckbinder L, Greene WC[§]. 2005. RelA phosphorylation regulates RelA acetylation. *Mol. Cell. Biol.* 25:7966-7975 ([§]corresponding author)
17. Chen J, Zhou Y, Mueller-Steiner S, **Chen LF**, Kwon H, Yi S, Mucke L, Gan L. 2005. SIRT1 Protects against Microglia-dependent Amyloid-β Toxicity through Inhibiting NF-κB Signaling. *J. Biol. Chem*.280: 40364-40374.
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19. Kweon SM, Wang B, Rixter D, Lim JH, Koga T, Ishinaga H, **Chen LF**, Jono H, Xu H, Li JD. 2006. Synergistic activation of NF-κB by nontypeable *H. influenzae* and *S. pneumoniae* is mediated by CK2, IKKβ-IκBα, and p38 MAPK. *Biochem. Biophys. Res. Commun*. 351:368-75.
20. Ishinaga H, Jono H, Lim JH, Kweon SM, Xu H, Ha UH, Xu H, Koga T, Yan C, Feng XH, **Chen LF**[§], Li JD[§]. 2007. TGF-β induces p65 acetylation to enhance bacteria-induced NF-κB activation. *EMBO J.* 26:1150-1162 ([§]**corresponding author**)
21. Williams S, Kwon H, **Chen LF**, Greene WC. 2007. Sustained Induction of NF-κB is required for efficient expression of latent HIV-1. *J. Virol.* 81:6043-56.
22. Murakami Y, **Chen LF**, Sanechika N, Kohzaki H, Ito Y. 2007. Transcription factor Runx1 recruits the polyomavirus replication origin to replication factories. *J. Cell Biochem.* 100(5):1313-23

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24. Ishinaga H., Jono H., Lim JH, Komatsu K, Xu X, Lee J, Woo CH, Xu H, Feng XH, **Chen LF**, Yan C, Li JD. 2009. Synergistic induction of nuclear factor-κB by transforming growth factor-β and tumour necrosis factor-α is mediated by protein kinase A-dependent RelA acetylation. *Biochem. J*. 417:583-91.
25. Huang B, Yang XD, Zhou MM, Ozato K, **Chen LF**. 2009. Brd4 coactivates transcriptional activation of NF-κB via specific binding to acetylated RelA. *Mol. Cell. Biol*. 29: 1450-63. (**Note**: This paper was cited by *Faculty of 1000*; http://f1000.com/1148256#eval605405)
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28. Yang XD, Lamb A, **Chen LF**. 2009. Methylation, a new epigenetic mark for protein stability. *Epigenetics.* 4:429-33
29. Nossa CW, Jain P, Batcha T, Gupta VR, **Chen LF**, Schreiber V, Desnoyers S, Blanke SR. 2009. Activation of the abundant nuclear factor poly(ADP-2 ribose) polymerase-1 by *Helicobacter pylori*. *Proc. Natl. Acad. Sci. USA* 106:19998-20003
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31. Lamb A, **Chen LF**. 2010. The many roads traveled by *Helicobacter pylori* to NF-κB activation. *Gut Microbes.* 1:109-113
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51. Bao Y, Wu XW, Chen JJ, Hu XM, Zeng FX, Cheng JJ, Jin H, Lin X and **Chen LF**. 2017. Brd4 modulates the innate immune response through Mnk2-eIF4E pathway-dependent translational control of IκBα. *Proc. Natl. Acad. Sci. U.S.A.* 114:E3993-E4001.
52. Hu XM, Dong SH, Chen J, Zhou XZ, Chen R, Lu KP, **Chen LF**. 2017. Prolyl isomerase Pin1 regulates the stability, transcriptional activity and oncogenic potential of Brd4. *Oncogene* 36: 5177-5188
53. Zhao X, **Chen LF**, Wang Z. 2017. Aesculin modulates bone metabolism by suppressing receptor activator of NF-κB ligand (RANKL)-induced osteoclastogenesis and transduction signals. *Biochem Biophys Res Commun.* 488:15-21
54. Zhao X, Chen J, Zhang G, Wang Y, Si SY, **Chen LF**[§], Wang Z[§]. 2017. Small molecule T63 suppresses osteoporosis by modulating osteoblast differentiation via BMP and WNT signaling pathways. *Scientific Reports.* 7:10397 ([§]corresponding author)

55. Xiong MH, Bao Y, Xu X, Wang H, Han ZY, Wang Z, Liu Y, Huang SY, Song Z, Chen J, Peek RM, Yin L, **Chen LF**[§], and Cheng JJ[§]. 2017. Selective killing of Helicobacter pylori with pH-responsive helix–coil conformation transitionable antimicrobial polypeptides. *Proc. Natl. Acad. Sci. U.S.A.* 114:12675-12680 ([§]corresponding author)
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57. Dong XC, Hu XM, Chen J, Hu D and **Chen LF**. 2018. BRD4 regulates cellular senescence in gastric cancer cells via E2F/miR-106b/p21 axis. *Cell Death and Diseases.* 9:203
58. Zhao XL, Chen JJ, Si SY, **Chen LF**, Wang Z. 2018. T63 inhibits osteoclast differentiation through regulating MAPKs and Akt signaling pathways. *Eur J Pharmacol*. 834:30-35
59. Yang XD, Li WG, Zhang S, Wu D, Jiang XL, Tan R, Niu XY, Wang Q, Wu XF, Liu ZD, **Chen LF**, Qin J, Su B. 2020. PLK4 deubiquitination by Spata2-CYLD suppresses NEK7-mediated NLRP3 inflammasome activation at the centrosome. *EMBO J.* 39:e102201
60. Hu X and **Chen LF.** 2020. Pinning Down the Transcription: A Role for Peptidyl-Prolyl *cis-trans* Isomerase Pin1 in Gene Expression. *Front Cell Dev Biol.* 8:179.
61. Chen YH, Sheppard DR, Dong X, Hu X, Chen MH, Chen RC Chakrabarti J, Zavros Y, Peek RM & **Chen LF** (2020). *H. pylori infection confers resistance to apoptosis via Brd4-dependent BIRC3 eRNA synthesis. Cell Death and Diseases.* 11:667
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63. Hu X, Dong X, Li G, Chen J, He X, Sun H, Kim D, Kemper JK & **Chen LF**. 2021. Brd4 modulates diet-induced obesity via PPARγ-dependent Gdf3 expression in adipose tissue macrophages. *JCI Insight*. 6:143379
64. Dong X, Hu XM, Bao Y, Li, G, Yang XD, Slauch JM & Chen LF. 2021. Brd4 regulates NLRC4 inflammasome activation by facilitating IRF8-mediated transcription of *Naips*. *J. Cell Biol*. 220:e202005148.
65. Dong XC and **Chen LF**, 2021. Protocol for measuring NLRC4 inflammasome activation and pyroptosis in murine bone-marrow-derived macrophages. *STAR Protocols.*2:100894
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67. Toska A, Modi N, **Chen LF.** 2023. RUNX3 Meets the Ubiquitin-Proteasome System in Cancer. *Cells.* 12(5):717.
68. Modi N, Chen Y, Dong XC, Hu XM, Lau GW, Wilson K, Peek RM and **Chen LF**. 2023. BRD4 regulates glycolysis-dependent *Nos2* expression in macrophages upon *H. pylori* infection. (under review).
69. Zhang J, Du Y, Yu YY, He YR, Wu DD, Jiang X, Sinclair M, Tajkhorshid E, Hou ZY, Zheng YJ*, **Chen LF** *, Yang XD*. (*corresponding author). 2023. WSB1/2 target chromatin-bound lysine-methylated RelA for proteasomal degradation and NF-κB termination. (submitted).

Intellectual Property

1. US Patent 7,081,343 - Methods for identifying modulators of NF-κB activity, Issued on July 25, 2006.
Inventors: Lin-Feng Chen, Wolfgang Fishcle, Eric Verdin, Warner C. Greene.
2. China Patent, CN104873499 A [P], The discovery and the anti-osteoporosis role of a novel up-regulator of Runx2 transcriptional activity. Issued on Sep 2, 2015.
Inventors: Wang Zhen, Si Shuyi, Zhao Xiaoli, Chen Jinjing, Chen Lin-Feng.
3. US Patent 11,225,507 – Conformation switchable antimicrobial peptides and methods of using the same. Issued on January 18, 2022.
Inventors: Jianjun Cheng, Lin-Feng Chen, Menghua Xiong, Yan Bao

Teaching Responsibilities

Introductory Biochemistry (MCB450) (2018-present)
MCB297 (MCB honor class) (2014-2019)
Medical Biochemistry (BMS602, BMS613) (2006-2017)
Special topics in Cell and Development Biology (MCB529) (2006-2012)
Current Topics in Biochemistry (Capstone, BIOC445) (2006-2012)

Trainees:

Postdoctoral fellows

Former (n=8):
Xiao-Dong Yang, Ph.D., 2006-2010, "Regulation of NF-κB function by reversible methylation"
Current position: Professor, Shanghai JiaoTong University
Bo Huang, Ph.D., 2007-2011, "Regulation of NF-κB by bromodomain-containing factor Brd4"
Current position: Research assistant professor, Center for Nuclear Receptors and Cell Signaling, University of Houston
Xuewei Wu, Ph.D., 2010-2013, "The in vivo functions of posttranslational modifications of NF-κB"
Current position: Senior Scientist at China Innovation Center of Roche, Pudong, Shanghai, China
ZhenHua Zou, Ph.D., 2011-2014, "Posttranslational modifications of NF-κB in cancer"
Current position: Staff scientist, University of Michigan
LiFeng Yang, Ph.D., 2012-2013, "Ubiquitination and NF-κB signaling"
Current position: Pediatrician, Department of Pediatrics, Xiangya Hospital, China
Yan Bao, Ph.D., 2013-2017, "Dissecting pathophysiological functions of Brd4"
Current position: Professor, Sun Yat-sen University.
Jinjing Chen, 2015-2017, "*H. pylori*-mediated inflammatory response.
Current position: Staff Research Scientist, University of Arizona
Xiang-Ming Hu, Ph.D., 2014-present, "Regulation and function of Brd4 in cancer and immunity"
Current position: Professor, Fujian Medical University

Visiting Scholars:

Bin Wang, MD, 2012, visiting scholar
Ying Yuan, MD, 2014, visiting scholar
Jinjing Chen, 2013-2015, visiting graduate student
Hui Chen, MD, 2016, visiting scholar
Feng Ye, MD, 2016-2017, visiting scholar

Graduate Students:

Current (n=4)

Nikita Modi, 2015-present, expecting graduate in 2022
Yanheng Chen, 2018-present, 4th year graduate student

Co-supervised with Dr. Susan Martinis:
Xiaodan Lin, 2017-present, 5th year graduate student
Issac Kim, 2017-present, 5th year graduate student

Former (n=6, 4 PhD, 2 master degree):

Xing-Chen Dong, Ph.D., 2013-2020,
Thesis title: "Epigenetic regulation of gene expression by brd4 in cancer and innate immune response"
Current position: Postdoctoral fellow at University of Wisconsin

Ying-Huang Nicole Tsang, Ph.D., 2007-2011.
A*STAR-UIUC Partnership (AUIP) fellow, Final defense: August 19, 2011.
Thesis title: "The regulation of RUNX3 in gastric and breast cancer"
Current position: Research Scientist at Veredus Laboratories (http://vereduslabs.com/)

Acacia Lamb, MD/PhD., 2006-2012.
Westcott Fellow (2006-2008), NIH T32 trainee (2009), Final defense: March 1, 2012.
Thesis title: "New insights into a complex host-pathogen interaction: Mechanisms of a helicobacter pylori activation of NF-κB"
Current position: Pediatric Hospitalist at NAVAL MEDICAL CENTER PORTSMOUTH,
Associate professor, Uniformed Services University of the Health Sciences Eastern Virginia Medical School.

Donald Sheppard, 2013-2018, PhD candidate (deceased due to colon cancer in 2021).

Surya Priya Karunakaran, M.S. 2005-2007.
Current position: Technical Sales Account Manager at DNA 2.0

Adrienne Victor, M.S., 2006-2008.
Current position: Physician specialized in Internal Medicine at San Antonio, TX

News Reports

1. http://news.illinois.edu/news/09/0311protein.html
2. http://www.news.illinois.edu/news/10/0802Lin-Feng_Chen_cancer.html
3. http://news.illinois.edu/news/11/0627protein_Lin-FengChen.html
4. http://news.illinois.edu/news/13/0520cancerstudy_Lin-FengChen.html
5. https://news.illinois.edu/blog/view/6367/493843
6. http://illinois.edu/emailer/newsletter/148053.html
7. https://mcb.illinois.edu/news/article/636/
8. https://mcb.illinois.edu/news/article/642/
9. https://www.igb.illinois.edu/article/investigating-role-brd4-diet-induced-obesity

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Education

2002	Ph.D.	University of Michigan, Ann Arbor Microbiology and Immunology Thesis: Mechanisms of Phagosomal Development and the Maturation Arrest of *Mycobacterium tuberculosis* Phagosomes Advisor: Vojo P. Deretic, Ph.D.
1996	M.S.	California State University, Long Beach Microbiology Thesis: Endothelial Cell Injury by *Candida albicans* Advisor: Scott G. Filler, M.D. (UCLA)
1992	B.S.	California State University, Long Beach Medical Microbiology

Research & Postdoctoral Training

2002 – 2006	Postdoctoral Fellow Dartmouth Medical School, Hanover, NH Department of Biochemistry Advisor: William T. Wickner, M.D.
1996 – 2002	Graduate Research Assistant (PhD) University of Michigan Advisor: Vojo P. Deretic, Ph.D.
1993 – 1996	Staff Research Associate Harbor-UCLA Medical Center Division of Infectious Diseases, Torrance, CA
1993 – 1996	Graduate Research Assistant (MS),

California State Univ., Long Beach & Harbor-UCLA Medical Center
Advisor: Scott G. Filler, M.D.

Academic Appointments

2021 –	Professor, Department of Biochemistry, UIUC
2021 –	Professor, Center for Biophysics and Quantitative biology, UIUC
2016 – 2021	Associate Head, Department of Biochemistry, UIUC
2016 – 2021	Associate Professor, Center for Biophysics and Quantitative biology, UIUC
2014 – 2021	Associate Professor, Department of Biochemistry, UIUC
2006 – 2014	Assistant Professor, Department of Biochemistry, UIUC

Honors and Awards

2020	Sigma-Xi, Full Member
2011 – 2012	University of Illinois Research Board Arnold O. Beckman Award
2009 – 2011	March of Dimes Basil O'Connor Starter Scholar Research Award
2009	Teacher Ranked as Excellent by Their Students
2007	UIUC nominee for the Searle Scholars Program
2003 – 2005	Helen Hay Whitney Foundation Postdoctoral Fellowship
2003	Damon Runyon Cancer Research Postdoctoral Fellowship (Declined)
1999 – 2001	NIH Pre-Doctoral Fellowship: Microbial pathogenesis training grant

Professional Societies

American Society for Cell Biology (Since 1998)
Biochemical Society (2005)
American Society for Biochemistry & Molecular Biology (Since 2005)
Society for Advancement of Chicanos and Native Americans in Science (2008, 12)
American Society for Microbiology (1993-2002, 2022-)
American Chemical Society (Since 2009)
Biophysical Society (2012)
Sigma Xi (Since 2020)

Publications (PubMed)

1. Hurst LR, Zhang C, Hrabak M, Balutowski A, Kazmirchuk TDD, Rivera-Kohr DA, Brett CL, **Fratti RA**. Sphingolipids with Very Long-chain Fatty Acids Regulate Vacuole Fusion During Tethering and Docking. *bioRxiv*.
2. Zhang C, Balutowski A, Feng Y, Calderin JD, **Fratti RA.** 2023. Erratum to "High throughput analysis of vacuolar acidification". *Analytical Biochemistry 661:114984*.
3. Zhang C, Miner GE, Rivera-Kohr DA, Hrabak M, Balutowski A, Sullivan KD, Guo A, Feng Y, Calderin JD, **Fratti RA**. 2022. Interdependent transport of Ca^{2+} and H^{+} on yeast vacuoles and the role of Phosphatidylinositol 3,5-bisphosphate. *J Biol Chem 298:102672*

4. Correction: Sparks RP, Arango AS, Starr ML, Aboff ZL, Hurst LR, Rivera-Kohr DA, Zhang C, Harden KA, Jenkins JL, Guida WC, Tajkhorshid E, **Fratti RA**. A Small Molecule-Competitive Inhibitor of Phosphatidic Acid Binding by the AAA+ protein NSF/Sec18 Blocks the SNARE Priming Stage of Vacuole Fusion. J. Biol. Chem. 298, 102576. https://doi.org/10.1016/j.jbc.2022.102576.
5. Zhang C, Balutowski A, Feng Y, Calderin JD, **Fratti RA.** 2022. High throughput analysis of vacuolar acidification. Analytical Biochemistry 658:114927. PMID:36167157
6. Sparks RP, Lawless W, Arango AS, Tajkhorshid E, **Fratti RA.** 2022. Use of Microscale Thermophoresis to Measure Protein-Lipid Interactions. J. Vis. Exp. Feb 10;(180). PMCID: in progress
7. **Fratti RA**. 2021. Editorial: Effects of Membrane Lipids on Protein Function. Front Cell Dev Biol. 9:675264 PMCID: PMC8116648
8. Sparks RP, Arango AS, Jenkins JL, Guida WC, Tajkhorshid E, Sparks JD, Sparks CE, **Fratti RA**. 2020. An Allosteric Binding Site on Sortilin Regulates the Trafficking of VLDL and PCSK9 Altering LDLR Expression Levels in Hepatocytes. Biochemistry 59, 4321-4335. PMCID: PMC7674269
9. Hurst LR, **Fratti RA**. 2020. Sphingolipids and Lipid Rafts in Yeast Vacuole Fusion and Maturation. Front Cell Dev Biol. 8:539 PMCID: PMC7349313
10. Miner GE, Sullivan KD, Zhang C, Rivera-Kohr DA, Guo A, Hurst LR, Ellis EC, Starr ML, Jones BC, **Fratti RA**. 2020. Phosphatidylinositol 3,5-bisphosphate regulates Ca^{2+} transport during yeast vacuole fusion through the Ca^{2+} ATPase Pmc1. Traffic. 21:503-517 PMCID: PMC8455071
11. Sparks RP, Arango AS, Starr ML, Aboff ZL, Hurst LR, Rivera-Kohr DA, Zhang C, Harden KA, Jenkins JL, Guida WC, Tajkhorshid E, **Fratti RA**. A Small Molecule-Competitive Inhibitor of Phosphatidic Acid Binding by the AAA+ protein NSF/Sec18 Blocks the SNARE Priming Stage of Vacuole Fusion. J. Biol. Chem. 294, 17168-17185. PMCID: PMC68773166
    - *Featured Article as "Editors' Pick" – In the top 2% of papers published by JBC*
    - *Highlighted Article in JBC*
12. Miner GE, Sullivan KD, Zhang C, Hurst LR, Starr ML, Rivera-Kohr DA, Jones BC, Guo A, **Fratti RA**. Copper blocks V-ATPase activity and SNARE complex formation to inhibit yeast vacuole fusion. Traffic. 20:841-850. PMCID: PMC6800785
13. Sparks R, Lui A, Bader D, Patel R, Murr M, Guida W, **Fratti R**, Patel N. 2019. A specific small-molecule inhibitor of Protein Kinase C-δI activity improves metabolic dysfunction in human adipocytes from obese individuals. J. Biol. Chem. 294:14896-14910 PMCID: PMC6791326
14. Starr ML, **Fratti RA**. 2019. Participation of Regulatory Lipids in Vacuole Homotypic Fusion. Trends Biochem Sci. 44:546-554 (Impact factor 14.273) PMCID:PMC6814398
    - *Featured Article*
15. Starr ML, Sparks RP, Hurst LR, Zhao Z, Arango AS, Lihan M, Jenkins JL, Tajkhorshid E, **Fratti RA**. 2019. Phosphatidic acid induces conformational changes in Sec18 protomers that prevent SNARE priming. J. Biol. Chem. 294:3100-3116 PMCID: PMC6398120
16. Miner GE, Sullivan KD, Guo A, Jones BC, Hurst LR, Ellis EC, Starr ML, **Fratti R**. 2019. Phosphatidylinositol 3,5-bisphosphate regulates the transition between *trans*-SNARE

complex formation and vacuole membrane fusion. Mol. Biol. Cell. 30: 201-208 PMCID: PMC6589561
17. Sparks RP, Jenkins J, **Fratti R**. 2019. Use of Surface Plasmon Resonance (SPR) to determine binding affinities and kinetic parameters between components important in fusion machinery. Methods Mol. Biol. 1860:199-210. PMCID: PMC8489108
18. Sparks RP, **Fratti R**. 2019. Use of Microscale Thermophoresis (MST) to measure binding affinities of components of the fusion machinery. Methods Mol. Biol. 1860:191-198. PMCID: PMC8466250
19. Starr ML, Fratti RA. 2019. Determining Sec18-Lipid interactions by liposome floatation. Methods Mol. Biol. 1860:211-220. PMCID: PMC8466267
20. Miner GE, **Fratti R**. 2019. Real-Time Analysis of Calcium Efflux during Vacuolar Membrane Fusion by Fluorescence. Methods Mol. Biol. 1860:323-331. PMCID: PMC8466256
21. Miner GE, Starr ML, Hurst LR, **Fratti RA.** 2017. Deleting the DAG kinase Dgk1 augments yeast vacuole fusion through increased Ypt7 activity and altered membrane fluidity. Traffic. 18:315-329. PMCID: PMC5458725
22. Sparks RP, Jenkins LJ, Miner GE, Wangm Y, Guida WC, Sparks CE, **Fratti RA**, Sparks JD. 2016. Phosphatidylinositol (3,4,5)-trisphosphate binds to sortilin and competes with neurotensin: Implications for very low density lipoprotein binding. Biochem. Biophys. Res. Commun. 479:551-556. PMCID: PMC5056161
23. Starr ML, Hurst LR, **Fratti RA**. 2016. Phosphatidic acid sequesters Sec18p from cis-SNARE complexes to inhibit priming. Traffic. 17:1091-1109. PMCID: PMC5023487
24. Sparks RP, Guida WC, Sowden MP, Jenkins JL, Starr ML, **Fratti RA**, Sparks CE, Sparks JD. 2016. Sortilin facilitates VLDL-B100 secretion by insulin sensitive McArdle RH7777 cells. Biochem. Biophys. Res. Commun. 478:546-552. PMCID. PMC5002383
25. Miner G, Starr ML, Hurst LR, Sparks RP Padolina M, **Fratti RA**. 2016. The Central Polybasic Region of the Soluble SNARE (Soluble N-Ethylmaleimide-sensitive Factor Attachment Protein Receptor) Vam7 Affects Binding to Phosphatidylinositol 3-Phosphate by the PX (Phox Homology) Domain. J. Biol. Chem. 291:17651-17663. PMCID: PMC5016161
26. Sasser TL, **Fratti RA**. 2014. Class C ABC Transporters and *Saccharomyces cerevisiae* Vacuole Fusion. Cell. Logist. 4:3, e943588. PMCID: PMC4292212
27. Lawrence G, Flood B, Brown C, Karunakaran S, Cabrera M, Nordmann M, Ungermann C, **Fratti RA**. 2014. Dynamic association of the PI3P-interacting Mon1-Ccz1 GEF with vacuoles is controlled through its phosphorylation by the type-1 casein kinase Yck3. Mol. Biol. Cell. 25:1608-1619. PMCID: PMC4019492
> 50 citations
28. Sasser T, Lawrence G, Brown C, Karunakaran S and **Fratti RA**. 2013. The Yeast ATP-binding cassette (ABC) Transporter Ycf1p Enhances the Recruitment of the Soluble SNARE Vam7p to Vacuoles for Efficient Membrane Fusion. J. Biol. Chem. 288:18300-18310. PMCID: PMC3689972
29. Karunankaran S and **Fratti RA**. 2013. The Lipid Composition and Physical Properties of the Yeast Vacuole Affect the Hemifusion-Fusion Transition. Traffic. 14:650-662. PMCID: PMC3660517

30. Sasser T, Padolina M, **Fratti RA**. 2012. The Yeast Vacuolar ABC Transporter Ybt1p Regulates Membrane Fusion Through Ca^{2+} Transport Modulation Biochem. J. 448:365-372. PMCID: PMC3646803
31. Karunakaran S, Sasser T, Rajalekshmi S, **Fratti RA.** 2012. SNAREs, HOPS, and regulatory lipids control the lateral mobility of vacuolar actin. J Cell Science. 125:1683-1692.
32. Sasser T, Karunakaran S, Qiu Q, Padolina M, Reyes A, Flood B, Smith S, **Fratti RA**. 2012 Yeast Lipin 1 Orthologue Pah1p Regulates Vacuole Homeostasis and Membrane Fusion J. Biol. Chem. 287:2221-2236. PMCID: PMC3265900
    > 100 citations
33. Qiu Q, **Fratti RA**. 2010. The Na^+/H^+ exchanger Nhx1p Regulates the Initiation of *Saccharomyces cerevisiae* Vacuole Fusion. J. Cell Science. 123:3266-3275.
    - *Featured Article*

    > 50 citations
34. **Fratti RA**, Collins K, Hickey C, Wickner W. 2007. Stringent 3Q:1R composition of the SNARE 0-layer can be bypassed for fusion by compensatory SNARE mutation or by lipid bilayer modification. J. Biol. Chem. 282:14861-14867.
    > 50 citations
35. **Fratti RA**, Wickner W. 2007. Distinct Targeting and Fusion Functions of the PX- and SNARE domains of Yeast Vacuolar Vam7p. J. Biol. Chem. 282:13133-13138.
36. Jun Y, Thorngren N, Starai V, **Fratti RA**, Collins K, Wickner W. 2006. Reversible, cooperative reactions of yeast vacuole docking. EMBO J. 25:5250-5259. PMCID: PMC1636623.
37. Stroupe CS, Collins KM, **Fratti RA**, Wickner W. 2006. Purification of active HOPS complex reveals its affinities for phosphoinositides and the SNARE Vam7p. EMBO J. 25:1579-1589. PMCID: PMC1440844
    * Faculty of 1000 Recommended Article
    > 250 citations
38. Collins KM, Thorngren N, **Fratti RA**, Wickner W. 2005. Sec17p and HOPS, in distinct SNARE complexes associate, mediate SNARE complex disruption or assembly for fusion. EMBO J. 24:1775-1786. PMCID: PMC1142591.
    * Faculty of 1000 Recommended Article
    > 125 citations
39. Starai VJ, Thorngren N, **Fratti RA**, Wickner W. 2005. Ion Regulation of Homotypic Vacuole Fusion in *Saccharomyces cerevisiae*. J. Biol. Chem. 280:16754-16762.
40. Phan QT, **Fratti RA**, Prasadarao NV, Edwards JE, Filler SG. 2005. N-Cadherin Mediates Endocytosis of *Candida albicans* by Endothelial Cells. J. Biol. Chem. 280:10455-10461.
    > 125 citations
41. **Fratti RA**, Jun Y, Merz AJ, Margolis N, Wickner W. 2004. Interdependent Assembly of Specific "Regulatory" Lipids and Membrane Fusion Proteins into the Vertex Ring Domain of Docked Vacuoles. J. Cell Biol. 167:1087-1098. PMCID: PMC2172599.
    > 225 citations
42. Jun Y, **Fratti RA**, Wickner W. 2004. Diacylglycerol and its formation by Phospholipase C regulate Rab- and SNARE- dependent yeast vacuole fusion. J. Biol. Chem. 279:53186-53195.
    > 100 citations

43. Thorngren N, Collins K, **Fratti RA**, Merz AJ, Wickner W. 2004. A Soluble SNARE drives rapid docking, bypassing ATP and Sec17/18p for Vacuole Fusion. EMBO J. 23:2765-2776.
    > 100 citations
44. Miller BH, **Fratti RA**, Poschet, JF, Timmins GS, Master SS, Burgos M, Marleta MA, Deretic V. 2004. Mycobacteria inhibit nitric oxide synthase recruitment to phagosomes during macrophage infection. Infect. Immun. 72:2872-2878.
    * Faculty of 1000 Recommended Article
    > 200 citations
45. Vergne I, **Fratti RA**, Hill, PJ, Chua J, Belisle J, Deretic V. 2004. *Mycobacterium tuberculosis* Phagosome Maturation Arrest: Mycobacterial Phosphatidylinositol Mannoside Stimulates Early Endosomal Fusion. Mol Biol Cell. 15:751-760.
    > 300 citations
46. **Fratti RA**, Chua J, Deretic V. 2003. Induction of p38 Mitogen-Activated Protein Kinase Reduces EEA1 Recruitment to Phagosomal Membranes. J. Biol. Chem. 278:46961-46967.
    > 125 citations
47. **Fratti RA**, Chua J, Vergne I, Deretic V. 2003. *Mycobacterium tuberculosis* Glycosylated Phosphatidylinositol Causes Phagosome Maturation Arrest. Proc. Natl. Acad. Sci. USA. 100:5437-5442. PMCID: PMC154363.
    * Faculty of 1000 Must Read Article
    > 600 citations
48. Belanger PH, Johnston DA, **Fratti RA**, Zhang M, Filler SG. 2002. Endocytosis of *Candida albicans* by vascular endothelial cells is associated with tyrosine phosphorylation of specific host cell proteins. Cell. Microbiol. 4:805-812.
49. **Fratti RA**, Chua, J., Deretic V. 2002. Cellubrevin alterations and mycobacterial phagosome maturation arrest. J. Biol. Chem. 277:17320-17326.
    > 75 citations
50. **Fratti RA**, Backer JM, Gruenberg J, Corvera S, Deretic V. 2001. Role of phosphatidylinositol 3-kinase and Rab5 effectors in phagosomal biogenesis and mycobacterial phagosome maturation arrest. J. Cell Biol. 154:631-644. PMCID: PMC2196432.
    * Featured in J Cell Biology editorial vol. 154:478.
    * Faculty of 1000 Must Read Article
    > 650 citations
51. **Fratti RA**, Vergne I, Chua J., Skidmore J., Deretic V. 2000. Regulators of membrane trafficking and *Mycobacterium tuberculosis* phagosome maturation block. Electrophoresis. 21:3378-3385.
    > 50 citations
52. Deretic V, **Fratti RA**. 1999. Mycobacterium tuberculosis Phagosome. Mol. Microbiol. 31:1603-1609.
    > 225 citations
53. Via LE, **Fratti RA**, McFalone M, Pagan-Ramos E, Deretic D, Deretic V. 1998. Effects of cytokines on mycobacterial phagosome maturation. J. Cell Sci. 111:897-905.
    > 400 citations

54. **Fratti RA**, Belanger PH, Sanati H, Ghannoum MA. 1998. The effect of the new triazole, Voriconazole (UK-109,496), on the interactions of *Candida albicans*, and *Candida krusei* with endothelial cells. J. Chemother. 10:7-16.
55. **Fratti RA**, Belanger PH, Ghannoum MA, Edwards, JE Jr, Filler SG. 1998. Endothelial Cell Injury Caused by *Candida albicans* is Dependent on Iron. Infect. Immun. 66:191-196.
    > 50 citations
56. Deretic V, Via LE, **Fratti RA**, Deretic D. 1997. Mycobacterial phagosome maturation, rab proteins, and intracellular trafficking. Electrophoresis. 18:2542-2547.
    > 75 citations
57. Sanati H, Belanger PH, **Fratti RA**, Ghannoum MA. 1997. Effect of Voriconazole (UK-109,496) on sterol biosynthesis of *Candida albicans* and *Candida krusei*. Antimicrob. Agents Chemother. 41:2492-2496.
    > 300 citations
58. Belanger P, Nast CC, **Fratti R**, Sanati H, Ghannoum M. 1997. Voriconazole (UK-109,496) inhibits the growth and alters the morphology of fluconazole-susceptible and -resistant *Candida* species. Antimicrob. Agents Chemother. 41:1840-1842
    > 75 citations
59. **Fratti RA**, Ghannoum MA, Edwards, JE Jr, Filler SG. 1996. Interferon-γ protects endothelial cells from damage by *Candida albicans* by inhibiting endothelial cell phagocytosis. Infect. Immun. 64:4714-4718.
    > 75 citations

Books Edited or Co-Edited (in print or accepted)

1. **Fratti R.A**. (ed.), 2019. *SNAREs: Methods and Protocols,* Methods in Molecular Biology, vol. 1860, Springer Science+Business Media New York. DOI 10.1007/978-1-4939-8760-3
2. **Fratti RA,** Botelho R, Rodal A, DelSinore, S (eds.), 2020. *Effects of Membrane Lipids on Protein Function,* Frontiers in Cell and Developmental Biology Research Topics.

Research support

Current

PI: Rutilio Fratti
National Science Foundation (MCB2216742) – 4 Year Grant
07/15/22 – 06/30/26
SNARE Function and Phosphoinositide induced conformational and oligomeric changes
$1,123,706 Total Costs

PI: Rutilio Fratti
National Science Foundation (MCB1818310) – 4 Year Grant
07/01/18 – 06/30/22
No cost extension
07/01/22 – 06/20/24
Regulation of the AAA+ protein Sec18 through membrane lipid modification

$900,000 Total Costs

Pending Grants

PI: Rutilio Fratti
National Institutes of Health-NIGMS
Regulation of lysosomal SNARE activation by phosphatidic acid and other organelle lipids

Completed research support

PI: Rutilio Fratti
National Institutes of Health-NIGMS (R01-GM101132) 05/01/12 – 04/30/17
No Cost Extension 05/01/17 to 4/30/18
Allosteric Regulation of SNAREs and the Rab Nucleotide Exchange Factor Mon1 by Phosphoinositides
$950,000 total direct costs

PI: Rutilio Fratti
University of Illinois Research Board (RB17120)
05/04/17 – 11/30/18
Small Molecule Discovery to Define the Regulation of Protein Function by Membrane Lipid Composition.
$20,000 total costs

PI: Rutilio Fratti
University of Illinois Research Board (RB11194)
Arnold O. Beckman Award 05/04/11 – 08/15/12
Regulation of Rab Conversion and SNARE Priming by the Lipin1 homologue Pah1.
$30,000 (total costs)

PI: Rutilio Fratti
March of Dimes: Basil O'Connor Starter Scholar 02/01/09 – 01/31/11
The Role of Phosphoinositide Metabolism in Charcot-Marie-Tooth Disease
$150,000 (total costs) (total direct costs: $135,000).

Teaching at UIUC

2020 – present (F/S)	Molecular & Cellular Biology 450. Introductory Biochemistry.
2019 – 2020 (F/S)	Mol & Cellular Biology 354. Biochem. & Biophys. Basis of Life.
2018 – 2019 (F/S)	Sabbatical
2015 – 2018 (F/S)	Molecular & Cellular Biology 450. Introductory Biochemistry.
2008 – 2014 (Fall)	Molecular & Cellular Biology 501. Advanced Biochemistry.
2009, 11 (S)	Molecular & Cellular Biology 580. Research Ethics and Responsibilities.
2007 – 2008 (F/S)	Biochemistry 455. Techniques in Biochemistry & Biotechnology.

UIUC Mentored Students & Lab Members (with next position) (*URM students)

Postdoctoral Researchers

2014 – 2015	Terry Sasser, Ph.D.	Staff Scientist at Thermo-Fisher, Rockford, IL
2009 – 2010	S. Rajalekshmi, Ph.D.	Postdoctoral Fellow, University of Virginia.
2007 – 2010	Q. Qiu, Ph.D.	Professor at Lanzhou University, China
2007	Nancy Beck, Ph.D.	Scientific Policy Advisor at Physicians Committee for Responsible Medicine, Washington D.C.

Graduate Students from UIUC (PhD and MD/PhD) (*URM students)

2020 –	Jorge Calderin*	
2020 –	Chi Zhang	
2019	Zach Aboff (Biophys)	Law Student at Rutgers University
2016 – 2019	Robert Sparks	Postdoc, Mass General/Harvard
2014 – 2020	Logan Hurst	Scientist, Clara Foods
2013 – 2019	Ez Ellis	Scientist, Stony Creek Colors
2013 – 2018	Matthew Starr	Instructor, Western Governors University
2013 – 2018	Greg Miner	Postdoc, UNC
2012 – 2016	Gus Lawrence	Medical School at UIUC
2012 – 2013	Ming Wu	Left UIUC with an MS degree
2009 – 2009	Chad Gonzales*	Left UIUC with an MS degree
2008 – 2012	Surya Karunakaran	Sr. Sales Assoc., BioSurplus, CA.
2007 – 2012	Terry Sasser	Postdoc at UIUC

Graduate Students from UIUC (MS)

2012 – 2014	Colin Stoy	Lab Manager, Morehead State University
2011 – 2012	Nick DeSanto	Healthcare Compliance Specialist at Stericycle
2010 – 2011	Dylan Reid	Res. Technician at NYU Langone Medical Center
2009 – 2011	Mark Padolina*	Res. Assoc., Stanford Univ. (with Axel Brunger)
2009 – 2009	Sheena Smith*	Transferred to the MCB PhD program at UIUC
2007 – 2008	Chad Gonzalez*	Transferred to the MCB PhD program at UIUC

Rotation graduate students

2021	Shweta Shree
2021	Tinyu Gao
2020	Misael Lazaro*
2020	Valeria Garcia*
2020	Andrew Riley
2019	Nicole Godellas*
2019	Temirlan Shilikbay
2017	Miles Norsworthy
2017	Sneha Das

2016	Savanna Sharum*	
2015	Hao Sun	
2013	Whitney Edwards*	
2013	Philip Olivares*	
2012	Joshua Gajsiewicz	
2012	Katrina Diaz*	
2011	Richard Travers	
2011	Andrew Fu	
2010	Aaron Frimel	
2009	Mark Fletcher	
2009	Madelyn Shapiro	
2008	Fiona Groninger-Poe	
2007	Sami Narayana	

Undergraduate Students from UIUC

2023	Ben Shapiro	
2022 – present	Eileen Zheng	
2022 – present	Cynthia Chavez*	
2022 – present	Razeen Ahmed	
2022 – present	Charlie Knapp	
2022	Paul Zou	
2022 – present	Shriya Patel	
2022	Elisabeth Paskali	
2021	Matt Babik	
2021	Ayelet Goldson	
2021 – 2022	Marwan Shamseldin	
2021	Erika Alvarez*	Nursing School at UIUC
2021 – 2023	Yilin Feng	PhD Student at Northwestern
2020 – 2023	Kaylee Showalter	
2020 – 2021	Isabella Wrobel	
2020	Skye Zlotowski	
2020 – 2021	Ashley McKee	
2020 – 2021	Tyler Hodgett	Law Student at Northwestern University
2020 – 2021	Satheesh Tamilselvan	
2019	Teodora Bozic	
2019	Mati Chaudhery	
2019 – 2021	Michael Hrabak	Lab Tech at Rosalind Franklin University
2019 – 2022	Adam Balutowski	PhD Student at Washington University
2019	Beau Hendren-Santiago*	
2018 – 2020	David Rivera-Kohr*	PhD Student at the University of Wisconsin
2018 – 2019	Raj Barot	MS Student at Rush University
2018	Julia Ekiert	PhD Student at University of Illinois-Chicago
2018	Connor Davidson	
2018	Lauren Mazurkievicz	PhD Student at the University of Wisconsin

2018 – 2020	Chi Zhang	PhD Student at UIUC
2018	Cory Matsumoto	Pharm.D/PhD at Univ. of Illinois, Chicago
2017 – 2019	Katherine Sullivan	PhD Student at Johns Hopkins University
2017 – 2018	Yifan Xing	Pharm.D. Student at Univ. of Florida
2016 – 2018	Bilal Darwish	DO student at Idaho College of Osteopathic Med.
2016 – 2018	Annie Guo	Biogen, Cambridge MA
2016 – 2018	Sabit Ejub	MD Student at Midwestern University
2016	Sana Kahn	
2014 – 2017	Brandon Jones	Healthcare Consultant at West Monroe Partners
2013 – 2016	Albert Chang	MD Student at the University of Virginia
2014	Lijo Luka	MD Student at St. George's University
2013 – 2014	Tyler Pohn	
2013	Jacob Tilsley	Podiatry school Rosalind Franklin University
2012	Jisoo Kim	
2012 – 2013	Alan Weisgerber	PhD Student at the University of Denver
2012	Nathan Lingham	Research Technician at Northwestern University
2011	Aaron Altman	
2011 – 2012	Vincent Mei	
2011 – 2013	Clinton Brubaker	
2011 – 2012	Christopher Brown	PhD Student at the University of Utah
2011 – 2013	Jason Han	MD Student at Southern Illinois University
2011 – 2012	Jae Young Chang	
2011 – 2012	Allison Brubaker	MD Student at UIUC
2011 – 2014	Blake Flood	MD/PhD Student at the University of Chicago
2010 – 2011	Jeffrey Nian	
2010	Calvin Rusiewski	
2010 – 2011	Anna Reyes*	DDS Student at Midwestern University, IL
2008 – 2009	Randy Chan	DO, Kansas City Unvi. Of Med and Bioscience
2008 – 2009	Anna Kelner	PhD Student at the University of Dundee, Scotland
2008	Zahabiya Aziz	
2007 – 2009	Edward Cho	
2007 – 2009	Joshua Paschedag	PhD Student at UIUC
2007 – 2010	Angie Unmaña*	PhD Student at the University of Wisconsin
2007	Minju Ham	
2007	Bijal Desai	

Qualifying/Thesis Committees (* qualification/prelim exam committee; # thesis committee)

1. * Evan Hebner (Leckband/Brieher)
2. * Rebecca Tang
3. # Andres Arango (Tajkhorshid)
4. * Jessica Derham (Kalsotra)
5. * Siddarthat Chakraoborti (Nair)
6. * Musarrat Jabeen (Shapiro)
7. # Thomas Kazmirchuk (External)
8. *# Joel Roberts (Chem)
9. *# Anna Mankovich (Freeman)
10. * Yiquan Wang (Wu)
11. * Jess Palalay (Sanfilippo)
12. * Yuwei Pan (Zhao)

13. * Zhengyuan Xue (BQE)
14. * Tim Tan (BQE)
15. * Jingqian Liu (BQE)
16. * Yubo-Arthur Zou (Leckband)
17. * Matt Sinclair (Tajkhorshid)
18. * Dylan Blaha (Kranz)
19. * # Megan Ringling (Blanke)
20. * Rachel Martini (Lu)
21. * Devlin Christin (Procko)
22. * Shukun Yang (Silverman)
23. # Zac Dewald (Kalsotra)
24. * Andrea Hernandez-Garcia (Nair)
25. * Yannan Tian (Huang)
26. * Dustin Buntrock (Nair)
27. *# Adrika Raybaraman (Huang)
28. * Kisurb Choe (Sweedler)
29. # Josephine Watson (Das)
30. * Savanna Sharum (Zhang)
31. *# Lauren Carnevale (Das/Nair)
32. * Heather Young (Procko)
33. * Andrew Buechler (Martinis)
34. * Sayed Tabatabaei
35. * Aaron Chan (BQE)
36. * Gregory Schwarz (BQE)
37. * Rohit Vaidya (BQE)
38. * How Sun (Morrissey)
39. * Surbi Jain (H. Zhou)
40. # Nilmani Singh (J. Chen)
41. # Vishnu Krishnamurthy (Zhang)
42. *# Xinyu Kong (Leckband)
43. # Aaron Frimel (Martinis)
44. *# Dayu Zhang (Martinis)
45. * Haloi (BQE)
46. * Chen (BQE)
47. * Yeo (BQE)
48. * Shinn (BQE)
49. * Lee (BQE)
50. * Liqun Yu (Shapiro)
51. * Xinyu Kong (Leckband)
52. * William Arnold (Das)
53. # Fiona Groninger-Poe (Gerlt)
54. *# Xiaobin Zheng (Shapiro)
55. *# Joshua Gajsiewicz (Morrissey)
56. # Daryl Meling (Das)
57. # Jay Oh (Blanke)
58. # Ismaeel Muhamed (Leckband)
59. # Xin Ye (Sligar)
60. *# Richard Travers (Morrissey)
61. # Sharon Choi (Morrissey)
62. # Adrienne Barry (Leckband)
63. * Peiwen Wu (Lu)
64. * EZ Elis (Wraight)
65. # Divya Srinivasan (Ha)
66. # Acacia Lamb (Chen)
67. * Shyamal Subramanyan (M. Speis)
68. *# Bijoy Desai (Gerlt)
69. # Katie Whalen (M. Speis)
70. # Raymond Morales (Caan)
71. # S. Tahir Abbas (Miller, Animal Sci.)
72. * Aaron Knowlton (Hergenrother)
73. # Evelyn Nieves (Schwartz)
74. *# Narjes Tavoosi (Morrissey)
75. *# Ella (Chiomui) Chan (Hwang)
76. *# Nicole Tsang (Chen)
77. *# Daniel Frank (Sligar)
78. * Sharon Fluss (Sligar)
79. *# David Aggen (Kranz)

Biophysics Tutorials

1. Alexander Barclay (Rienstra)
2. Andres Arango (Tajkhorshid)
3. Charles Chen (Tajkhorshid)

Service

Editorial responsibilities

Referee: Adv Exp Med Biol; ACS Chem Bio; Am J Med Gen: Part A; Biochem J; Biochim Biophys Acta Mol Cell Res; Bioscience Rep; Cell Logist; Cells; DNA Cell Biol; EMBO Rep; Essays Biochem.; FASEB J; FEBS Lett; FEMS Yeast Res; Front Cell Dev Biol; Inflammation; J Appl Microbiol; J Cell Sci; J Neurodegen Dis; J Vis Exp; Life Sic Alliance; Microbiology; Mol Biol Cell; Mol Gen Genomics; Molecules; Nat Comm; Neurosci; PLoS One; PNAS; Protein Rev; Sci Rep; Traffic

Guest Editor: Front Cell Dev Biol; Methods Mol Biol

National and International Service

2023 – 2025	ASCB, Minorities Affairs Committee, Associate Member
2021	NIH; Study Section of MBPP, *ad hoc* reviewer
2020	Tenure Letter Writer, University of Michigan
2020	Biotechnology & Biological Science Research Council (UK), *ad hoc* reviewer
2017	NIH; Study Section of SYN, *ad hoc* reviewer
2016, 17	Nat. Sci. & Engineering Research Council of Canada (NSERC), *ad hoc* reviewer
2015	The Wellcome Trust/DBT India Alliance, *ad hoc* reviewer
2014	Medical Research Council (MRC, United Kingdom), *ad hoc* reviewer
2012	NIH; Study Section of MBPP, *ad hoc* reviewer

Campus Service

2021 – 2023	Academic Integrity & Grievance Committee
2021 – 2023	Awards Comm, UIUC Dept. of Biochem.
2021	Rutter Chair Search Committee, Department of Biochemistry
2021 – 2022	Curriculum and Course Comm., UIUC School of MCB
2020 – 2021	Strategic Advisory Comm, School of MCB, UIUC
2019 – 2021	Qualifying Examination Comm. for Biophysics and Quant. Biology, UIUC
2017 –	Faculty Advisor, Undergraduate ASBMB Chapter at UIUC.
2017 – 2019	Space and Equipment Comm., UIUC Dept. of Biochem.
2017 – 2021	Director of Undergraduate Education, UIUC Dept. of Biochem.
2017 – 2018	Curriculum and Course Comm., UIUC School of MCB
2017	Chair, hiring committee for research scientist, UIUC Dept. of Biochem.
2017	Search Committee for Head of the School of MCB, UIUC
2017	Gordon and Betty Moore Foundation Inventor Fellows – *ad hoc* Reviewer
2017	Camille Dreyfus Teaching Scholar Award – *ad hoc* Reviewer
2016 – 2018	Qualifying Examination Comm. for Biophysics and Quant. Biology, UIUC
2016	Recruiting Faculty, SACNAS conference, Long Beach, CA
2016 – 2017	Rutter Chair Search Committee, Department of Biochemistry
2016 – 2020	Diversity Advocate, UIUC Dept. of Biochemistry & School of MCB
2015 – 2018	Committee on Academic Standards, UIUC College of Liberal Arts & Sciences
2015 – 2016	MCB Distinction Committee, UIUC School of MCB

2015 – 2016	Graduate College Executive Committee, UIUC
2015 – 2017	Chair, Graduate and Advanced Studies Comm., UIUC Dept. of Biochemistry
2015	UIUC Research Board – *ad hoc* Reviewer
2014	Recruiting Faculty, ABRCMS conference, San Antonio, TX
2012 – 2013	MCB distinction committee, UIUC School of MCB
2012	Literature exams committee, UIUC Dept. of Biochemistry
2012 – 2013	Executive Committee, UIUC Cell & Molecular Biology Training Grant
2012	UIUC Research Board – *ad hoc* Reviewer
2012	Recruiting Faculty, SACNAS conference, Seattle, WA
2011	Recruiting Faculty, ABRCMS conference, St. Louis, MO
2010	Recruiting Faculty, ABRCMS conference, Charlotte, NC
2009	Hiring committee for assistant research scientist, UIUC Dept. of Biochemistry
2009	Recruiting Faculty, SACNAS conference, Dallas, TX
2008	Recruiting Faculty, SACNAS conference, Salt Lake City, UT
2008	Hiring committee for undergraduate advisor, UIUC Dept. of Biochemistry
2007 – 2021	Graduate and Advanced Studies Committee, UIUC Dept. of Biochemistry
2007 – 2021	Combined Graduate Admissions & Programs Committee, UIUC School of MCB
2007	UIUC Research Board – *ad hoc* Reviewer
2007	Medical Scholars Program Interviewing Committee, *ad hoc* member

Invited Oral Presentations (* student invited speaker; ** Cancelled due to Covid-19)

2020	** Symposium, Mol. Mechanisms of Membrane Trafficking, Seoul, South Korea
2019	Seminar, Dept. of Mol. Physiol. & Biophys., University of Iowa, Iowa City, IA
2019	Seminar, Dept. of Physiol. & Biophys., University of Arkansas, Little Rock AK
2018	Seminar, Dept. of Biochemistry, University of Nebraska, Lincoln NE
2018	Seminar, Dept. of Biology, Concordia University, Montreal, Canada
2018	Seminar, Dept. of Biol. Sci., Univ. of Sothern Mississippi, Hattiesburg, MS
2015	Speaker, Colin A. Wraight Memorial Symposium, UIUC
2015	* Seminar, Dept. of Mol., Cell. & Dev. Biology, Colorado University, CO
2014	Seminar, Dept. of Molecular Biology, University of Wyoming, WY
2013	Seminar, Dept. of Mol. Phys. & Biol. Physics, Univ. of Virginia, Charlottesville, VA
2013	Mid-West Yeast Meeting, Northwestern University, Chicago, IL
2013	Seminar, Dept. of Biochem. & Mol. Genetics, University of Illinois at Chicago, IL
2012	Seminar, Dept. of Biochemistry University of Washington, Seattle, WA
2011	Seminar, Dept. of Cell & Dev. Biology, University of California at Irvine
2011	Seminar, Dept. of Chemistry & Biochemistry, Bradley University, Peoria, IL
2008	Seminar, Department of Biochemistry, University of Utah
2008	Seminar, Department of Cell Biology, University of Alberta
2008	ASBMB Meeting on Cellular Lipid Transport-Connecting Fundamental Membrane Assembly Processes to Human Disease, Canmore, Alberta, Canada
2006	Seminar, Section of Mol. Cell & Dev. Biology, University of Texas at Austin
2006	Seminar, Dept. of Biochemistry, University of Illinois at Urbana-Champaign
2006	Seminar, Department of Biology, University of Pennsylvania

2005 Gordon Research Conference on Molecular Membrane Biology. Andover, NH
2004 Keystone Symposia on Molecular Cell Biology of Lipid Domains. Vancouver, BC
2003 American Society for Cell Biology. San Francisco, CA
2000 ASM conference on Tuberculosis: Past, Present and Future. New York, NY
1995 ICAAC. San Francisco, CA.

Raven H. Huang

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405 Bradford Avenue
Savoy, IL 61874
Phone: (217) 356-7569

Education

1983	B.S. in Chemistry, Nankai University, P.R. China
1986	M.S. in Polymer Chemistry, Nankai University, P.R. China
1995	Ph.D. in Organic Chemistry, University of Washington Research Advisor: Professor Paul B. Hopkins (Department of Chemistry)

Postdoctoral Training

1996-1999	NIH Postdoctoral Fellow, Harvard University Research Advisors: Professor Gregory L. Verdine (Department of Chemistry and Chemical Biology) Professor Stephen C. Harrison (Department of Molecular and Cellular Biology)

Academic Appointments

1986-1989	Lecturer, Zhejiang Institute of Technology, P.R. China
2000-2006	Assistant Professor of Biochemistry & Biophysics, University of Illinois at Urbana-Champaign
2006-2015	Associate Professor of Biochemistry & Biophysics, University of Illinois at Urbana-Champaign
2016-present	Professor of Biochemistry & Biophysics, University of Illinois at Urbana-Champaign

Awards and Honors

1993-1994	Hitchings Fellow (University of Washington)
1997-1998	NIH Postdoctoral Fellow

Professional Societies

American Association for the Advancement of Science
American Chemical Society
RNA Society
Protein Society

Publications & Patent

<u>As a Graduate Student and a Postdoctoral Fellow:</u>

1. **H. Huang**, M. S. Solomon, P. B. Hopkins (1992) "Formaldehyde Preferentially Interstrand Cross-Links Duplex DNA through Deoxyadenosine Residues at the Sequence 5'-d(AT)," *J. Am. Chem. Soc*. **114,** 9240.
2. **H. Huang**, P. B. Hopkins (1993) "DNA Interstrand Cross-Linking by Formaldehyde: Nucleotide Sequence Preference and Covalent Structure of the Predominant Cross-Link Formed in Synthetic Oligonucleotides," *J. Am. Chem. Soc.* **115,** 9402.
3. **H. Huang**, T. K. Pratum, P. B. Hopkins (1994) "Covalent Structure of the DNA-DNA Interstrand Cross-Link Formed by Reductively Activated FR66979 in Synthetic DNA Duplexes," *J. Am. Chem. Soc.* **116,** 2703.
4. **H. Huang**, S. R. Rajski, R. M. Williams, P. B. Hopkins (1995) "FR66979 Requires Reductive Activation to Cross-Link DNA Efficiently," *Tetrahedron Lett.* **35,** 9669.
5. **H. Huang**, J. Woo, S. C. Alley, P. B. Hopkins (1995) "DNA-DNA Interstrand Cross-Linking by *cis*-Diamminedichloroplatinum(II): N7(dG)-to-N7(dG) Cross-Linking at 5'-d(GC) in Synthetic Oligonucleotides," *Bioorg. and Med. Chem.* **3**, 659.
6. **H. Huang**, L. Zhu, B. R. Reid, G. P. Drobny, P. B. Hopkins (1995) "Solution Structure of a Cisplatin-Induced DNA Interstrand Cross-Link," *Science* **270**, 1842.
7. **H. Huang**, R. Chopra, G. L. Verdine, S. C. Harrison (1998) "Structure of a Covalently Trapped Catalytic Complex of HIV-1 Reverse Transcriptase: Implications for Drug Resistance," *Science* **282,** 1669.
8. **H. Huang**, S. C. Harrison, G. L. Verdine (2000) "Trapping of a Catalytic HIV Reverse Transcriptase•Template:Primer Complex through a Disulfide Bond," *Chemistry & Biology* **7**, 355.

<u>As a Principal Investigator:</u>

1. W. Xie, X, Liu, **R. H. Huang** (2003) "Chemical Trapping and Structure of a Catalytic tRNA-Guanine Transglycosylase Covalent Intermediate," *Nat. Struct. Biol.* **10,** 781.
2. K. Phannachet, **R. H. Huang** (2004) "Conformational Change of Pseudouridine 55 Synthase upon Its Association with RNA Substrate," *Nucleic Acids Res*. **32,** 1422.
3. X, Liu, W. Xie, **R. H. Huang** (2005) "Structural-based Design, Synthesis and *in vitro* Assay of Novel Nucleoside Analog Inhibitors against HIV-1 Reverse Transcriptase," *Bioorg. Med. Chem. Lett.* **15**, 3775.
4. Y. Lin, Y. Elias, **R. H. Huang** (2005) "Structural and Mutational Studies of the Catalytic Domain of Colicin E5 – a tRNA-Specific Ribonuclease," *Biochemistry*, **44**, 10494.
5. Y. Elias, **R. H. Huang** (2005) "Biochemical and Structural Studies of A-to-I Editing by tRNA:A34 Deaminases at the Wobble Position of Transfer RNA," *Biochemistry*, **44**, 12057.
6. K. Phannachet, Y. Elias, **R. H. Huang** (2005) "Dissecting the Roles of a Strictly Conserved Tyrosine in Substrate Recognition and Catalysis by Pseudouridine 55 Synthase", *Biochemistry*, **44**, 15488.

7. C. Luna-Chávez, Y. Lin, **R. H. Huang** (2006) "Molecular Basis of Inhibition of the Ribonuclease Activity in Colicin E5 by Is Cognate Immunity Protein", *J. Mol. Biol.*, **358,** 571.
8. W. Xie, C. Zhou, **R. H. Huang** (2007) "Crystal Structure of tRNA Isopentenyl Transferase: RNA Modification through a Channel", *J. Mol. Biol.*, **367,** 872.
9. N. Cicmil, **R. H. Huang** (2008) "Crystal Structure of QueC from *Bacillius subtilis*: an Enzyme Involved in preQ1 Biosynthesis", *Proteins,***72,** 1084.
10. C. Zhou, **R. H. Huang** (2008) "Crystallographic Snapshots of Eukaryotic Dimethylallyltransferase Acting on tRNA: Insight into tRNA Recognition and Reaction Mechanism", *Proc. Natl. Acad. Sci.*, **105**, 16142.
11. L.L. Jones, L.A. Colf, A.J. Bankovich, J.D. Stone, Y.G Gao, C.M. Chan, **R.H. Huang**, K.C. Garcia, D.M. Kranz (2008) "Different thermodynamic binding mechanisms and peptide fine specificities associated with a panel of structurally similar high-affinity T cell receptors", *Biochemistry*, **47,** 12398-12408.
12. C.M. Chan, C.M., **R.H. Huang** (2009). "Enzymatic characterization and mutational studies of TruD--the fifth family of pseudouridine synthases", *Arch. Biochem. Biophys.* **489**, 15-19.
13. Chan, C.M., Zhou, C., Brunzelle, J.S., **Huang, R.H.** (2009). "Structural and biochemical insights into 2'-O-methylation at the 3'-terminal nucleotide of RNA by Hen1", *Proc. Natl. Acad. Sci. USA* **106**, 17699-17704.
14. C.M. Chan, C. Zhou, R.H. **Huang** (2009). "Reconstituting bacterial RNA repair and modification in vitro", *Science* **326**, 247.
15. C. Zhang, C.M. Chan, P. Wang, **R.H. Huang** (2012). "Probing the substrate specificity of the bacterial Pnkp/Hen1 RNA repair system using synthetic RNAs", *RNA* **18,** 335-344.
16. **R.H. Huang** (2012). "Cas Protein Cmr2 Full of Surprises", *Structure* **20,** 389-390.
17. **R.H. Huang** (2012). "RNA modification involved in eukaryotic RNAi and bacterial RNA repair", *Biochemistry* **51**, 4087-4095.
18. P. Wang, C.M. Chan, D. Christensen, C. Zhang, K. Selvadurai, **R.H. Huang** (2012). "Molecular basis of bacterial Hen1 activating the ligase activity of bacterial Pnkp in RNA repair", *Proc. Natl. Acad. Sci. USA* **109**, 13248-13253.
19. Selvadurai, K., Wang, P., Seimetz, J., Huang, R.H. (2014) Archaeal Elp3 catalyzes tRNA wobble uridine modification at C5 via a radical mechanism. *Nat. Chem. Biol.* **10**, 810-812.
20. Wang, P., Selvadurai, K., Huang, R.H. (2015) Reconstitution and structure of a bacterial Pnkp1–Rnl–Hen1 RNA repair complex. *Nat. Commun.* **6**, 6876.
21. Chakravarti, A., Selvadurai, K, Shahoei, R., Lee, H., Fatma, S., Tajkhorshid, E., **Huang, R.H.** (2018). Reconstitution and substrate specificity for isopentenyl pyrophosphate of the antiviral radical SAM enzyme viperin. *J. Biol. Chem.* **293**, 14122-14133.
22. **Huang, R.H.** (2019). Ribotoxins kill cells by chopping off the head of tRNAs. *Structure* **27**, 1613-1614.

Patent:

Nucleoside Analog Inhibitors of Reverse Transcriptase, granted.

Presentations and Posters

Conference Oral Presentation, (2004) "Chemical Trapping and Crystal Structure of tRNA Guanine Transglycosylase Covalent Intermediate", the Ninth Annual Meeting of the RNA Society, Madison, WI.

Invited Lecture, (2005) "Molecular Recognition and Mechanisms of RNA Modifications That Require Breakage of Glycosidic Bonds", Department of Biochemistry & Molecular Biology, University of Chicago.

Invited Lecture, (2005) "Molecular Recognition and Mechanisms of RNA Modifications That Require Breakage of Glycosidic Bonds", Biosciences Division, Argonne National Laboratory.

Invited Lecture, (2005) "Molecular Recognition and Mechanisms of RNA Modifications That Require Breakage of Glycosidic Bonds", Department of Biochemistry & Molecular Genetics, University of Illinois at Chicago.

Conference Poster Presentation, (2005) "Biochemical and Structural Studies of A-to-I Editing by tRNA:A34 Deaminases at the Wobble Position of Transfer RNA", Gordon Research Conference on Nucleic Acids, Newport, RI.

Invited Lecture, (2006) "Molecular Recognition and Mechanisms of RNA Modifications That Require Breakage of Glycosidic Bonds", Departments of Chemistry and Biology, Washington University at St. Louis.

Invited Conference Oral Presentation, (2006) "Crystal Structure of tRNA Dimethylallyltransferase: RNA Modification through a Channel", FASEB Conference on Nucleic Acid Enzymes.

Conference Oral Presentation, (2007) "Crystal Structure of tRNA Dimethylallyltransferase: RNA Modification through a Channel", MCB Retreat, University of Illinois at Urbana-Champaign.

Invited Lecture, (2009) "Molecular Recognition and Mechanisms of RNA Hypermodifications", Zhejiang University, P.R. China.

Invited Lecture, (2009) "Molecular Recognition and Mechanisms of RNA Hypermodifications", Shanghai Institute of Biological Sciences, P.R. China.

Invited Lecture, (2010) "Better Than New: How a Damaged RNA Gets Repaired and Reinforced", Center for RNA Study, Ohio State University.

Conference Oral Presentation, (2010) "Bacterial Proteins Pnkp and Hen1 Constitute A Novel RNA Repair and Modification System", the 14th Annual Meeting of the RNA Society, Seattle, WA.

Invited Conference Oral Presentation, (2011) "RNA Modification Involved in RNA Repair", Gordon Research Conference on RNA Editing.

Conference Oral Presentation, (2013) "Crystal structure of the bacterial Pnkp1/Rnl/Hen1 heterohexamer: a new RNA repair complex", the 15th Annual Meeting of the RNA Society, Davos, Switzerland.

Invited Lecture (2013) “Better than new: how a damaged RNA is repaired and reinforced”, Department of Chemistry and Biochemistry, Southern Illinois University.

PDB Deposited Since Last Promotion

2FHZ, 3BL5, 3CRM, 3CRQ, 3CRR, 3EPH, 3EPJ, 3EPK, 3EPL, 3ERY, 3JWG, 3JWH, 3JWI, 3JWJ, 4DRF, 4DQZ

Funding

Current Funding:

R. H. Huang (PI), “Genome-wide profiling of RNA damage and repair in vivo”, National Institute of Health, 2016–2020, $1,133,907

R. H. Huang (PI), “Generation and application of second messenger molecules by SMODS and SAVED”, National Institute of Health, 2020–2021, $417,024

Funding Pending:

Raven Huang (PI), “Investigation of substrate specificity and mechanism of RNA repair by bacterial RtcB”, National Institute of Health, 2020–2025, $1,886,865

Raven Huang (PI), “Investigation of potential inhibition of SARS-CoV-2 RdRp by ATP analogue synthesized by fungal and archaeal viperin”, National Institute of Health, 2020–2021, $391,412

Previously Awarded Funding:

R. H. Huang (P.I.), “Structure-based Design and Synthesis of Nucleoside Analog Inhibitors of HIV Reverse Transcriptase”, American Cancer Society, 2000–2002, $150,000

R. H. Huang (P.I.), “Molecular Recognition and Mechanism of Transfer RNA Modification”, R01 grant, National Institute of Health, 2002–2007, $1,054,575

R. H. Huang (P.I.), “Engineering Stable Human APOBEC3G and HIV-1 Vif”, Campus Research Board, 2007, $12,500.

R. H. Huang (P.I.), “Biochemical and Structural Analysis of RNA Methylation in RNA Repair”, National Science Foundation, 2009–2013, $534,999.

R. H. Huang (P.I.), “RNA Repair in Human-Hosted Bacteria: Intriguing Mechanisms and Novel Therapies”, Campus Research Board, 2014–2015, $16,000.

R. H. Huang (PI), “Structure and Function of the Elongator Complex”, National Institute of Health,2014–2018, $1,176,154

R. H. Huang (Co-PI), “Aminoacyl-tRNA Synthetases: Evolutionary Scaffolds to Novel Biology and Physiology”, Keck Foundation 2015–2018, $151,410

Funding Attempted:

R. H. Huang (P.I.), “Recognition and Mechanisms of Transfer RNA Modifications”, R01 renewal, National Institute of Health, 2007, scored as 30%.

R. H. Huang (P.I.), "Engineering Stable Human APOBEC3G and HIV-1 Vif", R21/R33, National Institute of Health, 2007. unscored.

R. H. Huang (P.I.), "Structural characterization of enzyme-RNA complexes via covalent trapping", Challenge grant, National Institute of Health, 2008. scored as 2% but not awarded.

R. H. Huang (P.I.), "Structural and Functional Characterization of a RNA Repair & Modification System", R01, National Institute of Health, 2009, scored as 31%.

R. H. Huang (P.I.), "Structural and Functional Characterization of a RNA Repair & Modification System", R01 revision, National Institute of Health, 2010, scored as 33%.

R. H. Huang (P.I.), "RNA Repair in Bacteria", R01, National Institute of Health, 2011, unscored.

R. H. Huang (P.I.), "Structure and Function of the Elongator Complex", R01, National Institute of Health, 2012, unscored.

R. H. Huang (P.I.), "RNA Repair in Human-Hosted Bacteria: Intriguing Mechanisms and Novel Therapies", R01, National Institute of Health, 2013, R01, scored as 45%.

Supervision of Graduate Students

Graduate Students Obtained Ph.D.

Phannachet, Kulwadee, Ph.D., 2005, "Biochemical and Structural Studies of Pseudouridine 55 Synthase"

Xie, Wei, Ph.D., 2005, "Structural Studies of TGT and MiaA – Two Key Enzymes Involved in Hypermodifications of tRNA"

Lin, Yi-Lun, Ph.D. 2005, "Structure and Function of Colicin E5 Ribonuclease Domain".

Elias, Youssef, Ph.D. 2007, "Biochemical and Structural Studies of DNA and RNA editing"

Cicmil, Nenad, Ph.D. 2008, "Biochemical and Structural Studies of RNA modification and cleavage"

Zhou, Chun, Ph.D. 2009, "Biochemical and Structural Studies of tRNA Modification and Repair Enzymes"

Chan, Chio Mui, Ph.D. 2009, "Biochemical and Structural Studies of RNA Modification and Repair"

Wang, Pei, Ph.D. 2015, "Discovery and Characterization of Novel RNS Repair Systems"

Selvadurai, Kiruthika, Ph.D. 2016, "Biochemical and Structural Characterization of Radical SAM Enzymes Elp3 And Viperin"

Amy Carruthers, Ph.D., 2019, "Biochemical and Structural Studies of RNA Damage and Repair in Bacteria"

Current Graduate Students

Arpita Chakravarti	5th year	joined lab in 2015	research

Xuankun Zeng	5th year	joined lab in 2015	research
Adrika Raybarman	3rd year	joined lab in 2017	research
Yannan Tian	3rd year	joined lab in 2017	research

Teaching

2001	Spring	Biochem 452, Biophysics 410ZZ
	Fall	Biochem 490A
2002	Spring	Biophysics 410ZZ
	Fall	MCB 401A
2003	Spring	Biophysics 410ZZ
	Fall	MCB 401A, Biochem 490
2004	Spring	Biochem 490, Biophysics 410ZZ
	Fall	MCB 501A, Biochem 590
2005	Spring	Biochem 590, Biophysics 410ZZ
	Fall	MCB 501A
2006	Fall	MCB 501A
2007	Fall	MCB 501A
2008	Spring	BIOC445
2009	Spring	MCB406, BIOC445
2010	Spring	MCB406, BIOC445
2011	Spring	MCB406, BIOC445
2013	Spring	BIOC445
2014	Spring	BIOC445
2015	Fall	MCB501
2016	Fall	MCB501
2017	Fall	MCB501
2018	Fall	MCB501
2019	Fall	MCB501

Summary of Service

Member, MCB Award Committee
Member, Thesis Committee in the Department of Biochemistry
Member, Thesis Committee in the Department of Chemistry

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Hong Jin

eRA COMMONS USER NAME (credential, e.g., agency login): HongJin

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Central China Normal University, Wuhan, Hubei, China	B.S.	05/1995	Chemistry
Wuhan University, Wuhan, Hubei, China	M. S.	05/1998	Analytical Chemistry
University of Massachusetts at Boston, Boston, MA		05/2000	Physical Chemistry
Yale University, New Haven, CT, USA	Ph.D.	05/2007	Biophysics
Medical Research Council (MRC) - Laboratory of Molecular biology, Cambridge, UK	Postdoctoral training	01/2008-12/2012	Biophysics, X-ray Crystallography

A. Personal Statement

My research focuses on understanding the molecular mechanisms of protein synthesis and quality control in the cell. We reveal structures and functions of the ribosome and other RNA-binding proteins important for cellular translation and quality control using a combination of biochemistry and biophysical methods, including genomics and structural biology such as macromolecule X-ray crystallography, solution NMR spectroscopy and single particle cryoEM. As a principal investigator, I have laid the groundwork for our research by providing leadership roles and developing effective experimental strategies and protocols. We have been focusing on studying molecular mechanisms of translation regulation and co-translational quality control, and on revealing conserved protein-RNA interactions that are important for these cellular processes. Our key findings were published in peer-reviewed journals, including *Nature, PNAS, RNA, Molecular Cell, Cell Reports,* and *Scientific Reports*. Prior to my independent position, as a Ruth L. Kirschstein National Research Postdoctoral Fellow, I carried out extensive biochemical studies in translation and solved several high-resolution crystal structures of ribosomal complexes with protein release factors bound along the translational termination pathway by X-ray crystallography. These include the first high-resolution crystal structure of a translational GTPase bound to the hybrid state of the ribosome. These structures revealed critical molecular interactions that contribute to the specificity of stop-codon recognition, catalysis of peptide release and how a GTPase induces the ribosome into the hybrid ligand-binding state. As a Ph.D student at Yale University, I studied eukaryotic small nucleolar RNA (snoRNA) and ribosomal RNA (rRNA) interactions, and solved the structure of a snoRNA-rRNA complex by solution NMR spectroscopy. This work revealed a new RNA interaction motif, named as the Ω motif, which provided mechanistic insights into how a specific nucleotide in the rRNA is selected for modifications that are essential for cellular functions.

In this application, I propose to investigate functions of the conserved developmentally-related translational GTPase (Drg) protein in the protein synthesis and quality control, and to reveal the underlying molecular mechanisms that account for Drg's cellular functions. I believe my group is uniquely positioned to investigate the fundamental questions that require a combination of calculated risk-taking and a focused desire to tackle important yet underexplored areas of science. My scientific training, experience and past success in RNA and

translation will certainly be of great value in pioneering our research and I look forward to the challenges and opportunities that confront our investigations.

B. Positions and Honors

Research and Professional Positions

01/2008 – 12/2012 **Postdoctoral Fellow**
(Supervisor: Sir/Dr. Venki Ramakrishnan, Nobel Laureate in Chemistry; President of the Royal Society from 2015 to 2020)
MRC Laboratory of Molecular Biology, Cambridge, UK

09/2009 – 12/2012 **Research Fellow in Science (Equivalent to a Faculty Position in the US)**
University of Cambridge, Lucy Cavendish College, Cambridge, UK

12/2012 – 08/2019 **Assistant Professor**
Department of Biochemistry, Center for Biophysics and Quantitative Biology
University of Illinois at Urbana-Champaign

08/2019 – Present **Associate Professor**
Department of Biochemistry, Center for Biophysics and Quantitative Biology
University of Illinois at Urbana-Champaign

08/2019 – Present **Associate Professor**
University of Illinois Cancer Center

05/2020 – Present **Associate Professor**
Institute for Genomic Biology
University of Illinois at Urbana-Champaign

Academic and Professional Honors

1992-1995 **Central China Normal University Scholarship for Academic Excellence**
- Top 2% of the university

2002 **Yale University Extraordinary Teaching Assistant Award**
- The award is based upon student evaluations and nominations

2009-2012 **Ethel Cruickshank Research Fellowship, University of Cambridge - Lucy Cavendish College, UK**
- The award is equivalent to a faculty position in the US, which includes participating and providing various academic services such as seminars, lectures, governing body meetings and other administrative services. It also includes lively participation in the college life and activities in the Lucy Cavendish College and other colleges in the University of Cambridge.

2009-2012 **NIH Ruth L. Kirschstein National Research Service Award, USA**
- The award includes my postdoctoral salary and institutional allowance covering my conference travel and part of the research expense.

2017-2019 **Lincoln Excellence for Assistant Professor Scholar**
- University of Illinois at Urbana-Champaign

2018-2019 **Fellow of Center for Advanced Study**
- University of Illinois at Urbana-Champaign

2019-2020 **Helen Corley Petit Scholar**
- University of Illinois at Urbana-Champaign

Memberships in professional societies:

2007-Present American Chemical Society, USA
2008-Present RNA Society, USA
2009-Present Biophysical Society, USA

Other Experience and Professional Activity

2007- Present Invited speaker at 30 institutions and conferences
2016 *Ad Hoc* reviewer for NSF (Systems and Synthetic Biology)
2016 *Ad Hoc* reviewer for NIH as an early-stage investigator (GM-MSFC)
2018 Chair and Organizer for the spotlight session on Ribosomes and Translational Regulation American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting

C. Contributions to Science

1. Molecular mechanisms of protein synthesis and co-translational quality control

Intervening or continuing protein synthesis after an error occurs is essential in maintaining protein homeostasis and contributing to the overall accuracy and fidelity of translation in living cells. In this process, cellular signals that initiate either a resumed or terminated translation are first deciphered in the ribosome. Using bacterial proteins such as ArfA/RF2 and conserved eukaryotic proteins Drg/Dfrp as the model system, we determined structures, functions and mechanisms important to protein synthesis and quality control. For example, we determined the kinetics of ArfA/RF2-mediated co-translational quality control on bacterial ribosomes follows an induced-fit mechanism. Since the signals that intervention is required originate in the decoding center of the small subunit while the actions that result in termination of protein synthesis occur in the large subunit of the ribosome, the induced-fit mechanism for co-translational quality control that we have proposed is likely to be universally conserved. Following our initial success, we propose to determine the mechanism specific to an enhanced translation by Drg/Dfrp.

Our results have a broader impact on uncovering new functions of the ribosome in translation and quality control, demonstrating that beyond making proteins in living cells, ribosomes actively maintain translation accuracy and fidelity by recruiting proteins other than the canonical translational factors.

My role in this work is the PI. I conceived the projects, designed experiments, and performed most of the experiments with postdoctoral fellows and graduate students in my laboratory.

- Fuxing Zeng, Xin Li, Melissa Pires-Alves, Xin Chen, Christopher W. Hawk and Hong Jin. (2021). Conserved heterodimeric GTPase Rbg1/Tma46 promotes efficient translation in eukaryotic cells. Cell Reports. 37. (Published on Oct 26th, 2021)
- Fuxing Zeng, Yanbo Chen, Jonathan Remis, Mrinal Shekhar, James C. Phillips, Emad Tajkhorshid and **Hong Jin**
  Structural basis of co-translational quality control by ArfA and RF2 bound to ribosome. ***Nature,*** 541(7638), 554-557, 2017 PMCID: PMC5679781
- Fuxing Zeng and **Hong Jin**
  Peptide release promoted by methylated RF2 and ArfA in nonstop translation is achieved by an induced-fit mechanism ***RNA,*** 22(1): 49–60, 2016 PMCID: PMC4691834
- Fuxing Zeng and **Hong Jin**
  Conformation of methylated GGQ in the Peptidyl Transferase Center during Translation Termination. ***Scientific Reports,*** *8*, 2349, 2018. PMID: 29403017 PMCID: PMC5799190

2. Functions of the RNA-binding protein in translational control

Decapping activators facilitate removal of the 5' m^7G caps from eukaryotic mRNAs by assisting the assembly of decapping complexes or stimulating activities of the decapping enzyme, and they are known to be translational repressors to inhibit translation and promote storage or degradation of mRNAs in cytoplasm. Using biochemistry, we showed that one decapping enhancer, Sbp1, selectively promotes the translation of mRNA encoding the polyadenosine-binding protein (Pab1) and other mRNAs possessing cap-independent translation initiation activities. We demonstrated molecular interactions important for Sbp1-specific translational regulation and the underlying molecular mechanism. Furthermore, our recent results show that this group of proteins affects ribosome dynamics and translation accuracy.

Our results not only reveal a dual role of the decapping activator in regulating mRNA translation: a general translation repressor and a translation activator for a subset of mRNAs in the cell, but also connect the two seemingly unrelated processes, decapping and translation activation of cellular mRNAs. We further demonstrate the decapping activators contribute to translation accuracy. Taken together, our research

establishes a new layer of translational control in eukaryotic cells.

My role in this work is the PI. I assembled a strong research team, designed experiments, and participated in the experimental work with my team.

- Alberto Brandariz-Núñez, Fuxing Zeng, Quan Ngoc Lam and **Hong Jin**
  Sbp1 modulates the translation of Pab1 mRNA in a poly(A)- and RGG-dependent manner, ***RNA,*** *24*, 43-55, 2018 PMCID: PMC5733569
- Mashiat Nawar Chowdhury and **Hong Jin**
  The RGG Motif Proteins: Interactions, Functions and Regulations, ***WIREs RNA****, Accepted.*

3. Molecular mechanisms of translating ribosomes in the hybrid ligand-binding state

Translational GTPases ensure speed, fidelity, and accuracy in each step of the translation. Ribosomes recruit the translational GTPases in the hybrid ligand-binding states where the two ribosomal subunits rotate relative to one another. Following a thorough biochemical characterization of the translation system, I solved the first high-resolution crystal structure of a translational GTPase, the class II release factor 3 (RF3), bound to the hybrid state of the ribosome by X-ray crystallography. The structure revealed the molecular interactions on how a GTPase induces and stabilizes the hybrid state of the ribosome and shed light on the function of RF3 in translational termination. Our work also elucidated the structural features of the ratcheting ribosome in the hybrid ligand-binding state that are the fundamental feature of the ribosome function in the essential stages of translation including initiation, translocation, termination and recycling.

Furthermore, the new crystal form that I discovered has paved the way for solving new structures of ribosomes with other translational GTPases bound. These structures have opened a new field for functional investigations and have provided enormous molecular details and a framework for designing new antibiotics targeting bacterial ribosome functions.

I led this project as a postdoctoral fellow. I designed and performed all the experimental work while one technician in the lab helped with a protein purification step.

- **Hong Jin**, Ann C. Kelley and V. Ramakrishnan
  Crystal structure of the hybrid state of ribosome in complex with the GTPase release factor 3.
  Proceedings of the National Academy of Sciences, 108(38): 15798-15803, 2011
  PMCID: PMC3179103

4. Molecular mechanisms of translational termination.

The specificity of stop-codon recognition and the catalytic mechanism of peptide release have been the fundamental questions in molecular biology since the elucidation of the genetic code. I achieved the major breakthrough in structural studies on ribosomal complexes by obtaining reproducible ribosomal crystals with protein factors bound and determined the first high-resolution crystal structure of release factor 2 (RF2) bound to the 70S ribosome. The structure revealed universally conserved protein-RNA interactions in the ribosome during termination. I also obtained structures of other ribosomal complexes along the termination pathway. Together, these structures answered long-standing questions about the specificity of stop-codon recognition and addressed the catalytic mechanism of peptide release.

I led this project to its successful completion as a postdoctoral fellow. I designed the strategy for sample preparation, crystallization and cryo-protection. I also performed the experiments and screened the crystals with help from my colleagues.

- Albert Weixlbaumer*, **Hong Jin***, Cajetan Neubauer, Rebecca M. Voorhees, Sabine Petry, Ann C. Kelley and V. Ramakrishnan **(*These two authors contributed equally to the work)**
  Insights into translational termination from the structure of RF2 bound to the ribosome.
  Science, 322(5903): 953-956, 2008 PMCID: PMC2642913
- **Hong Jin**, Ann C. Kelley, David Loakes, and V. Ramakrishnan
  The structure of the 70S ribosome bound to RF2 and a substrate analog provides insights into catalysis of peptide release**.**
  Proceedings of the National Academy of Sciences, 107(19): 8593-8598, 2010
  PMCID: PMC2889298

5. Functions of noncoding RNAs in ribosome biogenesis.

Noncoding RNAs play essential and diverse roles in regulating gene expression. My Ph.D. work focused on small nucleolar RNAs (snoRNAs) in eukaryotic cells. Base pairings between snoRNAs and sequences in eukaryotic rRNAs target specific nucleotides for modifications. Most of the modifications are clustered in the functionally important regions of the ribosome. rRNA modifications are critical for ribosome biogenesis, assembly, structure and translating function. snoRNAs play other essential functions in the cell, including participating in pre-mRNA processing, directing alternative splicing and acting as microRNA precursors. As a Ph.D. student, I developed a model system, used extensive biochemical and biophysical methods to characterize the model and parent systems, and subsequently determined the first structure of the human snoRNA with and without substrate bound by solution NMR spectroscopy. This structure revealed a new Ω-shaped RNA interaction motif conserved in all box H/ACA snoRNP-substrate complexes and provided the first physical evidence to support unique features of the substrate recognition by box H/ACA snoRNA.

My role in this work is as a Ph.D. student. I designed and carried out all the experimental investigations in this research. My Ph.D. research provided the first structural basis for box H/ACA snoRNA-mediated pseudouridylation in the cell.

- **Hong Jin**, J. Patrick Loria and Peter B. Moore
  Solution structure of an rRNA substrate bound to the pseudouridylation pocket of a box H/ACA snoRNA.
  Molecular Cell, 26(2): 205-215, 2007 PMID: 17466623

Other publications in Chemistry and Analytical Chemistry fields are:

- Yan Bao, Xuewei Wu, Jinjing Chen, Xiangming Hu, Fuxing Zeng, Jianjun Cheng, **Hong Jin**, Xin Lin, and Lin-Feng Chen
  Brd4 modulates the innate immune response through Mnk2-eIF4E pathway-dependent translational control of IκBα.
  Proceedings of the National Academy of Sciences **114**, E3993-E4001 2017 PMCID: PMC5441817
- Hong Wang, Yuan-yuan Zhao, **Hong Jin**, and Hua-shan Zhang
  N-hydroxy-succinimidyl-α-naphthylacetata as a derivatizing reagent for amino acids and oligopeptides in RP-HPLC.
  Journal of Liquid Chromatography, 24(20): 3157-3170. 2001
- Hong Wang, **Hong Jin** and Hua-shan Zhang
  Determination of catecholamines as their N-hydroxy-succinimidyl-3-indolylacetate derivatives by pre-column derivatization HPLC separation and fluorescent detection.
  Fresenius Journal of Analytical Chemistry, 365(8): 682-684. 1999
- **Hong Jin**, Xun Liu, Hong Wang, Hua-shan Zhang and Jie-ke Cheng
  Determination of amino acids as their N-hydroxy-succinimidyl-3-indolylacetate derivatives by pre-column derivatization HPLC separation and fluorescent detection.
  Wuhan Da Xue Xue Bao (Natural Science Journal of Wuhan University, China), 44(2): 175-178, 1998
- Guanghan Lu, **Hong Jin** and Dandan Song
  Determination of trace nitrite by anodic stripping voltammetry.
  Food Chemistry, 59(4): 583-587. 1997

List of Published Work in MyBibliography:
http://www.ncbi.nlm.nih.gov/sites/myncbi/18WK9L8_bYGAJ/bibliography/48229889/public/?sort=date&direction=descending

D. Additional Information: Research Support and/or Scholastic Performance

Research Support:

NIH	R01GM120552
Title:	Mechanisms of Translational Activation by Decapping Activators
Role:	Hong Jin, **P.I.**
	Award period: 9/22/16 – 08/31/2021

I. PERSONAL HISTORY AND PROFESSIONAL EXPERIENCE

NOTE: In each section, list items in chronological order from past to present.

A. Educational Background.

1999	B.S. in Pharmacy (Honors), Birla Institute of Technology and Science, Pilani, RJ, India
2005	Ph.D. in Biochemistry and Molecular Biology, University of Texas Health Science Center, Houston, TX, USA

B. List of Academic Positions since Final Degree.

2006-2010	Postdoctoral Research Associate, Pathology and Immunology Baylor College of Medicine Houston, TX, USA
2010-2012	Instructor, Pathology and Immunology, Baylor College of Medicine Houston, TX, USA
2012-2019	Assistant Professor, Department of Biochemistry and Medical Biochemistry, University of Illinois at Urbana-Champaign (UIUC)
2013-present	Affiliate, Carl R. Woese Institute for Genomic Biology—Gene Networks in Neural & Developmental Plasticity theme, UIUC
2016-present	Faculty member, Carl R. Woese Institute for Genomic Biology—Omics Nanotechnology for Cancer Precision Medicine theme, UIUC
2017-present	Faculty member, Cancer Center at Illinois, University of Illinois, Urbana-Champaign, IL
2019-present	Associate Professor, Department of Biochemistry, University of Illinois, Urbana-Champaign, IL
2020-22	Assistant Director, Junior Faculty Mentoring and Advising in SMCB, University of Illinois, Urbana-Champaign, IL
2023-present	Faculty member, Division of Nutritional Sciences (DNS) at the University of Illinois, Urbana-Champaign, IL

C. Other Professional Employment.

1999-2000	Trainee Scientist, Pharmacology, Cadila Pharmaceuticals Ltd., India

D. Honors, Recognitions, and Outstanding Achievements.

*awarded as UIUC Faculty; #since last promotion

RESEARCH FELLOWSHIPS AND AWARDS

2003	Pre-doctoral Fellowship, Harry S. and Isabel Cameron Foundation
2004	Dean's Award for Excellence in Research, University of Texas, Houston, TX
2005	President's Research Award, University of Texas M.D. Anderson Cancer Center, Houston, TX
2009	Post-Doctoral Fellowship, Myotonic Dystrophy Foundation
2010	First Prize Poster Award, AAAS SWARM 85th Annual Meeting, Houston, TX

2011	American Heart Association Scientist Development Grant
*2013	Roy J. Carver Charitable Trust Young Investigator Award
*2014	Advisory Board Member, Faculty of 1000
*2014	March of Dimes Basil O'Connor Starter Scholar Research Award
*2016	Beckman Fellow, Center for Advanced Study, UIUC
*2017	Research Grant, Muscular Dystrophy Association
*2017	Co-Vice Chair, Annual Rustbelt RNA Meeting, Indianapolis, IN
*2018	Co-Chair, Annual Rustbelt RNA Meeting, Columbus, OH
#2019	Planning Grant Award, Cancer Center at Illinois, IL.
#2019	Distinguished Promotion Award, UIUC, IL
#2021	William C. Rose Professorial Scholar, UIUC, IL
#2023	Research Grant, Muscular Dystrophy Association

TEACHING AWARDS

*2014	Teacher Ranked as Excellent by Their Students (Fall semester)
*2015	Teacher Ranked as Excellent by Their Students (Fall semester)
*2016	Teacher Ranked as Excellent by Their Students (Spring semester)
*2017	Teacher Ranked as Excellent by Their Students (Spring semester)
*2018	Teacher Ranked as Excellent by Their Students (Spring semester)
#2019	Teacher Ranked as Excellent by Their Students (Spring semester)
#2020	Teacher Ranked as Excellent by Their Students (Fall semester)

TRAVEL GRANTS

2004	Gordon Conference, Drug Metabolism, Holderness, NH
2006	ASBMB Centennial Meeting, San Francisco, CA
2010	Gordon Conference, Posttranscriptional gene regulation, Newport, RI.
2010	Myotonic Dystrophy Foundation, Minneapolis, MN
2011	IMDC-8 meeting, Clearwater Beach, FL
2012	Alternative Splicing-SIG ISMB meeting, Long Beach, CA
*2014	Myotonic Dystrophy Foundation, Washington, DC
*2015	International Symposium on Cells of Hepatic Sinusoid, Asilomar, CA
*2017	International Symposium on Cells of the Hepatic Sinusoid, Galway, Ireland
*2018	Bermuda Principles - Impact on Splicing 2nd Annual Conference, Bermuda
*2018	FASEB meeting on Mechanisms of RNA Decay, Scottsdale, AZ
#2019	American Heart Association meeting on RNA-based regulation of cardiac remodeling, Philadelphia, PA.
#2019	WIREs RNA Editorial Board Meeting, Boston, MA
#2022	Annual RNA Society Meeting, Boulder, CO.
#2022	Gordon Research Conference: Post-transcriptional gene regulation, Newry, ME.

E. Invited Lectures and Invited Conference Presentations Since Last Promotion.

ORAL PRESENTATIONS/SEMINARS

2019	Center for RNA Biomedicine, University of Michigan, Ann Arbor, MI.
2019	American Heart Association meeting on RNA-based regulation of cardiac remodeling, Philadelphia, PA.
2019	Comparative Sciences Dept., Veterinary School of Medicine, UIUC, IL.

2020 Distinguished Guest Lecture, Saint Jude Children's Hospital, Memphis, TN.
2020 David Lawn Commemorative Lecture, Baylor College of Medicine, Houston, TX.
2020 Physiology and Cell Biology Dept., Ohio State University, Columbus, OH.
2020 Biological Sciences Dept., IISER Bhopal, Madhya Pradesh, India. (*virtual*)
2020 Osher Lifelong Learning Institute lecture, UIUC, IL.
2021 The Australian National University, Canberra, Australia (*virtual*).
2021 Joint CIBERehd-ISCIII and the University of Navarra Lecture, Pamplona, Spain (*virtual*).
2021 Osher Lifelong Learning Institute lecture, UIUC, IL.
2022 Medical University of Graz, Austria (*virtual*).
2022 Annual RNA Society Meeting, Boulder, CO.
2022 OSF health care Radio show, University of Illinois, College of Medicine, Peoria, IL.
2022 Pittsburgh Liver Research Center, Pittsburgh, PA.
2022 Cancer Center at Illinois—CDP program meeting, UIUC, IL.
2022 Gordon Research Conference: Post-transcriptional gene regulation, Newry, ME.
2022 Neurology Dept., Virginia Commonwealth University, Richmond, VA
2023 Division of Nutritional Sciences, UIUC, IL.
2023 Biological Sciences Dept., Carnegie Mellon University, Pittsburgh, PA.
2023 Spatial Omics Initiative, Carl R. Woese Institute for Genomic Biology, UIUC
2023 Liver/GI work in progress eSeminar, University of Illinois at Chicago.
2023 Myotonic Dystrophy Foundation, Annual Conference at Washington D.C.
2023 Biochemistry, Molecular Biology and Biophysics Dept., University of Minnesota, Twin Cities, Minneapolis, MN.

ORGANIZER, CHAIRPERSON OF A SCIENTIFIC MEETING OR MEETING SESSION

2021 Session Chair, "Viruses, Disease, and RNA processing" Eukaryotic mRNA processing meeting, Cold Spring Harbor, NY
2022 Session Chair, "RNA in Disease" Annual RNA Society Meeting, Boulder, CO.
2024 Session Chair, "Development and Disease" Gordon Research Conference: Posttranscriptional gene regulation *(scheduled)*.
2024 Co-Vice Chair (*elected*), Gordon Research Conference: Posttranscriptional gene regulation *(scheduled)*.
2026 Co-Chair (*elected*), Gordon Research Conference: Posttranscriptional gene regulation *(scheduled)*.

PRESENTATIONS BY STUDENTS/POSTDOCTORAL FELLOWS

2019 Keystone Symposia on RNA-protein Interactions (Sushant Bangru: **oral presentation**)
2019 Rustbelt RNA Meeting (Andrew Gupta: **oral presentation**; **received best undergraduate talk award**)
2019 Rustbelt RNA Meeting (Joseph Seimetz: **oral presentation**)
2019 Rustbelt RNA Meeting (Sushant Bangru)
2019 Rustbelt RNA Meeting (Bo, Zhang)
2019 Rustbelt RNA Meeting (Zac Dewald)
2019 Rustbelt RNA Meeting (Chaitali Misra)
2019 Rustbelt RNA Meeting (Ullas Chembazhi)

2020 Annual RNA Society eMeeting (Sushant Bangru)
2020 Annual RNA Society eMeeting (Ullas Chembazhi)
2020 Annual RNA Society eMeeting (Zac Dewald)
2020 American Heart Association eMeeting (Chaitali Misra)
2020 Rustbelt RNA eMeeting (Katelyn Toohill)
2020 Rustbelt RNA eMeeting (Sushant Bangru)
2020 Rustbelt RNA eMeeting (Zac Dewald)
2020 Rustbelt RNA eMeeting (Chaitali Misra)
2020 Rustbelt RNA eMeeting (Ullas Chembazhi)
2021 Annual RNA Society eMeeting (Zac Dewald: **oral presentation**)
2021 Annual RNA Society eMeeting (Sushant Bangru)
2021 Annual RNA Society eMeeting (Chaitali Misra)
2021 Annual RNA Society eMeeting (Ullas Chembazhi)
2021 CSHL Eukaryotic mRNA processing eMeeting (Sushant Bangru: **oral presentation**)
2021 CSHL Eukaryotic mRNA processing eMeeting (Bo Zhang)
2021 CSHL Eukaryotic mRNA processing eMeeting (Ullas Chembazhi)
2021 CSHL Eukaryotic mRNA processing eMeeting (Sandip Chorghade)
2021 Keystone eSymposia on Single cell biology (Ullas Chembazhi)
2021 Rustbelt RNA eMeeting (Zac Dewald; **won excellent poster award**)
2021 Rustbelt RNA eMeeting (Ullas Chembazhi: **oral presentation**)
2021 Rustbelt RNA eMeeting (Chaitali Misra)
2021 Rustbelt RNA eMeeting (Sandip Chorghade)
2021 Rustbelt RNA eMeeting (Sarah Matatov)
2022 Big Ten Academic Alliance Lipids Symposium (Ullas Chembazhi; **won outstanding poster award**)
2022 Annual RNA Society Meeting (Sandip Chorghade: **oral presentation**)
2022 Annual RNA Society Meeting (Ullas Chembazhi; **won outstanding poster award**)
2022 Annual RNA Society Meeting (Zac Dewald)
2022 Annual RNA Society Meeting (Sushant Bangru)
2022 FASEB Liver Biology Conference on Post-Transcriptional Gene Regulation (Ullas Chembazhi: **oral presentation**)
2022 ISMB "iRNA—COSI 22" Conference (Subhashis Natua; **won outstanding poster award**)
2022 ISMB "iRNA—COSI 22" conference (Nick Baker)
2022 Gordon Research Conference on (Ullas Chembazhi)
2022 Rustbelt RNA Meeting (Subhashis Natua; **won best poster award**)
2022 Rustbelt RNA Meeting (Zac Dewald: **oral presentation**)
2022 Rustbelt RNA Meeting (Nick Baker)
2022 Rustbelt RNA Meeting (Sandip Chorghade)
2022 Rustbelt RNA Meeting (Ullas Chembazhi)
2022 Rustbelt RNA Meeting (Sushant Bangru)
2023 Keystone Symposia on Heart Development and Disease: From Genes to Cures (Subhashis Natua)
2023 Gordon Research Conference on Alcohol-Induced End Organ Diseases (Ullas Chembazhi: **oral presentation**)

F. <u>Offices Held in Professional Societies</u>.

2007-present Member, RNA Society

2014-2022	Advisory Board Member, Faculty of 1000 (now Faculty Opinions)
2020-23	Elected Member, Rustbelt RNA Meeting (RRM) Steering Committee
2021-present	Member, International Society for Regenerative Biology (ISRB)
2022-present	Member, American Association for the Advancement of Science (AAAS)

G. <u>Editorships of Journals or Other Learned Publications</u>.

2019-25 Associate Editor, WIREs RNA (Wiley)

H. <u>Grants Received since Last Promotion at Illinois.</u>

KALSOTRA AS PRINCIPAL INVESTIGATOR

1. **Title: Post-transcriptional mechanisms of gene regulation in cardiac cell growth and development**

   Funding: NIH R01-NHLBI (R01HL126845) Role: PI
   04/01/20 – 06/30/24 Total award: $1,547,934

   The goals of this project are to delineate genetic programs that regulate normal cardiac growth during development and reactivate fetal gene expression in disease conditions.

2. **Title: TNF alpha and recovery from alcoholic liver injury**

   Funding: NIH R01-NIAAA (R01AA010154) Role: MPI with A.M. Diehl (Duke)
   09/20/19 – 07/31/24 Total award (Kalsotra): $787,822

   The goals of this project are to evaluate the hypothesis that alcohol-related liver diseases progress because pro-inflammatory cytokines like TNF-α disrupt the ESRP2-mediated-RNA-regulatory mechanisms that control when fetal gene expression programs are switched ON and OFF in adult liver cells.

3. **Title: Mechanisms of fatty liver disease and impaired drug metabolism in DM1**

   Funding: Muscular Dystrophy Association (MDA1072487) Role: PI
   09/01/23 – 08/31/26 Total award: $300,000

   This project will identify pathways underlying fatty liver disease and poor drug metabolism in Myotonic Dystrophy type 1 (DM1).

4. **Title: Gene regulatory mechanisms controlling tissue maturation and polyploidization**

   Funding: NIH R21-NICHD (R21HD104039) Role: PI
   04/22/21 – 03/31/23 (NCE until 2024) Total award: $ 415,495

   This project aims to test the hitherto unexplored roles of RNA splicing in regulating polyploidy and determine how differences in ploidy affect the transcriptional and post-transcriptional output of hepatocytes.

5. **Title: Characterization of nuclear-retained RNA-mediated gene regulatory mechanisms**

   Funding: NIH R01-NIGMS (R01GM132458) Role: Co-I with KV. Prasanth (PI)
   09/01/20 – 08/31/25 Total award (Kalsotra): $85,000

The major goals of this proposal are to understand the function of MALAT1 lncRNA in alternative splicing and nuclear speckle organization during hypoxia response.

6. **Title: Small molecule approaches to targeting the DNA and RNA in myotonic dystrophy**

   Funding: NIH R01-NIAMS (R01AR069645) Role: Co-I with S. Zimmerman (PI)
   03/01/17 – 01/31/22 (NCE until 2024) Total award (Kalsotra): $466,982

   The major goals of this project are to develop self-assembling small molecules targeting $dCTG^{exp}$ and $rCUG^{exp}$ and to evaluate their therapeutic efficacy in cell and animal models of Myotonic Dystrophy.

7. **Title: Identifying pathways for therapeutic design to stop liver cancer**

   Funding: CCIL, UIUC Planning grant Role: CO-I with S. Anakk (PI)
   08/1/2020 – 07/30/2021 Total award (Kalsotra): $7,500

   The major goal of this project is to establish the molecular mechanism(s) underlying MALAT1's role in breast cancer progression and metastasis

8. **Title: Characterization of oncogenic noncoding RNAs in breast cancer progression and metastasis**

   Funding: CCIL, UIUC seed grant Role: CO-I with KV. Prasanth (PI)
   08/1/2019 – 07/30/2021 Total award (Kalsotra): $50,000

   The major goal of this project is to establish the molecular mechanism(s) underlying MALAT1's role in breast cancer progression and metastasis

9. **Title: Elucidating mechanisms by which environmental toxicants induce liver cancer**

   Funding: CCIL, UIUC Planning grant Role: MPI with J. Irudayaraj
   08/1/2019 – 07/30/2020 Total award (Kalsotra): $12,500

   The goal of this project is to determine whether environmental toxicants disrupt epigenetic and RNA splicing mechanisms that promote NAFLD and liver cancer.

10. **Title: Conference: 2018-2020 Rustbelt RNA Meetings**

    Funding: NSF-MCB (1834786) Role: MPI with G. Singh (OSU)
    06/05/18 – 05/31/20 (NCE until 05/31/22) Total award: $50,000

PENDING SUPPORT

1. **Title: TNF alpha and recovery from alcoholic liver injury**

   Funding: NIH R01-NIAAA Role: MPI with A.M. Diehl (Duke)
   08/01/25 – 07/31/29 Total award (Kalsotra): $1,780,286

   This project will evaluate the hypothesis that the re-emergence of the fetal splicing program in alcoholic liver disease promotes progressive liver dysfunction.

2. **Title: Molecular Mechanisms of Cardiac Dysfunctions in Myotonic Dystrophy**

Funding: Department of Defense (IIRA-award) Role: PI
03/01/24 – 02/29/28 Total award: $1,590,133

This project seeks to understand why DM1 patients develop specific cardiac pathology and test a new therapeutic strategy to treat DM1-related cardiac defects in mice and iPSC-CMs.

3. **Title: Herpesvirus-mediated regulation of mRNA splicing in the host**

Funding: NIH R01-NIGMS Role: CO-I with K. Jarosinski (PI)
03/01/24 – 02/29/28 Total award (Kalsotra): $551,757

The long-term goal of this project is to identify viral or cellular targets for developing novel virus therapies or vaccines against virus infections.

KALSOTRA AS MENTOR

1. **Title: Characterizing the role(s) of a nuclear poly(A) binding protein in cardiac maturation and function**

Funding: Michael A. Recny Fellowship – UIUC Biochemistry Department
08/16/23 – 05/15/24 PI: S. Natua (Ph.D. Student)
Total award = $28,200

2. **Title: Single-cell analysis of liver regeneration**

Funding: NIH Pre-doctoral CBI Training Program (T32-GM070421)
08/01/21 – 07/31/23 PI: N. Baker (Ph.D. Student)
Total award = $94,446

3. **Title: Role of giant Ankyrin isoforms in developing cardiac arrhythmia in DM1**

Funding: Department of Defense Discovery Award (PR190711)
11/15/19 – 11/14/21 PI: C. Misra (Research Scientist)
Total award = $317,200

4. **Title: Function of the nuclear poly(A) binding protein in cardiac maturation**

Funding: American Heart Association Post-doctoral Fellowship (21POST834659)
07/01/21– 06/30/23 PI: B. Zhang (Post-doc, declined)
Total award = $140,752

5. **Title: Requirement of ESRP2 splicing regulatory network in liver polyploidization**

Funding: Scott Dissertation Completion Fellowship, UIUC Graduate College
06/01/20 – 05/30/21 PI: S. Bangru (Ph.D. Student)
Total award = $20,000

6. **Title: Deciphering mechanisms promoting cardiac arrhythmias in myotonic dystrophy**

Funding: Herbert E. Carter Pre-doctoral Fellowship – UIUC Biochemistry Department
08/16/19 – 08/15/20 PI: UV. Chembazhi (Ph.D. Student)
Total award = $28,200

I. Review Panels.

ONLY THOSE SINCE THE LAST PROMOTION ARE LISTED

2019 Muscular Dystrophy Review Panel for Peer Reviewed Medical Research Program (PRMRP) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP), USA
2019 Medical Research Council (MRC), UK, ad hoc reviewer
2019 NSF, Division of Molecular Cell Biology (MCB), USA, ad hoc reviewer
2020 Muscular Dystrophy Review Panel for Peer Reviewed Medical Research Program (PRMRP) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP), USA
2020 Biotechnology and Biological Sciences Research Council, UK, *ad hoc* reviewer
2021 Deutsche Forschungsgemeinschaft (DFG) Study Section, German Research Foundation, DE, *ad hoc* reviewer
2021 NIH, Basic Biology of Blood, Heart and Vasculature (*Invited, but did not serve*)
2021 NIH, Program Project Grants (NHLBI), USA, ad hoc reviewer
2021 NIH, CHDD-C (NICHD), USA, *ad hoc* reviewer
2022 NIH, Program Project Grants (NHLBI), USA (*Invited, but did not serve*)
2022 NIH, Career Development K-Awards (NHLBI), ZHL1, USA, *ad hoc* reviewer

II. PUBLICATIONS AND CREATIVE WORKS

For promotion to Associate Professor with Indefinite Tenure, list all publications and creative works over the course of the candidate's career. For candidates for promotion to Full Professor, list only publications and creative works that have occurred since the most recent promotion at Illinois.

# Denotes any publication derived from the candidate's thesis.

* Denotes publication that has undergone stringent editorial review by peers.

+ Denotes publication that was invited and carries special prestige and recognition.

(Additional symbols may be used to denote other noteworthy features. Please add and define here.)

A. Doctoral Thesis Title

Auinash Kalsotra (2005). "Characterization of Cytochromes P450 4F Subfamily: Functional Roles and Response in Inflammation". Department of Biochemistry and Molecular Biology, University of Texas Health Science Center, Houston, TX, USA.

B. Chapters in Books

1. Strobel HW, **Kalsotra A** and Dash PK (2003). Cytochrome P450 4Fs: Response and role following brain trauma, in Cytochrome P450, Biochemistry Biophysics & Drug Metabolism. P Anzenbacher and J Hudecek (eds.), *MONDUZZI EDITORE: Prague,* pps. 107-114

+ 2. **Kalsotra A** (2008, 2015). Erythromycin mechanism (antibiotic); case #9 in *Casefiles: Biochemistry*. E Toy, W Seifert Jr., HW Strobel and K Harms (eds.), *LANGE SERIES by Mcgraw-Hill UK*, pps. 83-91

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C. Articles in Journals

* 1. Palit G, **Kalsotra A,** Kumar R, Nath C, Dubey MP (2001). Behavioral and anti-psychotic effects of $Ca2^{+}$ channel blockers in rhesus monkey. ***Eur J Pharmacol.*** 412(2), 139-44.

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- *Recommended by F1000*

* # 12. **Kalsotra A,** Anakk S, Brommer CL, Kikuta Y, Morgan ET, Strobel HW (2007). Catalytic characterization and cytokine mediated regulation of cytochromes P450 4Fs in rat hepatocytes. ***Arch Biochem Biophys.*** 461(1): 104-112.

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- *Highlighted as Research News by Scibite.com, Sciencedaily.com, Myotonic Dystrophy Foundation, Sciencetoday.com, and Medical News Today*

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+ * 29. Lewis CJ, Pan T and **Kalsotra A** (2017) RNA modifications and structures cooperate to guide RNA-protein interactions. ***Nature Rev Mol Cell Biol.*** 3: 202-210

+ * 30. Yum K, Wang ET and **Kalsotra A** (2017). Myotonic Dystrophy: Disease Repeat Range, Penetrance, Age of Onset, and Relationship Between Repeat Size and Phenotypes. ***Curr Opin Genet Dev.*** 44:30-37

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* 43. Sun Q, Hao Q, Lin Y, Song Y, Bangru S, Arif W, Tripathi V , Zhang Y, Jenkins L, Ma J, **Kalsotra A**, Lal A, Prasanth SG, Prasanth KV (2020) Antagonism between splicing and Microprocessor 1 complex dictates the serum-induced processing of *lnc*-MIRHG for efficient cell cycle re-entry. ***RNA*** 26(11):1603-1620.

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* 45. Mathur B, Shajahan A, Arif W, Chen Q, Hand NJ, Abramowitz LK, Schoonjans K, Rader DJ, **Kalsotra A**, Hanover JA, Azadi P, Anakk S (2021) Nuclear receptors FXR and SHP regulate protein N-glycan decorations in the liver. ***Science Adv.*** 7: Eabf4865.

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* 47. Chembazhi UV§, Bangru S§, Hernaez M, **Kalsotra A** (2021) Cellular plasticity balances the metabolic and proliferation dynamics of a regenerating liver. ***Genome Res.*** 31(4):576-591.
§denotes equal authors

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cell level. ***Dev Biol.*** 491:13-30.
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* 49. Peng J§, Serrano G§, Traniello I, Chembazhi UV, Bangru S, Ezponda T, Rodriguez-Madoz JR, **Kalsotra A**, Prosper F, Ochoa I, Hernaez M (2022) SimiC: A single-cell gene regulatory network inference method for identifying complex regulatory dynamics across cell phenotypes. ***Commun Biol.*** 5(1):351.
§denotes equal authors

* 50. Chembazhi UV§, Tung WS§, Hwang H§, Wang Y, Lalwani A, Bangru S, Yee D, Chin K, Yang J, **Kalsotra A***, Mei W* (2023) PTBP1 controls intestinal epithelial regeneration through post-transcriptional regulation of gene expression. ***Nucleic Acids Res.*** 51(5):2397-241
§denotes equal authors; *co-corresponding authors

- *Highlighted by the Cancer Center@ Illinois and Comparative Biosciences News, UIUC*

* 51. Arif W, Mathur B, Saikali MF, Chembazhi UV, Van Nostrand EL, Bangru S, Hao Q, Yeo GW, Prasanth KV, Anakk S, Cummins C, **Kalsotra A** (2023) Splicing factor SRSF1 deficiency in the liver triggers NASH-like pathology and cell death. ***Nature Commun.*** 14(1):551.

- *Highlighted by EurekAlert, Illinois News Bureau, LabRoots, The Medical News, ScienMag, Front Line Genomics, and other news outlets*

+* 52. Derham J, **Kalsotra A** (2023) The discovery, function, and regulation of epithelial splicing regulatory proteins. ***Biochem Soc Trans.*** 51(3):1097-1109

* 53. Piersma S§, Bangru S§, Yoon J, Liu TW, Yang L, Plougastel-Douglas B, **Kalsotra A***, Yokoyama WM* (2023) NK cell expansion requires HuR and mediates innate immune control of solid tumors and long-term virus infection. ***J Exp Med.*** 220(11):e20231154
§denotes equal authors; *co-senior authors

D. Patents

Bai Y, Zimmerman SC, and **Kalsotra A** (2022) Multivalent ligand for myotonic dystrophy. US Patent 11,242,326,

MANUSCRIPTS UNDER REVISION/SUBMITTED/IN PREPARATION

* 1. Li K§, Chembazhi UV§, Kreuger SE, Dewald Z, Chen J, Bai Y, Kim D, Kocheril PA, Chen J, **Kalsotra A***, Zimmerman SC* (2023) Cell delivery agent as a drug. A multitarget agent delivers an antisense oligonucleotide for synergistic activity in myotonic dystrophy type 1. ***Nature Commun.*** *(under revision*)
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* 2. Goo YH, Ayyappan JP, Cheeran FD, Bangru S, Saha PK, Baar P, Schulz S, Lydic TA, Spengler B, Wagner AH, **Kalsotra A**, Paul A (2023) Lipid droplet-associated hydrolase mobilizes stores of liver X receptor sterol ligands and protects against atherosclerosis. ***Nature Commun.*** *(under revision*)

3. Oluwafolajimi A, Das D, **Kalsotra A** (2023) Emerging Roles of RNA binding proteins in fatty liver disease. ***WIREs RNA.*** *(under review*)

* 4. Zhou W, Chembazhi UV, Huang J, Bangru S, Dean AE, **Kalsotra A**, Rudnick DA, Anakk S (2023) Excess bile acid increase after partial hepatectomy in constitutive androstane receptor knockout mice drives regeneration. ***J Hepatol.*** *(under review*)

+ 5. **Kalsotra A** (2024) Muscling through the RNA toxicity hypothesis. ***Nature Rev Mol Cell Biol.*** *(under review*)

+* 6. Natua S, Zhang B, **Kalsotra A** (2024) Function and regulation of mRNA 3'-end diversity in health and disease. ***Trends in Genet.*** *(under review*)

+* 7. Dewald ZL, Chembazhi UV, Gupta A, **Kalsotra A** (2023) Altered drug metabolism and increased susceptibility to fatty liver disease in an inducible liver-specific mouse model of myotonic dystrophy. ***bioRxiv.*** *2021.04.06.438688; (in preparation*)

8. Chambazhi UV[§], Bangru S[§], Dutta R, Das D, Natua S, Purwar, I, Peiffer B, Toohil K, Sun Z, Diehl AM[*], **Kalsotra A**[*] (2023) Transcriptional and post-transcriptional landscapes of alcohol-associated human liver diseases *(in preparation*)
[§]denotes equal authors; [*]co-corresponding authors

9. Bangru S, Chen J, Chembazhi UV, Arif W, Alencastro F, Duncan AW, Carsten RP, **Kalsotra A** (2023) ESRP2-miR-122 axis directs postnatal onset of hepatocyte maturation and polyploidization *(in preparation*)

10. Chorghade S, Seimetz J, Natua S, Zhang B, Misra C, Chembazhi UV, Hao Q, Wehrens X, Chen J, **Kalsotra A** (2023) Post-transcriptional silencing of the nuclear poly(A) binding protein is critical for postnatal maturation and function of the heart *(in preparation*)

11. Chembazhi UV, Das D, Toohill K, Lund C, Gurra M, Mei W, Yang J, **Kalsotra A** (2023) Polypyrimidine tract-binding protein 1 coordinates the proliferative and inflammatory responses of hepatocytes during toxin-induced liver injury and regeneration *(in preparation*)

12. Bangru S[§], Chembazhi UV[§], Zhou W, Dean AE, **Kalsotra A**[*], Anakk S[*] (2023). Single-cell multiome analysis reveals sex-specific transcriptional remodeling during liver regeneration *(in preparation*)
[§]denotes equal authors; [*]co-corresponding authors

13. Arif W, Blatti C, **Kalsotra A**[*], Hernaez M[*] (2023) SHIRLOC: A robust computational approach to analyze polysome profiling RNA sequencing data *(in preparation*)
[*]denotes co-corresponding authors

III. CONTRIBUTIONS TO TEACHING AND LEARNING

A. Summary of Teaching Activity

SINCE LAST PROMOTION

In the Spring of 2019, I began teaching the large undergraduate course "Introductory Biochemistry (MCB 450)". It was co-taught with a second Professor and coordinated by Ms. Renee Alt in the MCB Undergraduate Instructional Program Office. The class consists of students from varied backgrounds, and the coursework

is designed to link key principles in biochemistry and metabolism to physiology, pathology, pharmacology, and nutrition.

After the retirement of Prof. John Gerlt in 2020, there was an immediate need to fill in for the teaching requirement in MCB 354, which is a required upper-level course for all MCB and Biochemistry majors. So, in the Fall of 2021, I switched my primary teaching from MCB 450 to MCB 354. MCB 354 is a large undergraduate class taught in both Fall and Spring semesters. It is co-taught with a second Professor and is coordinated by Ms. Melissa Reedy (previously Alejandra Stenger) in the MCB Undergraduate Instructional Program Office.

I have also taught the "MCB Honors Discussion (MCB 297)" course to undergraduate students. In this class, I incorporate primary peer-reviewed literature and cutting-edge review articles to facilitate higher-level learning so that the students can apply their understanding of basic concepts and develop new hypotheses about how chemical and biological systems work under normal and disease settings.

As a head of an active research lab, I have graduate and undergraduate students who are enrolled in courses for laboratory work. For MCB majors, the course is MCB 290 (Individual Topics), and for Biochemistry majors, it is BIOC290. Undergraduates who do a senior thesis enroll in BIOC 492. Graduate students who have not yet passed their preliminary exams enroll in BIOC 590 (Individual Research), while those who have passed their exam enroll in BIOC 599 (Thesis Research).

1. Descriptive Data

MCB 354: Biochemical & Biophysical Basis of Life (2021-2022)
- Offered every Fall and Spring semester
- I am a primary instructor, and I teach the second half of the course
- Class enrollment = 250-300 in the Fall semester and 100-150 in the Spring semester
- I give approximately 42 lectures per year

MCB 450: Introductory Biochemistry (2019-2020)
- Offered every Fall and Spring semester
- I was a primary instructor, and I taught the second half of the course
- Class enrollment = 250-300
- I gave approximately 36 lecture hours per year

MCB 297: MCB Honors Discussion (2019-2021)
- Offered every Fall and Spring semester
- I was the primary instructor
- Class enrollment = 15-20
- I had 14 contact hours per year

From UIUC Division of Management Services:

2. Supervision of Graduate Students

PRIOR TO LAST PROMOTION

1. DR. AMRUTA BHATE (2012-2017)

Thesis Title: Identification of a conserved Alternative mRNA Splicing program that supports hepatic growth and maturation during development and regeneration.
After leaving my laboratory: Post-doc Fellow at Stanford School of Medicine, in the laboratory of Dr. Jin Billy Li
Distinctions under my mentorship: ● Recipient of the 2018 Biochemistry Trust of Urbana Best Thesis Award ● Recipient of the 2016 Herbert E. Carter Pre-doctoral Fellowship ● Won the 2016 MCB Graduate Student Association Research Image Award ● Won "First Prize Poster Award" at the 2015 Annual RNA society meeting ● Won "Best Oral Presentation Award" at the 2015 Annual UIUC-COM Research Day ● Oral presentation at the 2015 Annual Rustbelt RNA meeting ● Won "2nd Prize Poster Award" at the 2014 Annual UIUC-COM Research Day.

SINCE LAST PROMOTION, I HAVE GRADUATED FOUR PH.D. STUDENTS.

1. DR. WAQAR ARIF (2013-2019)
Thesis Title: Elucidating the role of splicing factor SRSF1 in liver physiology.
After leaving my laboratory: Resident in Pathology, Johns Hopkins University, Baltimore, MD
Distinctions under my mentorship: ● Recipient of the 2021 Biochemistry Trust of Urbana Best Thesis Award ● Won the 2019 Colin A Wraight Award for the Best Research Paper in Biochemistry ● Oral presentation at the 2018 Annual UIUC-COM Research Day ● Won "Excellent Poster Award" at the 2017 Annual Rustbelt RNA meeting ● Oral presentation at the 2017 AASLD meeting ● Oral presentation at the 2017 OMICS Nanotechnology for Cancer Symposium ● Recipient of the NRSA F30 Pre-doctoral Fellowship from NIH/NIDDK (2016-2020) ● Recipient of the 2016 UIUC Biochemistry Department Conference Travel Award ● Oral presentation at the 2015 Annual UIUC-COM Research Day ● Recipient of the 2015 Hazel I. Craig Fellowship, UIUC-COM ● Recipient of the 2013 UIUC Ullyot Graduate Fellowship.

2. DR. JOSEPH SEIMETZ (2014-2021)
Thesis Title: Post-transcriptional regulation of poly(A) binding proteins direct multiple facets of cardiac development and hypertrophy.
After leaving my laboratory: Director of R&D, RICOVR Healthcare, Princeton, NJ
Distinctions under my mentorship: ● Oral presentation at the 2019 Annual Rustbelt RNA meeting ● Recipient of the American Heart Association Predoctoral Fellowship (2017-2019) ● Appointed to NIH Chemical Biology Interface Training Program (2015-2017) ● Recipient of the 2017, 2016 UIUC Biochemistry Department Conference Travel Award ● Recipient of 2014 UIUC Ullyot Graduate Fellowship.

3. DR. SUSHANT BANGRU (2015-2021)
Thesis Title: Elucidating gene regulatory mechanisms of postnatal maturation and regeneration in the mammalian liver.
After leaving my laboratory: Post-doc Fellow at Duke University College of Medicine, in the laboratories of Drs. Ken Poss and Stefano Di Talia
Distinctions under my mentorship: ● Oral presentation at the 2021 CSHL Eukaryotic mRNA Processing Meeting ● Awarded 2020-21 Scott Dissertation Completion Fellowship, UIUC Graduate College ● Won the 2019 Colin A Wraight Award for the Best Research Paper in Biochemistry ● Oral presentation at the 2019 Keystone RNA-Protein Interactions meeting ● Won "Excellent Poster Award" at the 2018 Annual Rustbelt RNA meeting ● Appointed to NIH Tissue Microenvironment (TiMe) Training Program (2018-2020) ● Oral presentation at the 2018 Annual TiMe Symposium ● Recipient of the 2017 UIUC Graduate College Conference Travel

Award ● Oral presentation at the 2017 Annual Rustbelt RNA meeting ● Recipient of 2017, 2016 UIUC Biochemistry Department Conference Travel Award ● Recipient of the 2015 UIUC Ullyot Graduate Fellowship.

4. DR. ULLAS V. CHEMBAZHI (2016-2023)
   Thesis Title: Elucidating gene regulatory mechanisms of postnatal maturation and regeneration in the mammalian liver.
   After leaving my laboratory: Post-doc Fellow at the University of Pennsylvania, in the laboratory of Dr. Edward Morrissey
   Distinctions under my mentorship: ● Recipient of the 2023 Biochemistry Trust of Urbana Best Thesis Award ● Oral presentation at the 2023 GRC on Alcohol-Induced End Organ Diseases ● Oral presentation at the 2022 FASEB Liver Biology Conference ● Won the "Outstanding poster prize" at the 2022 Annual RNA Society meeting ● Won the "Outstanding poster award" at the Big Ten Academic Alliance Lipids Symposium ● Won the 2021 Colin A. Wraight award for the Best Research Paper in Biochemistry ● Oral presentation at the 2021 Annual Rustbelt RNA meeting ● Recipient of the 2019 Herbert E. Carter Pre-doctoral Fellowship

CURRENTLY, I AM SUPERVISING SIX GRADUATE STUDENTS.

1. ZAC DEWALD (2017-present)
   Distinctions under my mentorship: ● Selected to attend the 2023 Young Investigator Workshop on "*Foundations for the Future: Developing leaders to tackle challenges in myotonic dystrophy"* ● Oral presentation at the 2022 Annual Rustbelt RNA meeting ● Won "Excellent poster award" at the 2021 Rustbelt RNA meeting (*virtual*) ● Oral presentation at the 2021 Annual RNA society meeting (*virtual*) ● Passed PhD Prelim/qualifying exam in 2019 ● Appointed to NIH Chemical Biology Interface Training Program, 2018-2019

2. NICHOLAS BAKER (2020- present)
   Distinctions under my mentorship: ● Passed the PhD Prelim/qualifying exam in 2022 ● Appointed to NIH Chemical Biology Interface Training Program, 2021-2023

3. SUBHASHIS NATUA (2021-present)
   Distinctions under my mentorship: ● Recipient of the 2023 Michael A. Recny Graduate Fellowship in Biochemistry ● Passed PhD Prelim/qualifying exam in 2023 ● Won the "Outstanding poster prize" at the 2022 Annual Rustbelt RNA meeting ● Won the "Outstanding poster prize" at the 2022 ISMB "iRNA—COSI" meeting.

4. JESSICA DERHAM (2021-present)
   Distinctions under my mentorship: ● Passed PhD Prelim/qualifying exam in 2023

5. DIPTATANU DAS (2022-present)

6. ADESANYA OLUWAFOLAJIMI (2022-present)

GRADUATE STUDENT THESIS COMMITTEE MEMBER

1. RICHARD TRAVERS (Biochemistry, PhD with Jim Morrissey: 2015)
2. DANIEL HARRIS (Biochemistry, PhD with Dave Kranz: 2016)
3. Long Minh Luu (Chemistry, PhD with Steve Zimmerman: 2016)
4. ZHONGYI LI (Biochemistry, PhD with Susan Martinis: 2016)
5. ZIQIAO DING (Biochemistry, PhD with Bob Gennis: 2017)
6. MAHADIEH JADALIHA (CDB, PhD with KV Prasanth: 2018)
7. JUYEON LEE (Chemistry, PhD with Steve Zimmerman: 2018)

8. VISHNU MURTHY (Biochemistry, PhD with Kai Zhang: 2019)
9. PAYEL MONDAL (Biochemistry, PhD with Kai Zhang: 2020)
10. XINGCHEN DONG (Biochemistry, PhD. with Lin Feng Chen: 2020)
11. QINYU SUN (CDB, PhD with KV Prasanth: 2020)
12. QINYU HAO (CDB, PhD with KV Prasanth: 2021)
13. MAXWELL BAYMILLER (Biochemistry, PhD with Susan Martinis: 2022)
14. DAYU ZHANG (Biochemistry, PhD with Susan Martinis: 2022)
15. ANDREW BUECHLER (Biochemistry, PhD with Susan Martinis: 2022)
16. DARJAN DURAKI (Biochemistry, PhD with Dave Shapiro: 2022)
17. SARAH GARDNER (Biochemistry, PhD with Jeff Chan: 2023)
18. NIKITA MODI (Biochemistry, PhD. with Lin Feng Chen: 2023)
19. YIHENG PENG (Comparative Biosciences, Huanyu Qiao Lab: Current)
20. PRADEEP KUMAR (CDB, Belmont Lab: Current)
21. HUAXUN FAN (Biochemistry, Kai Zhang Lab: Current)
22. ANISH BOSE (CDB, Smith-Bolton Lab: Current)
23. AATIQA NAWAZ (CDB, Ceman Lab: Current)
24. AMIE LANZENDORF (Chemistry, Zimmerman Lab: Current)
25. SIJIE CHEN (Comparative Biosciences, Jing Yang Lab: Current)
26. MASHIAT CHOWDHURY (Biochemistry, Hong Jin Lab: Current)
27. HINA ZHOU (Biochemistry, Van der Donk Lab: Current)
28. CHRIS HAWK (Biochemistry, Hong Jin Lab: Current)

GRADUATE STUDENT QUALIFICATION/PRELIM EXAM COMMITTEE MEMBER

1. MAHADIEH JADALIHA (CDB, KV Prasanth Lab: 2013)
2. JESSIE PEH (Chemistry, Paul Hergenrother Lab: 2013)
3. LONG MINH LUU (Chemistry, Steve Zimmerman Lab: 2013)
4. DANIEL T HARRIS (Biochemistry, Dave Kranz Lab: 2013)
5. ZIQIAO DING (Biochemistry, Bob Gennis Lab: 2013)
6. QINYU HAO (CDB, KV Prasanth Lab: 2014)
7. QINYU SUN (CDB, KV Prasanth Lab: 2014)
8. XIAOBIN ZHENG (Biochemistry, Dave Shapiro Lab: 2014)
9. JULLIAN REED (Biochemistry, Yi Lu Lab: 2014)
10. VISHNU MURTHY (Biochemistry, Kai Zhang Lab: 2014)
11. XINYU KONG (Biochemistry, Deborah Leckband Lab: 2015)
12. DILLON COGAN (Biochemistry, Satish Nair Lab: 2015)
13. DENNIS PIEHL (Biochemistry, Chad Reinstra Lab: 2015)
14. JEREMIAH HEREDIA (Biochemistry, Erik Procko Lab: 2016)
15. PAYEL MONDAL (Biochemistry, Kai Zhang Lab: 2017)
16. SUN HAO (Biochemistry, Jim Morrissey Lab: 2017)
17. LAWRENCE WANG (Biochemistry, Dave Shapiro Lab: 2017)
18. DARJAN DURAKI (Biochemistry, Dave Shapiro Lab: 2018)
19. QI ZOU (Biochemistry, John Cronan Lab: 2018)
20. SARAH GARDNER (Biochemistry, Jeffrey Chan Lab: 2019)
21. XINYI LI (Biochemistry, Martin Burke Lab: 2019)
22. SHUKUN YANG (Biochemistry, Scott Silverman Lab: 2019)
23. CHRISTINE DEVLIN (Biochemistry, Erik Procko Lab: 2020)
24. HAOQIAN LAINEY LIANG (Biochemistry, Wilfred Vander Donk Lab: 2020)
25. GRAEME LINDSEY (Biochemistry, Erik Procko Lab: 2021)
26. YUBO ARTHUR ZHOU (Biochemistry, Deborah Leckband Lab: 2021)
27. GILBERTO PADRON (Biochemistry, Joe Sanfillipo Lab: 2022)

28. MUSARRET JABEEN (Biochemistry, David Shapiro Lab: 2022)

LABORATORY ROTATION STUDENTS

1. QINYU HAO (Fall, 2013)
2. OMID GHOLAMALAMDARI (Fall, 2013)
3. JOHN KHAMO (Fall, 2014)
4. YO-CHUEN LIN (Fall, 2014)
5. JEREMIAH HEREDIA (Fall, 2014)
6. MARA LIVEZEY (Fall, 2014)
7. HANNA ERICKSON (Fall, 2013)
8. ROSA MEJIA-SANCHEZ (Fall, 2015)
9. MEGHAN DIEFENBACHER (Fall, 2015)
10. ANDREW BUECHLER (Fall, 2015)
11. FABIENNE BIRKLE (Fall, 2016)
12. KEVIN GILL (Fall, 2016)
13. GABRIELA HERNANDEZ (Fall, 2016)
14. MASHIAT CHOWDHURY (Fall, 2017)
15. JESUS MORANO (Fall, 2018)
16. ADAM NELSON (Fall, 2018)
17. NEHA CHIVUKULA (Fall, 2018)
18. JUNYA LI (Fall, 2018)
19. ELIZABETH THAYER (Fall, 2020)
20. ANDREW RILEY (Fall, 2020)
21. SOUNAK SAHA (Fall, 2021)
22. SIHANG ZHOU (Fall, 2021)
23. KATRINE DAILEY (Fall, 2022)
24. PALLOB BARAI (Fall, 2022)
25. ORAYA ZINDER (Fall, 2022)

3. Supervision of Undergraduate Students

PRIOR TO LAST PROMOTION

1. DARREN PARKER (2013-2014)
   After leaving my laboratory: Graduate student at MIT, in the Lab of Dr. Gene-Wei Li
   Distinctions under my mentorship: ● Awarded the 2014 “Best Undergraduate Thesis in Biochemistry” with highest distinction ● Recipient of the 2013 William T. and Lynn Jackson Biochemistry Summer Research Fellowship.
2. KEVIN YUM (2014-2015)
   After leaving my laboratory: MD student at Southern Illinois University, Springfield
   Distinctions under my mentorship: ● Awarded the 2015 “Best Undergraduate Thesis in Biochemistry” with highest distinction ● Recipient of the 2014 James Scholarship – Preble Research Award ● Won "Best Oral Presentation Award" at the 2015 Annual UIUC Undergraduate Research Symposium.
3. EDREES H. RASHAN (2014-2016)
   After leaving my laboratory: Graduate student at the University of Wisconsin, in the laboratory of Dr. David J. Pagliarini
   Distinctions under my mentorship: ● Awarded the 2016 “Best Undergraduate Thesis in Biochemistry” with highest distinction ● Won " First Prize Poster Award " at the 2016 Annual UIUC Undergraduate Research Symposium ● Recipient of the 2015 MCB

Summer Research Fellowship ● Recipient of the 2015 UIUC Office of Undergraduate Research Conference Travel Award ● Recipient of the 2014 William T. and Lynn Jackson Biochemistry Summer Research Fellowship.

4. COLE LEWIS (2013-2017)
After leaving my laboratory: Graduate student at Yale University, in the laboratory of Dr. Wendy Gilbert
Distinctions under my mentorship: ● Won "Best Oral Presentation Award" at the 2016 Annual Rustbelt RNA meeting ● Awarded Distinction with Thesis Research in MCB Recipient of 2015, 2014 MCB Summer Research Fellowship ● Recipient of the 2014 James Scholarship – Preble Research Award.

5. GANDHAR K. DATAR (2014-2017)
After leaving my laboratory: MD/PhD student at Baylor College of Medicine, in the laboratory of Dr. Margaret Goodell
Distinctions under my mentorship: ● Awarded Highest Distinction with Thesis Research in MCB ● Recipient of the 2015 MCB Summer Research Fellowship ● Recipient of the 2015 James Scholarship – Preble Research Award

6. DAVID RHODE (2015-2017)
After leaving my laboratory: MD student at the University of Illinois, Chicago
Distinctions under my mentorship: ● Recipient of the 2017, 2016 James Scholarship – Preble Research Award ● Recipient of the 2016 MCB Summer Research Fellowship

7. JEFFREY RAJKUMAR (2015-2017)
After leaving my laboratory: MD student at the University of Illinois, Chicago
Distinctions under my mentorship: ● Recipient of the 2016 MCB Summer Research Fellowship

8. JACKIE CHEN (2016-2018)
After leaving my laboratory: Graduate student at the University of Wisconsin, in the laboratory of Dr. Srivatsan Raman
Distinctions under my mentorship: ● Awarded the 2018 "Best Undergraduate Thesis in Biochemistry" with highest distinction ● Won "Outstanding Poster Award" at the 2017 Annual Rustbelt RNA meeting ● Recipient of the 2017 William T. and Lynn Jackson Biochemistry Summer Research Fellowship.

SINCE LAST PROMOTION

1. EMELIA SMITH (2017-2019)
After leaving my laboratory: Graduate student at the University of Colorado, in the laboratory of Dr. Heide Ford
Distinctions under my mentorship: ● Recipient of the 2018 MCB Summer Research Fellowship ● Awarded High Distinction with Thesis Research in MCB.

2. FEIKEI LIN (2017-2019)
After leaving my laboratory: Graduate student at McGill University, in the laboratory of Dr. Mark Brandon
Distinctions under my mentorship: ● Awarded Highest Distinction with Thesis Research in MCB ● Recipient of 2018 and 2017 MCB Summer Research Fellowship.

3. MIRANDA GURRA (2017-2019)
After leaving my laboratory: Master's student at Northwestern University, Chicago

Distinctions under my mentorship: ● Best Image of Research Award at the 2019 Annual UIUC Undergraduate Research Symposium ● Selected for Study Abroad LAS-MCB in Stockholm Program.

4. LUKE DETLOFF (2017-2018)
After leaving my laboratory: MD student at RUSH Medical School, Chicago
Distinctions under my mentorship: ● Recipient of the 2017 MCB Summer Research Fellowship ● Recipient of the 2017 James Scholarship – Preble Research Award.

5. KRISTINA SLABY (2017-2019)
After leaving my laboratory: Master's student at UIUC
Distinctions under my mentorship: ● Recipient of the 2019 MCB Summer Research Fellowship ● Oral presentation at the 2019 Annual UIUC Undergraduate Research Symposium ● Recipient of the 2018 MCB Summer Research Fellowship.

6. ANDREW GUPTA (2018-2020)
After leaving my laboratory: Breakthrough Teaching Fellow, Boston College.
Distinctions under my mentorship: ● Awarded the 2020 "Best Undergraduate Thesis in Biochemistry" with highest distinction ● Won "Best Oral Presentation Award" at the 2019 Annual Rustbelt RNA meeting ● Recipient of the 2019 Jenner Family Summer Research Fellowship ● Honorable Mention for poster presentation at the MCB Undergraduate Research Symposium ● Oral presentation at the 2019 Annual UIUC Undergraduate Research Symposium.

7. CODY LUND (2018-2020)
After leaving my laboratory: MD student at the University of Illinois College of Medicine
Distinctions under my mentorship: ● Recipient of the 2019 MCB Summer Fellowship.

8. KATIE TOOHILL (2019-2021)
After leaving my laboratory: Graduate student at the University of Pennsylvania, Philadelphia, in the laboratory of Dr. Andrew Modzelewski
Distinctions under my mentorship: ● Presented poster at the 2020 Annual Rustbelt RNA meeting (*virtual*) ● Recipient of the 2020 Biochemistry Summer Fellowship

9. SARAH MATATOV (2019-2022)
After leaving my laboratory: MD/PhD student at Northwestern University, Chicago
Distinctions under my mentorship: ● Awarded the 2022 Michael Glaser Undergraduate Service Award in Biochemistry ● Awarded the 2022 "Jackson Best Undergraduate Thesis in Biochemistry" with highest distinction ● Recipient of the 2021 Mayo Illinois Alliance Summer Research Fellowship ● Presented poster at the 2021 Annual Rustbelt RNA meeting (*virtual*) ● Recipient of the 2020 Jenner Family Summer Fellowship

10. ABID A. ANWAR (2021-2022)
After leaving my laboratory: MD student at the University of Illinois, Chicago
Distinctions under my mentorship: ● Recipient of the 2022 Mayo Illinois Alliance Summer Research Fellowship

11. JEONGMIN LEE (2022-2023)
After leaving my laboratory: Graduate student at Seoul National University
Distinctions under my mentorship: ● Awarded the 2023 "Outstanding Undergraduate Thesis in Biochemistry" with highest distinction

12. MILAN PATEL (2021-2022)
After leaving my laboratory: Applying to MD programs

13. ISHITA PURWAR (2022-present)
Distinctions under my mentorship: ● Recipient of the 2023 MCB Summer Undergraduate Research Fellowship

14. ESHA KULKARNI (2022-present)

15. TEDDY LOPANSARI (2022-present)

16. POUYA NABIE (2022-present)

4. Other Contributions to Teaching and Learning

a. Curriculum research and development

MCB 354: Modified the course content to include direct links between biochemistry and physiology, pathology, pharmacology, clinical diagnosis, and nutrition.

MCB 450: Updated lectures to highlight interconnections between metabolic pathways.

b. Educational Service

Provided annual guest lecture with Prof. Robert Switzer to the Biochemistry Freshman Seminar class (BIOC 190), where we presented our perspectives and discussed different types, stages, and requirements of an academic career.

c. Informal student mentoring and support

Since last promotion, I have advised and mentored >25 MCB/Biochemistry graduate and undergraduate students on grant writing, making scientific presentations, applying to graduate/professional schools, and building academic/industry careers.

d. Other

TRAINING OF POSTDOCTORAL FELLOWS

1. DR. CHAITALI MISRA (2014-2022)
After leaving my laboratory: Senior Scientist, Takeda Pharmaceuticals, San Diego, CA.
Distinctions under my mentorship: ● Recipient of the Department of Defense Discovery Award (2019-2021) ● Won "Best Oral Presentation Award" at the 2018 Annual Rustbelt RNA meeting ● Oral presentation at the 2017 IDMC meeting; Oral presentation at the 2016 Weinstein Cardiovascular Conference ● Awarded "Best Oral Presentation" at the 2016 Annual UIUC-COM Research Day ● Recipient of the American Heart Association Post-doctoral Fellowship (2016-2018)

2. DR. BO ZHANG (2017-2021)
After leaving my laboratory: Taking time off to be with family.
Distinctions under my mentorship: ● Recipient of the American Heart Association Post-doctoral Fellowship (2021-2023).

3. DR. SANDIP CHORGHADE (2013-2017; 2021-present)
Distinctions under my mentorship: ● Oral presentation at the 2022 Annual RNA Society Meeting ● Oral presentation at the 2015 Annual UIUC-COM Research Day ● Oral presentation at the 2013 Annual Rustbelt RNA meeting.

HOSTING INDO-US KHORANA UNDERGRADUATE SUMMER RESEARCH FELLOW

1. MR. SUBHASHIS NATUA (Summer 2019)
   Current position: Graduate student at the University of Illinois, Urbana-Champaign.

OFFERING HIGH SCHOOL STUDENT RESEARCH INTERNSHIPS

1. MS. UMA BHOSALE (researcHStart fellow, Summer 2018)
2. MS. NEHA HEBBAR (researcHStart fellow, Summer 2019)
3. MS. ANUPROVA D. BHOWMIK (University High School, Spring 2023)

IV. SERVICE (PUBLIC, PROFESSIONAL/DISCIPLINARY, AND UNIVERSITY)

A. Summary of Service

Since last promotion, I have served on eight different committees within the Department, School, and College. My roles have included advising the SMCB director on future research directions, identifying key areas for strategic investments, co-chairing faculty searches, junior faculty mentoring and advising, graduate student admissions, as well as selecting students for Chemical Biology Interface (CBI) training fellowships. In addition, I have served as the departmental representative for the MCB Diversity, Equity, and Inclusiveness (DEI) and Animal Care committees. I am also active at the Professional Society and disciplinary levels, serving as a steering committee member for the Rustbelt RNA meeting, chairing scientific sessions at various national/international RNA meetings, serving as *ad hoc* reviewer for national/international funding agencies, and more recently, being elected to serve as a future Co-Chair for the Gordon Research Conference on Posttranscriptional gene regulation.

1. Public Engagement, Outreach, and/or Extension.

- Led tours for admitted undergraduate students and their families through my laboratory, presented information on my research program, and described the opportunities for undergraduates to participate in research on the UIUC campus. My graduate student and/or undergraduate students gave 15-20 min presentations to these students.
- Led tours of my laboratory and discussed of our ongoing research with high school juniors and seniors. My graduate students and/or undergraduate students give 15-20 min presentations to the students.
- Provided opportunities for high school students to conduct summer research in my laboratory.
- Fundraiser and Research Advocate for the Muscular Dystrophy Association, Illinois Chapter.
- Served as Faculty Chairperson, IGB-Genome Day at the Orpheum Museum, Champaign, IL
- Coordinated annual "Being a Biologist" workshop for Agora Week, University High School Urbana, IL
- Served as Panelist/guest speaker for the Patient-Clinician-Researcher forum, Myotonic Dystrophy Foundation (MDF) Conference

2. Service to Professional and/or Disciplinary Societies or Associations.

2019-present *Ad hoc* reviewer, funding agencies: *Japan-Israel Scientific Research Cooperation, Israel; Association Française contre les Myopathies, France; UIUC Campus Research Board, USA; KCALSI Patton Trust Research*

	Program, USA; American Heart Association, USA; Scottish Clinical Academic Training Fellowship Scheme, Scotland; Prinses Beatrix Spierfonds, Netherlands; Graduate Women in Science Foundation, USA; Biotechnology and Biological Sciences Research Council (BBSRC), UK; Department of Defense (CDMRP), USA; National Institutes of Health, USA; National Science Foundation, USA; Medical Research Council (MRC), UK; Deutsche Forschungsgemeinschaft (DFG), German Research Foundation, DE
2019-present	Invited reviewer, scientific journals: *Science, Nature, eLIFE, Nature Medicine, Nature Structural and Molecular Biology, Nature Metabolism, Proceedings of the National Academy of Sciences, Nature Communications, Science Advances, Molecular Cell, Developmental Cell, Cell Reports, Journal of Clinical Investigation, Genome Research, Nucleic Acids Research, PLoS Genetics, Genome Biology, Journal of Biological Chemistry, Molecular Cell Biology, RNA, Human Molecular Genetics, Scientific Reports*
2019-present	Career Advisor on Applying for Academic Jobs, RNA Society Meetings
2019-present	Career Advisor on Applying, Interviewing, and Negotiating for Faculty or Postdoctoral Positions, CSHL mRNA Processing Meetings
2019-present	Poster Judge, Annual Rustbelt RNA Meeting
2020	Elected Member, Rustbelt RNA Meeting Steering Committee (3year term)
2021	Session Chair, Eukaryotic mRNA processing meeting, Cold Spring Harbor, NY (virtual).
2022	Session Chair, Annual RNA Society Meeting, Boulder, CO.
2023	Tenure and promotion letter writer for the Faculty of Medicine, University of Pittsburgh.

3. <u>University and/or Campus Service</u>.

SCHOOL OF MOLECULAR AND CELL BIOLOGY

2019-present	Member, MCB Strategic Advisory Committee
2019-present	Steering Committee Member, Chemical Biology Interface (CBI) Training Program
2019-present	Biochemistry Department Representative, Animal Care Committee
2019-present	Faculty Advisor, Biochemistry Undergraduate students
2019-present	Participant, MCB Faculty Recruitment
2019-present	Graduate Student Admissions Recruitment
2019-20	Member, W.J. Rutter Chair in Biochemistry Search Committee
2020-22	Junior Faculty Mentor and Advisor
2020-present	Service and teaching evaluations of junior faculty in Biochemistry
2021-present	Biochemistry representative, MCB Diversity, Equity, and Inclusiveness (DEI) Committee
2021-22	Member, Cancer Biology Search Committee – recruited Dr. Kevin Van Bortle
2022-23	Co-Chair, RNA Biology Search Committee – recruited Dr. Yan Zhang and Dr. Boxuan Zhao

COLLEGE OF LIBERAL ARTS AND SCIENCE

2019-present	Reviewer, UIUC Pew Biomedical Scholars program
2019-present	Campus Security Authority (CSA), Clery act
2019-present	*Ad hoc* Reviewer University of Illinois Research Board
2020-present	Reviewer, UIUC Searle Scholars program

Updated on 10/10/2023.

CHU-YOUNG KIM

600 South Mathews Avenue
417 Roger Adams Laboratory, MC-712
Urbana, IL 61801, USA
E-mail: chuyoung@illinois.edu

EDUCATION

2001	Ph.D. in Chemistry University of Pennsylvania, Philadelphia, PA Advisor: David W. Christianson
1998	M.S.E. in Bioengineering University of Pennsylvania, Philadelphia, PA
1996	B.A. in Chemistry Cornell University, Ithaca, NY Advisors: Roald Hoffmann, John E. McMurry

PROFESSIONAL APPOINTMENTS

2023–present	Professor Department of Biochemistry, University of Illinois Urbana-Champaign
2016–2023	Associate Professor; Professor Department of Chemistry and Biochemistry, The University of Texas at El Paso
2006–2016	Assistant Professor; Associate Professor Department of Biological Sciences, National University of Singapore
2001–2005	Postdoctoral Associate Department of Chemistry and Chemical Engineering, Stanford University Advisor: Chaitan Khosla

OTHER APPOINTMENTS

2021–2022	Visiting Scientist, Stanford-SLAC Cryo-EM Center

HONORS

2022	Ralph and Kathleen Ponce de Leon Endowed Professorship, The University of Texas at El Paso
2016	University of Texas STARs Award, The University of Texas System
2014, 2013	Top Publication Award, National University of Singapore
2012, 2011	Inspiring Research Mentor Award, National University of Singapore
2012, 2006	Young Scientist Award, National University of Singapore

PUBLICATIONS

Research articles

1. Qian Wang, Ning Liu, Yaming Deng, Yuze Guan, Hongli Xiao, Tara A. Nitka, Hui Yang, Anju Yadav, Lela Vukovic, Irimpan I. Mathews, Xi Chen, Chu-Young Kim. Triepoxide formation by a flavin-dependent monooxygenase in monensin biosynthesis. *Nature Communications* 14, 6273 (2023).
2. Priyanka Gade, Amanda Erlandson, Anwar Ullah, Xi Chen, Irimpan I. Mathews, Paola E. Mera, Chu-Young Kim. Structural and functional analyses of the echinomycin resistance conferring protein Ecm16 from *Streptomyces lasalocidi*. *Scientific Reports* 13, 7980 (2023).
3. Amanda Erlandson, Priyanka Gade, Inoka P. Menikpurage, Chu-Young Kim, Paola E. Mera. The UvrA-like protein Ecm16 requires ATPase activity to render resistance against echinomycin. *Molecular Microbiology* 117, 1434 (2022).
4. Saket R. Bagde, Irimpan I. Mathews, J. Christopher Fromme, Chu-Young Kim. Modular polyketide synthase contains two reaction chambers that operate asynchronously. *Science* 374, 723 (2021).
5. Ying Gao, Yulu Hu, Qimeng Liu, Xiaokang Li, Xinming Li, Chu-Young Kim, Tony D. James, Jian Li, Xi Chen, Yuan Guo. Two-dimensional design strategy to construct smart fluorescent probes for the precise tracking of senescence. *Angewandte Chemie International Edition* 60, 10756 (2021).
6. Xiaokang Li, Wenjing Qiu, Jinwen Li, Xi Chen, Yulu Hu, Ying Gao, Donglei Shi, Xinming Li, Huiling Lin, Huiling Lin, Zelan Hu, Guoqiang Dong, Chunquan Sheng, Bei Jiang, Conglong Xia, Chu-Young Kim, Yuan Guo, Jian Li. First-generation species-selective chemical probes for fluorescence imaging of human senescence-associated β-galactosidase. *Chemical Science* 11, 7292 (2020).
7. Zilong Wang, Saket R. Bagde, Gerardo Zavala, Tsutomu Matsui, Xi Chen, Chu-Young Kim. De novo design and implementation of a tandem acyl carrier protein domain in a type I modular polyketide synthase. *ACS Chemical Biology* 13, 3072 (2018).
8. Thanh-Binh Nguyen, Priya Jayaraman, Elin Bergseng, M. S. Madhusudhan, Chu-Young Kim, Ludvig Sollid. Unraveling the structural basis for the unusually rich association of human leukocyte antigen DQ2.5 with class-II-associated invariant chain peptides. *Journal of Biological Chemistry* 292, 9218 (2017).
9. Fong T. Wong, Kinya Hotta, Xi Chen, Minyi Fang, Kenji Watanabe, Chu-Young Kim. Epoxide hydrolase–lasalocid A structure provides mechanistic insight into polyether natural product biosynthesis. *Journal of the American Chemical Society* 137, 86 (2015).
10. Kinya Hotta, Ronan M. Keegan, Soumya Ranganathan, Minyi Fang, Jaclyn Bibby, Martyn D. Winn, Michio Sato, Mingzhu Lian, Kenji Watanabe, Daniel J. Rigden, Chu-Young Kim. Conversion of a disulfide bond to a thioacetal group during echinomycin biosynthesis. *Angewandte Chemie International Edition* 53, 824 (2014).
11. Sathya Dev Unudurthi, Kinya Hotta, Chu-Young Kim. Engineering the Polyproline II Propensity of a class II major histocompatibility complex ligand peptide. *ACS Chemical Biology* 8, 2382 (2013).

12. Kinya Hotta, Xi Chen, Robert S. Paton, Atsushi Minami, Hao Li, Kunchithapadam Swaminathan, Irimpan I. Mathews, Kenji Watanabe, Hideaki Oikawa, Kendall N. Houk, Chu-Young Kim. Enzymatic catalysis of anti-Baldwin ring-closure in polyether biosynthesis. *Nature* 483, 355 (2012).
13. Stig Tollefsen, Kinya Hotta, Xi Chen, Bjørg Simonsen, Kunchithapadam Swaminathan, Irimpan I. Mathews, Ludvig M. Sollid, Chu-Young Kim. Structural and functional studies of the *trans*-encoded HLA-DQ2.3 (DQA1*03:01/DQB1*02:01) protein molecule. *Journal of Biological Chemistry* 2012, *287*, 13611.
14. Michael Bodd, Chu-Young Kim, Knut E. Lundin, Ludvig M. Sollid. T-cell response to gluten in patients with HLA-DQ2.2 reveals requirement of peptide-MHC stability in celiac disease. *Gastroenterology* 142, 552 (2012).
15. Kinya Hotta, Chu-Young Kim, David T. Fox, Andrew T. Koppisch. Siderophore-mediated iron acquisition in Bacillus anthracis and related strains. *Microbiology* 156, 1918 (2010).
16. Lars-Egil Fallang, Elin Bergseng, Kinya Hotta, Axel Berg-Larsen, Chu-Young Kim, Ludvig M. Sollid. Differences in the risk of celiac disease associated with HLA-DQ2.5 or HLA-DQ2.2 are related to sustained gluten antigen presentation. *Nature Immunology* 10, 1096 (2009).
17. David T. Fox, Kinya Hotta, Chu-Young Kim, Andrew T. Koppisch. The missing link in Petrobactin biosynthesis: AsbF encodes a (-)-3-dehydroshikimate dehydratase. *Biochemistry* 47, 12251 (2008).
18. Andrew T. Koppisch, Kinya Hotta, David T. Fox, Christy E. Ruggiero, Chu-Young Kim, Timothy Sanchez, Srinivas Iyer, Cindy C. Browder, Pat J. Unkefer, Clifford J. Unkefer. Biosynthesis of the 3,4-dihydroxybenzoate moieties of petrobactin by Bacillus anthracis. *Journal of Organic Chemistry* 73, 5759 (2008).
19. Jiang Xia, Elin Bergseng, Burkhard Fleckenstein, Matthew Siegel, Chu-Young Kim, Chaitan Khosla, Ludvig M. Sollid. Cyclic and dimeric gluten peptide analogues inhibiting DQ2-mediated antigen presentation in celiac disease. *Bioorganic & Medicinal Chemistry* 15, 6565 (2007).
20. Yinyan Tang, Alice Y. Chen, Chu-Young Kim, David E. Cane, Chaitan Khosla. Structural and mechanistic analysis of protein interactions in module 3 of the 6-deoxyerythronolide B synthase. *Chemistry & Biology* 14, 931 (2007).
21. Yinyan Tang, Ho Young Lee, Yi Tang, Chu-Young Kim, Irimpan Mathews, Chaitan Khosla. Structural and functional studies on SCO1815: A β-Ketoacyl-acyl carrier protein reductase from *Streptomyces coelicolor* A3(2). *Biochemistry* 45, 14085 (2006).
22. Yinyan Tang, Chu-Young Kim, Irimpan I. Mathews, David E. Cane, Chaitan Khosla. The 2.7-A crystal structure of a 194-kDa homodimeric fragment of the 6-deoxyerythronolide B synthase. *Proceedings of the National Academy of Sciences of the U.S.A.* 103, 11124 (2006).
23. Alice Y. Chen, Nathan A. Schnarr, Chu-Young Kim, David E. Cane, Chaitan Khosla. Extender unit and acyl carrier protein specificity of ketosynthase domains of the 6-deoxyerythronolide B synthase. *Journal of the American Chemical Society* 128, 3067 (2006).

24. Elin Bergseng, Jiang Xia, Chu-Young Kim, Chaitan Khosla, Ludvig M. Sollid. Main chain hydrogen bond interactions in the binding of proline-rich gluten peptides to the celiac disease associated HLA-DQ2 molecule. *Journal of Biological Chemistry* 23, 21791 (2005).
25. Chu-Young Kim, Viktor Y. Alekseyev, Alice Y. Chen, Yinyan Tang, David E. Cane, Chaitan Khosla. Reconstituting modular activity from separated domains of 6-deoxyerythronolide B synthase. *Biochemistry* 43, 13892 (2004).
26. Chu-Young Kim, Hanne Quarsten, Elin Bergseng, Chaitan Khosla, Ludvig M. Sollid. Structural basis for HLA-DQ2 mediated presentation of gluten epitopes in celiac disease. *Proceedings of the National Academy of Sciences of the U.S.A.* 101, 4175 (2004).
27. Vijay M. Krishnamurthy, Brooks R, Bohall, Chu-Young Kim, Demetri T. Moustakas, David W. Christianson, George M. Whitesides. Thermodynamic parameters for the association of fluorinated benzenesulfonamides with bovine carbonic anhydrase II. *Chemistry - An Asian Journal* 2, 94 (2007).
28. Chu-Young Kim, Douglas A. Whittington, Jeanne S. Chang, John Liao, Jesse A. May, David W. Christianson. Structural aspects of isozyme selectivity in the binding of inhibitors to carbonic anhydrases II and IV. *Journal of Medicinal Chemistry* 45, 888 (2002).
29. Bartosz A. Grzybowski, Alexey V. Ishchenko, Chu-Young Kim, George Topalov, Robert Chapman, David W. Christianson, George M. Whitesides, Eugene I. Shakhnovich. Combinatorial computational method gives new picomolar ligands for a known enzyme. *Proceedings of the National Academy of Sciences of the U.S.A.* 99, 1270 (2002).
30. Ryan D. Madder, Chu-Young Kim, Pooja P. Chandra, Jeffrey B. Doyon, Teaster A. Baird Jr., Carol A. Fierke, David W. Christianson, Judith G. Voet, Ahamindra Jain. Twisted amides inferred from QSAR analysis of hydrophobicity and electronic effects on the affinity of fluoroaromatic inhibitors of carbonic anhydrase. *Journal of Organic Chemistry* 67, 582 (2002).
31. Chu-Young Kim, Pooja P. Chandra. Ahamindra Jain, David W. Christianson. Fluoroaromatic-fluoroaromatic interactions between inhibitors bound in the crystal lattice of human carbonic anhydrase II. *Journal of the American Chemical Society* 123, 9620 (2001).
32. Chu-Young Kim, Jeanne S. Chang, Jeffrey B. Doyon, Teaster T. Baird Jr., Carol A. Fierke, Ahamindra Jain, David W. Christianson. Contribution of fluorine to protein-ligand affinity in the binding of fluoroaromatic inhibitors to carbonic anhydrase II. *Journal of the American Chemical Society* 122, 12125 (2000).
33. Jeffrey B. Doyon, Elizabeth A. M. Hansen, Chu-Young Kim, Jeanne S. Chang, David W. Christianson, Ryan D. Madder, Judith G. Voet, Teaster A. Baird Jr., Carol A. Fierke, Ahamindra Jain. Linear free energy relationships implicate three modes of binding for fluoroaromatic inhibitors to a mutant of carbonic anhydrase II. *Organic Letters* 2, 1189 (2000).

Review articles

1. Suttinee Poolsup, Chu-Young Kim. Therapeutic applications of synthetic nucleic acid aptamers. *Current Opinion in Biotechnology* 48, 180 (2017).

Book chapter

1. Chu-Young Kim. Three-dimensional structure of megasynthases - mammalian fatty acid synthase, type I modular polyketide synthase, and nonribosomal peptide synthetase. In: Hung-Wen (Ben) Liu and Tadhg P. Begley (eds.) *Comprehensive Natural Products III: Chemistry and Biology*, vol.[6], pp. 318-335. UK: Elsevier (2020).

Article recommendations

1. Kim C: Faculty Opinions Recommendation of [Gestaut D et al., Cell 2022 185(25):4770-4787.e20]. In Faculty Opinions, 16 Dec 2022; 10.3410/f.742444735.793597081
2. Kim C: Faculty Opinions Recommendation of [Wicky BIM et al., Science 2022 378(6615):56-61]. In Faculty Opinions, 23 Nov 2022; 10.3410/f.742323418.793596626
3. Chu-Young Kim. Faculty Opinions Recommendation of [Parker EN et al., ACS Cent Sci 2022 8(8): 1145-1158]. *Faculty Opinions*, 06 Sep 2022; 10.3410/f.742299671.793595147
4. Chu-Young Kim. Faculty Opinions Recommendation of [Kojima K et al., Org Lett 2020 22(11):4217-4221]. *Faculty Opinions*, 22 Aug 2022; 10.3410/f.737912605.793594855
5. Chu-Young Kim. Recommendation of [Stsiapanava A et al., Nat Struct Mol Biol 2022 29(3):190-193]. *Faculty Opinions*, 25 Mar 2022; 10.3410/f.741809081.793592089
6. Chu-Young Kim. Recommendation of [Borsellini A et al., Nat Struct Mol Biol 2022 29(1):59-66]. *Faculty Opinions*, 08 Feb 2022; 10.3410/f.741447316.793591396
7. Chu-Young Kim. Recommendation of [Kim LJ et al., Nat Chem Biol 2021 17(8):872-877]. *Faculty Opinions*, 26 Oct 2021; 10.3410/f.740541613.793589089
8. Chu-Young Kim. Recommendation of [de la Mora E et al., Proc Natl Acad Sci USA 2020 117(8):4142-4151]. *Faculty Opinions*, 09 Aug 2021; 10.3410/f.737364182.793587321
9. Chu-Young Kim. Recommendation of [Sikora M et al., PLoS Comput Biol 2021 17(4):e1008790]. *Faculty Opinions*, 10 May 2021; 10.3410/f.739862732.793585401
10. Chu-Young Kim. Recommendation of [Wilson MR et al., Science 2019 363(6428)]. *Faculty Opinions*, 21 Feb 2019; 10.3410/f.735089517.793556577
11. Chu-Young Kim. Recommendation of [Jarmoskaite I et al., elife 2020 9]. *Faculty Opinion*s, 22 Jan 2021; 10.3410/f.738447994.793582105
12. Chu-Young Kim. Recommendation of [Edwards MJ et al., J Biol Chem 2020 295(45):15174-15182]. *Faculty Opinions*, 23 Nov 2020; 10.3410/f.738650481.793580391
13. Chu-Young Kim. Recommendation of [Ruijtenberg S et al., Nat Struct Mol Biol 2020 27(9):790-801]. *Faculty Opinions*, 05 Oct 2020; 10.3410/f.738317416.793578795
14. Chu-Young Kim. Recommendation of [Kneller DW et al., Nat Commun 2020 11(1):3202]. *Faculty Opinions*, 29 Jul 2020; 10.3410/f.738192970.793577108
15. Chu-Young Kim. Recommendation of [Zargar A et al., J Am Chem Soc 2020 142(22):9896-9901]. *Faculty Opinions*, 29 May 2020; 10.3410/f.737956814.793574731
16. Chu-Young Kim. Recommendation of [Förster A and Schulze-Briese C, Struct Dyn 2019 6(6):064302]. *Faculty Opinions*, 27 Feb 2020; 10.3410/f.737110896.793571475

17. Chu-Young Kim. Recommendation of [Ratnayake AS et al., Bioconjug Chem 2019 30(1):200-209]. *Faculty Opinions*, 15 Jan 2020; 10.3410/f.734628905.793569412
18. Chu-Young Kim. Recommendation of [Barnes CO et al., Proc Natl Acad Sci USA 2019 116(19):9333-9339]. *Faculty Opinions*, 24 Oct 2019; 10.3410/f.735614750.793566309
19. Chu-Young Kim. Recommendation of [Kawano S et al., Sci Rep 2019 9(1):8656]. *Faculty Opinions*, 10 Sep 2019; 10.3410/f.735996414.793564680
20. Chu-Young Kim. Recommendation of [Wojtaszek JL et al., Cell 2019 178(1):152-159.e11]. *Faculty Opinions*, 28 Jun 2019; 10.3410/f.735918247.793561717
21. Chu-Young Kim. Recommendation of [Lyumkis D, J Biol Chem 2019 294(13):5181-5197]. *Faculty Opinions*, 10 May 2019; 10.3410/f.735165326.793559716
22. Chu-Young Kim. Recommendation of [Mahata T et al., Biochemistry 2018 57(38):5557-5563]. *Faculty Opinions*, 17 Dec 2018; 10.3410/f.733896235.793554078
23. Chu-Young Kim. Recommendation of [Macdonald-Obermann JL and Pike LJ, J Biol Chem 2018 293(35): 13401-13414]. *Faculty Opinions*, 05 Oct 2018; 10.3410/f.733629181.793551196
24. Chu-Young Kim. Recommendation of [Edwardson TGW et al., J Am Chem Soc 2018 140(33):10439-10442]. *Faculty Opinions*, 30 Aug 2018; 10.3410/f.733793248.793549847
25. Chu-Young Kim. Recommendation of [Knappenberger AJ et al., elife 2018 7]. *Faculty Opinions*, 26 Jul 2018; 10.3410/f.733397290.793548305
26. Chu-Young Kim. Recommendation of [Kim W et al., Nature 2018 556(7699):103-107]. *Faculty Opinions*, 21 May 2018; 10.3410/f.732909342.793545839
27. Chu-Young Kim. Recommendation of [Hover BM et al., Nat Microbiol 2018 3(4):415-422]. *Faculty Opinions*, 08 Mar 2018; 10.3410/f.732646025.793543292
28. Chu-Young Kim. Recommendation of [Prokhorova I et al., Proc Natl Acad Sci USA 2017 114(51): E10899-E10908]. *Faculty Opinions*, 30 Jan 2018; 10.3410/f.732234543.793541787

RESEARCH FUNDING

Current research support

1. R01GM138990 (National Institute of General Medical Sciences, NIH), PI. Structural biology of polyether antibiotic biosynthesis (09/15/2020–08/31/2025).

Completed research support

1. R21EY030981 (National Eye Institute, NIH), PI. Developing isozyme-selective inhibitors against carbonic anhydrase isozymes expressed in the eye (04/01/2020–08/31/2023).
2. SC2GM136445 (National Institute of General Medical Sciences, NIH), PI. Selective targeting of human alkaline phosphatase isozymes (03/02/2020–08/31/2023).

3. R-154-000-644-112 (Singapore Ministry of Education), PI. Detoxification of gluten using DNA (2014–2017).
4. R-154-000-548-112 (Singapore Ministry of Education), PI. Biosynthesis of natural product antibiotic drugs in soil bacteria (2012–2015)
5. R-182-000-204-133 (National University of Singapore), co-PI. Peptide-assisted delivery of DNA minimal vectors for RNAi-based knockdown of target genes (2011–2013).
6. R-154-000-495-133 (Japan Society for the Promotion of Science), PI. Structural and enzymological investigations of enzymes involved in natural product modifications and precursor biosynthesis (2011–2013).
7. R-154-000-277-112 (Singapore Ministry of Education), PI. Coordinated DNA double-strand break repair by gp46 and gp47 proteins (2010–2012).
8. R-154-000-363-305 (Singapore Agency for Science, Technology and Research), PI. Exploring the structure and function of trans-encoded MHC's (2008–2011).
9. R-154-000-386-275 (Singapore Ministry of Health), PI. Toward the development of polyproline type II peptide-based, entropy-driven MHC blocker as novel and general therapeutics and prophylactics for treating autoimmune diseases (2008–2010).
10. R-154-000-277-101 (National University of Singapore), PI. Multivalent MHC blockers for treatment of autoimmune diseases (2006–2009).

CLASSROOM TEACHING

University of Illinois Urbana-Champaign
Biochemical and Physical Basis of Life

Korea University International Summer Campus
Introductory Life Science
General Biology I

The University of Texas at El Paso
Biochemistry I
Biochemistry II
Advanced Biochemistry
Laboratory for General Chemistry

National University of Singapore
Fundamentals of Biochemistry
Laboratory Techniques in Life Sciences
Synthetic Biology

RESEARCH MENTORING

Postdoctoral associates supervised
Manas Jagdev

Anwar Ullah
Ashani Kuttan
Haram Cha

Ph.D. students graduated
Priyanka Gade
Qian Wang
Zilong Wang
Minyi Fang
Priya Jayaraman
Thanh-Binh Nguyen (co-supervised)
Roopsha Brahma
Sathya Dev Unudurthi
Xi Chen

Master's students graduated
Gileydis Guillama
Dayan Viera
Afroz Karim
Saket Bagde
Soumya Ranganathan

Undergraduate research students supervised
Gerardo Vargas
Lham Tsering
Alheli Romero
Xay Pham
Jerrica Keaton
Gerardo Zavala
Jennifer Villa
Katherine McCormick
Jonathan Vaquera
Keira Howard
Kevin Lim Jie Han
Lynn Yap Lin
Ju Ih Shin
Ju Hong Lee
Kuk Chun Yin
Sakshi Sikka
Tang An Ting Nicole

Tan Mingli Yvonne
Tan Yaw Sing
Eu Kum Wah Dominic
Lee Lin Elijah

CONFERENCE PRESENTATION

1. SLAC National Accelerator Laboratory 2022 SSRL/LCLS Users' Group Meeting (USA, Sep 26-30, 2022)
2. American Chemical Society Southwest & Rocky Mountain Regional Meeting (USA, Nov 13-16, 2019)
3. 14th Federation of Asian and Oceanian Biochemists and Molecular Biologists Conference (India, Nov 27-30, 2015)
4. 9th Asian Biophysics Association Symposium (China, May 9-12, 2015)
5. 8th Singapore International Chemistry Conference (Singapore, Dec 14-17, 2014)
6. National University Health System Synthetic Biology Symposium (Singapore, Oct 20, 2014)
7. ESF-EMBO Symposium on Synthetic Biology of Antibiotic Production II (Spain, Aug 30-Sep 4, 2014)
8. 1st Chulalongkorn University & National University of Singapore Joint Seminar in Biochemistry (Thailand, Jun 24, 2014)
9. UK-Singapore Workshop on Synthetic Biology (Singapore, Feb 18-19, 2014)
10. 3rd Asia-Korea Conference on Science and Technology (Singapore, Nov 21-23, 2013)
11. 264th American Chemical Society National Meeting (USA, Sep 8-12, 2013)
12. Keystone Symposia, Structural Analysis of Supramolecular Assemblies by Hybrid Methods (USA, Mar 3-7, 2013)
13. International Conference on Biomolecular Forms and Functions & Celebration of 50 Years of the Ramachandran Map (India, Jan 08-11, 2013)
14. 10th Global COE International Symposium on Biochemistry and Cell Biology (Singapore, Dec 22-23, 2011)
15. A Special Symposium Celebrating the 40th Anniversary of the Protein Data Bank (USA, Oct 28-30, 2011)
16. XXII Congress and General Assembly of the International Union of Crystallography (Spain, Aug 22-30, 2011)
17. 1st Asian Chemical Biology Conference (Korea, Jun 25-27, 2010)
18. Gordon Research Conferences, Immunochemistry & Immunobiology (Switzerland, May 16-21, 2010)

19. Joint A-Star Bioinformatics Institute & Department of Biological Sciences Workshop (Singapore, Sep 3-4, 2009)
20. 13th International Coeliac Disease Symposium (Netherlands, April 6-8, 2009)
21. Nanyang Technological University Bioinformatics Research Centre Workshop on Protein Structure and Function (Singapore, Oct 25, 2008)
22. Gordon Research Conferences, Chemistry and Biology of Peptides (USA, Feb 17-22, 2008)
23. Keystone Symposia, Frontiers of Structural Biology (USA, Jan 6-11, 2008)
24. 13th International Congress of Immunology (Brazil, Aug 21-25, 2007)
25. Joint 3rd Asia Oceania Human Proteome Organization & 4th Structural Biology and Functional Genomics Conference (Singapore, Dec 4-7, 2006)
26. 7th Frontier Science Symposium (Taiwan, Nov 23-26, 2006)

DEPARTMENT SEMINARS

1. California Polytechnic State University, San Luis Obispo, Chemistry & Biochemistry Department (Oct 14, 2022, San Luis Obispo, CA)
2. University of Illinois at Urbana-Champaign, Department of Biochemistry (Apr 29, 2022, Urbana, IL)
3. Stanford-SLAC Cryo-Electron Microscopy Center (Oct 13, 2021, Menlo Park, CA)
4. University of Connecticut, School of Pharmacy (Sep 22, 2021, Storrs, CT)
5. University of Texas at El Paso, School of Pharmacy (Feb 2, 2021, El Paso, TX)
6. New Mexico State University, Department of Chemistry and Biochemistry (Oct 4, 2019, Las Cruces, NM)
7. Northern Arizona University, Department of Chemistry and Biochemistry (Sep 27, 2019, Flagstaff, AZ)
8. Northwest University, Department of Chemistry and Materials Science (Jun 19, 2019, Xi'an, The People's Republic of China)
9. Indian Institute of Science Education and Research, Bhopal, Department of Chemistry (Jun 13, 2019, Bhopal, India)
10. Indian Institute of Science Education and Research, Pune, Department of Biology (Jun 10, 2019, Pune, India)
11. Indian Institute of Science Education and Research, Pune, Department of Biology (Dec 3, 2015, Pune, India)
12. Korea Advanced Institute of Science and Technology, Department of Biological Science (Aug 8, 2014, Daejeon, South Korea)
13. Chinese University of Hong Kong, Department of Chemistry (Apr 29, 2014, Hong Kong SAR, The People's Republic of China)

14. Chinese Academy of Medical Sciences, Institute of Materia Medica (Apr 15, 2014, Beijing, The People's Republic of China)
15. Tsinghua University, School of Life Sciences (Apr 14, 2014, Beijing, The People's Republic of China)
16. Dartmouth College, Department of Chemistry (Feb 25, 2014, Hanover, NH)
17. University of Minnesota, Department of Biochemistry, Molecular Biology, and Biophysics (Jan 6, 2014, Minneapolis, MN)
18. National University of Singapore, Department of Chemistry (Mar 5, 2012, Singapore)

PROFESSIONAL SERVICE

2023–present	Editorial board member, *Scientific Reports*
2017–present	Faculty member, *Faculty Opinions*
2021–present	Panel member, Ford Foundation Fellowship Programs The National Academies of Sciences, Engineering, and Medicine

UNIVERSITY SERVICE

2018–2022	Department Awards and Scholarship Committee
2017–2022	Judge, Undergraduate Research Symposium
2016–2022	College of Science Grant Writing Group
2020–2021	Chair, Biochemistry Division
2018–2021	University Faculty Senate
2019–2020	Department Workload Policy Committee
2019–2020	College of Science Workload Policy Committee
2019	Department Chair Search Committee, Chemistry and Biochemistry
2018	Laboratory Coordinator Search Committee, Chemistry and Biochemistry
2017	School of Pharmacy Research Committee
2016–2017	School of Pharmacy Curriculum Committee
2016	Faculty Search Committee, Pharmacy Practice and Clinical Sciences
2016	Faculty Search Committee, Pharmaceutical Sciences
2016	Department Chair Search Committee, Pharmaceutical Sciences
2016	Associate Dean for Research Search Committee, School of Pharmacy

Satish K. Nair
Head & Gregorio Weber Endowed Chair, Department of Biochemistry
Director, Center for Biophysics & Computational Biology
Member, Institute for Genomic Biology
Phone: 217-333-0641 Email: snair@illinois.edu

Education

1989	Sc.B.	Brown University	Chemistry (with Honors)
1994	Ph.D.	University of Pennsylvania	Chemistry (PI: David W. Christianson)
1999	Postdoctoral	Rockefeller University	Biophysics (PI: Stephen K. Burley)
1999-2001	Research Associate (w. S.K. Burley)		Rockefeller University, New York, NY

Positions

2001-2007	Assistant Professor	Department of Biochemistry, Biophysics & Computational Biology University of Illinois
2007-2012	Associate Professor	Department of Biochemistry, Biophysics & Computational Biology
2012-2017	Professor	Department of Biochemistry Biophysics & Computational Biology
2017-current	Director	Biophysics & Computational Biology
2017-2021	I.C. Gunsalus Endowed Chair	Department of Biochemistry
2019-2020	Interim Department Head	Department of Biochemistry
2020-current	Department Head	Department of Biochemistry
2020-current	Co-Director	Macromolecular CryoEM facility
2021-present	Gregorio Weber Endowed Chair	Department of Biochemistry

Other Professional Employment

2008-current	Affiliate Member	Department of Chemistry, UIUC
2012-current	Member	Institute for Genomic Biology, UIUC
2019-current	Member	Cancer Center at Illinois, UIUC

Extramural funding

Current

NIH RO1 GM079038 2020-2024 $1,450,137
PI: Satish K. Nair, Ph.D.
Mechanistic Studies of Lantibiotic Biosynthetic and Tailoring Enzymes.

NIH RO1 GM131347 2019-2023 $1,207,592
PI: Satish K. Nair, Ph.D.
Structural Biological Studies of Thiopeptide Biosynthesis and Engineering.

Select prior funding of note

NIH S10 OD028700 (High-end instrumentation) $1,400,000
PI: Satish K. Nair, Ph.D.
Cryo-TEM and Micro Electron Diffraction Instrument

NIH P01 GM077596 2010-2016 $8,000,000 ($1,265,279 Nair costs)
PI: William Metcalf, Ph.D. (role: Co-PI)
Structural Biology of Biosynthetic Enzymes

Energy Biosciences Systems 2008-2012 $5,000,000
PI: Satish K. Nair, Ph.D.
Engineering of Enzymes to Overcome Biomass Recalcitrance

Honors and Service:

1996-1999	Leukemia Society of America Fellowship
2007	NSF, Genes and Genome Systems Cluster, Ad hoc
2008	NSF, Genes and Genome Systems Cluster, Ad hoc
2008	NIH, Macromolecular Structure and Function B Study Section, Ad hoc
2009	NIH, Special Panel ZAT SM1, Ad hoc
2009	NIH, Special Panel ZRG1 AARR-C 22, Ad hoc
2009	U.S. Army, American Institute for Biological Sciences, Ad hoc
2010	NIH, Special Panel ZRG1 AARR-H (HIV/AIDS), Ad hoc
2010	NSF, Catalysis and Biocatalysis Cluster Ad hoc
2010	MRC, U.K., Programme Grant referee
2010	SIMB, Session chair; Enzyme Mechanism
2011	NIH, Macromolecular Structure and Function B Study Section, Ad hoc
2011	SIMB, Session chair; Enzyme Mechanism
2012	NIH, Special Panel ZRG1 AARR-H (Fogerty Centers HIV/AIDS), Ad hoc
2012	SIMB, Session chair; Enzyme Mechanism
2013	NIH, NIAID Special Emphasis (Infectious Diseases), Ad hoc
2014	NIH, Macromolecular Structure and Function A Study Section, Mail-in
2016	NIH, DP5 Pathways to Independence, Mail-in
2017	NIH, Macromolecular Structure and Function A Study Section, Ad hoc
2018	NIH, Prokaryotic Cell and Molecular Biology Study Section, Ad hoc
2018	NSF, CLP Enzyme Chemistry Panel
2018	NIH, P20 Special Emphasis Panel, Center for Biomedical Research Excellence
2022	Gordon Research Conference, Vice Chair (Enzymes, Coenzymes & Pathways)
2023	Gordon Research Conference, Chair (Enzymes, Coenzymes & Pathways)
2019-2023	NIH, Macromolecular Structure and Function A Study Section (Standing Member)

Patents

Publication number: WO201130509-A1. Zhao, H., Sulliva, R.P., Bae, D., and Nair, S.K. (Oct 2011) Mutants of L-arabinitol 4-dehydrogenase from *Neurospora crassa*.

Publication number: US8357518-B2. Han, Y., Dodd, D., Nair, S.K., Mackie, M.R. and Cann, I.K. (Jan. 2013) Thermostable enzymes for the hydrolysis of mannan-containing polysaccharides.

Publication number: EP2809144-A4. (w/ Dow Agrosciences) Lira, J.E., Cucchillo, R.M., and Nair, S.K. (Oct. 2015) Novel class of glyphosate resistance genes.

Publications (chronological)

[**Graduate Research**]

1. Alexander, R.S., Nair, S.K., and Christianson, D.W. (1991) “Engineering the Hydrophobic Pocket of Carbonic Anhydrase II” **Biochemistry** *30*, 11068-11072.

2. Nair, S.K., Calderone, T.L., Christianson, D.W., and Fierke, C.A. (1991) “Altering the Mouth of a Hydrophobic Pocket: Structure and Kinetics of Human Carbonic Anhydrase II Mutants at Residue Val-121” **J. Biol. Chem.** *266*, 17320-17325.

3. Nair, S.K., and Christianson, D.W. (1991) “Structural Properties of Human Carbonic Anhydrase II at pH 9.5” **Biochem. Biophys. Res. Commun.** *181*, 9455-9458.

4. Nair, S.K., and Christianson, D.W. (1991) “Unexpected pH-Dependent Conformation of His-64, the Proton Shuttle of Carbonic Anhydrase II” **J. Am.Chem. Soc.** *113*, 9455-9458.

5. Tweedy, N.B., Nair, S.K., Paterno, S.A., Fierke, C.A., and Christianson, D.W. (1993) "Structure and Energetics of a Non-Proline cis-Peptidyl Linkage in a Pro-202→Ala Carbonic Anhydrase II variant" **Biochemistry** *32*, 10944-10949.

6. Nair, S.K., and Christianson, D.W. (1993) "Crystallographic Studies of Azide Binding to Human Carbonic Anhydrase II" **Eur. J. Biochem.** *213*, 507-515.

7. Nair, S.K., and Christianson, D.W. (1993) "Structural Consequences of a Hydrophilic Amino Acid Substitution in the Hydrophobic Pocket of Human Carbonic Anhydrase II" **Biochemistry** *32*, 4506-4514.

8. Nair, S.K., Ludwig, P.A., and Christianson, D.W. (1994) "Two-Site Binding of Phenol in the Active Site of Human Carbonic Anhydrase II: Structural Implications for Substrate Association" **J. Am. Chem. Soc.** *116*, 3659-3660.

9. Ippolito, J.A., Nair, S.K., Alexander, R.S., Kiefer, L.L., Fierke, C.A., and Christianson, D.W. (1995) "Structure of His94→Asp carbonic anhydrase II in a new crystalline form reveals a partially occupied zinc binding site" **Protein Eng.** *8*, 975-980.

10. Nair, S.K., Krebs, J.F., Christianson, D.W., and Fierke, C.A. (1995) "Structural Basis of Inhibitor Affinity to Variants of Human Carbonic Anhydrase II" **Biochemistry** *34*, 3981-3989.

11. Nair, S.K., Elbaum, D., and Christianson, D.W. (1996) "Unexpected Binding Mode of the Sulfonamide Fluorophore 5-Dimethylamino-1-napthalene Sulfonamide to Human Carbonic Anhydrase II" **J. Biol. Chem.** *271*, 1003-1007.

12. Elbaum, D., Nair, S.K., Patchan, M.W., Thompson, R.B., and Christianson, D.W. (1996) "Structure-Based Design of a Sulfonamide Probe for Fluorescence Anisotropy Detection of Zinc with a Carbonic Anhydrase-Based Biosensor" **J. Am. Chem. Soc.** *118*, 8381-8387.

13. Stams, T., Nair, S.K., Okuyama, T., Waheed, A., Sly, W.S., and Christianson, D.W. (1996) "Crystal Structure of the Secretory form of Membrane-associated Human Carbonic Anhydrase IV at 2.8-Å Resolution" **Proc. Nat'l Acad. Sci.** *93*, 13589-13594.

[**Post-doctoral research**]

14. Nair, S.K., and Burley, S.K. (2000) "Recognizing DNA in the Library*",* **Nature** (News and Views) *404*, 715-718.

15. Campbell, E.A., Korzheva, N., Mustaev, A., Murakami, K., Nair, S., Goldfarb, A., and Darst, S.A. (2000) "Structural Mechanism for Rifampicin Inhibition of Bacterial RNA Polymerase" **Cell** *104***,** 901-912.

16. Nair, S.K., and Burley, S.K. (2003) "X-ray structures of Myc-Max and Mad-Max recognizing DNA: Molecular bases of regulation by proto-oncogenic transcription factors" **Cell** *112*, 193-205*.*

[**Independent career-Assistant Professor**]

17. Lasker, M.V., Gajjar, M,M., and Nair, S.K. (2005) "Cutting edge: molecular structure of the IL-1R-associated kinase-4 death domain and its implications for TLR signaling." **J. Immunology** *175*, 4175-9.

18. Li, B., Yu, J.P., Brunzelle, J.S., Moll, G.N., van der Donk, W.A.*, and Nair, S.K.* (2006) "Structure and Mechanism of the Lantibiotic Cyclase Involved in Nisin Biosynthesis" **Science**, *311*, 1464-67. [Highlighted in *Chemical & Engineering News*, etc.]. (*Corresponding author)

19. Nair, S.K.*, and Burley, S.K. (2006) “Structural Aspects of Interactions Within the Myc/Max/Mad Network” The Myc/Max/Mad Transcription Factor Network. Eisenman, R.N., ed. **Current Topics in Molecular Immunology** *302*, 123-144. (*Corresponding author)

20. Lasker, M.V., Kuruvilla, S., Kapoor, A., Gajjar, M., and Nair, S.K. (2006) “Metal Ion Mediated Reduction in Surface Entropy Improves Diffraction Quality of Crystals of the IRAK-4 Death Domain” **J. Biomol. Techniques**, *17*, 114-121.

21. Lasker, M.V., and Nair, S.K. (2006) “Molecular Aspects of Signaling in the Innate Immune Response **J. Immunology**, *177*, 11-16.

22. Lin, Y., Guzman, C.E., McKinney, M.C., Nair, S.K., Ha,T., Cann, I.K.O. (2006) “Methanosarcina acetivorans flap endonuclease 1 activity is inhibited by a cognate single-stranded DNA-binding protein”. **J. Bacteriology**, *188*, 6153-6167.

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119. Nayak, D.D., Liu, A., Agrawal, N., Rodriguez-Carerro, R., Donh, S.H., Nair, S.K., and Metcalf, W.W. (2020) “Functional interactions between posttranslationally modified amino acids of methyl-coenzymes M reductase in Methanosarcina acetivorans.” **PLoS Bio.** *18*, e3000507.

120. Dong, S.H., Nhu-Lam, M., Nagarajan, R., and Nair, S.K. (2020) “Structure-guided biochemical analysis of quorum signal synthase specificities.” **ACS Chem. Bio.** *15*, 1497-1504.

121. Kapoor, I., Olivares, P., Nair, S.K. (2020) “Biochemical basis for the regulation of biosynthesis of antiparasitics by bacterial hormones.” **eLife** *9*, e57824.

122. Dong, S.H., Cogan, D.P., and Nair, S.K. (2020) “Structural biology of RiPP natural products biosynthesis.” **Comprehensive Natural Products 3rd Ed**. (Liu, H.W., and Begley, T. Eds).

123. Cogan, D.P., Ly, J., and Nair, S.K. (2020) “Structural Basis for Enzymatic Off-Loading of Hybrid Polyketides by Dieckmann Condensation.” **ACS Chem. Bio.** *15*, 2783-91.

124. Bogart, J.W., Kramer, N.J., Turlik, A., Bleich, R.M., Catlin, D.S., Schroeder, F.C., Nair, S.K., Williamson, R.T., Houk, K.N., and Bowers, A.A. (2020) “Interception of the Bycroft-Gowland Intermediate in Enzymatic Macrocyclization of Thiopeptides.” **J. Am. Chem. Soc.** *142*, 13170-79.

125. Montalban-Lopez, M. et al., (2021) “New developments in RiPP discovery, enzymology and engineering.” **Natural Product Report**. *38*, 130-239.

126. Liu, A., Si, Y., Dong, S.H., Mahanta, N., Penkala, H., Nair, S.K., and Mitchell, D.A. (2021) “Functional elucidation of TfuA in peptide backbone thioamidation.” **Nature Chem. Bio.** Doi:10.1038/s41589-021-00771-0.

127. Lai, K.Y., Galan, S.R., Zeng, Y., Zhou, H., He, C., Ritu, R., Riedl, J., Liu, S., Chool, K.P., Garg, N., Zeng, M, Jones, L.H., Hutchings, G.J., Mohammed, S., Nair, S.K., Chen, J., Davis, B.G., and van der Donk, W.A. (2021) “LanCLs add glutathione to dehydroamino acids generated at phosphorylated sites in the proteome.” **Cell.** Doi:10.1016/j.cell.2021.04.001

Former Graduate Students

John Paul Yu 2001-2006 M.D./Ph.D. completed Feb 2006
“Structure and function of Lantibiotic Biosynthesis and Immunity”
(Assistant Professor: Department of Radiology, University of Wisconsin-Madison)

Michael Lasker 2001-2006 M.D./Ph.D. completed April 2006
“Structural and Biochemical Studies of the Innate Immune Pathway”
(Surgeon: Kaiser Permanente Santa Rosa Medical Center)

Yaozhong Zou 2003-2008 Ph.D. completed June 2008
”Structural Studies of Enzymes Involved in Drug Resistance and Antibiotic Biosynthesis”
(Postdoc with Brian Kobilka, HHMI/Stanford; Permanent address: Pfizer Pharmaceuticals)

Brian Bae 2005-2009 Ph.D. completed Dec. 2009
“Structural Studies of Archaeal DNA Replication.”
(Postdoc with Seth Darst, Rockefeller University)

Zhi Li 2008-2012 Ph.D. completed Dec. 2012
“Structural Studies on the Biosynthesis and Biological Functions of Natural Products.”
(Postdoc with Hening Lin, HHMI/Cornell; Permanent address: Bristol-Myers Squibb)

Vinayak Agarwal 2007-2012 Ph.D. completed April 2012
“Structural studies of enzymes involved in antibiotic resistance and phosphonate degradation”
(H. H.-Whitney fellow with Brad Moore, UCSD; Permanent address: Asst. Prof: Georgia Tech 2017-on)

Neha Garg 2008-2013 Ph.D. completed April 2013
“Exploring and Understanding Lantibiotic Biosynthesis”
(Postdoc with Pieter Dorrestein, UCSD; Permanent address: Asst. Prof: Georgia Tech 2017-on)

Yue Hao 2010-2015 Ph.D. completed Nov 2015
“Studies of Tailoring Enzymes Involved in Ribosomal Peptide Synthesis”
(Permanent address: Staff Scientist, Amgen Pharmaceuticals, Cambridge MA)

Jonathan Chekan 2012-2016 Ph.D. completed Mar 2016
“Biochemical and structural studies on proteins involved in the production of natural products and degradation of polysaccharides”
(Life Sciences postdoc with Brad Moore, UCSD; Permanent address: Asst. Prof: UNC Greensborough 2020-on)

David Park 2012-2016 Ph.D. completed Dec 2015
“Structural and Biochemical Studies of Enzymes Involved in NP Biosynthesis and Cellular Respiration”
(Permanent address: Visiting Instructor of Biology, Ferrum College, VA).

Nektaria Petronikolou 2013-2018 Ph.D. completed April 2018
“Biochemical Studies of Enzymes Involved in the Biosynthesis of Value-Added Products”
(Postdoc with Danica Fujimori, UCSF; Permanent address: Nektar Therapeutics).

Iti Kapoor 2013-2018 Ph.D. completed Dec 2018
“Biochemical and Synthetic Chemical Approaches to Studying the Biosynthesis and Regulation of Bacterial Secondary Metabolites”
(Postdoc with Ted Jardetzky, Stanford University).

Dillon P. Cogan 2013-2019 Ph.D. completed Dec 2018
“Mechanistic Interrogations of Ribosomal and Non-ribosomal Natural Product Enzymes”
(Postdoc with Chaitan Khosla, Stanford University).

Philip Olivares 2013-2019 Ph.D. completed August 2018
“Homeostasis of Primary and Secondary Metabolites”
(ORISE Fellow, Food and Drug Administration, USA)

Paola Estrada 2014-2020 Ph.D. completed Nov 2019
“Metabolite Biosynthetic Enzymes: Catalysis, Substrate Specificity and Protein Engineering”

(Presidential Fellow, Princeton University, postdoc with Mohammed Donia)

Former Postdoctoral Fellows

Houjin Zhang, PhD	2006-2009	Professor, Huazhong Univ. of Sci and Tech, PRC
Jui-Hui Chen, PhD	2009-2012	Scientist, Academia Sinica, PRC
Tom Graham, MD/PhD	2008-2010	Dermatologist, Carle Hospital, USA
Tiit Lukk, PhD	2010-2013	Prof., Tallinn Univ. of Technology, Estonia
Jaigeeth Devershetty, PhD	2012-2014	Research Scientist, St. Louis University, USA
Shangwen Lou, Ph.D.	2016-2019	Research Assistant, Lanzhou University, PRC
Shi-Hui Dong, PhD	2014-2019	Associate Professor, Lanzhou University, PRC
Daniel Catlin	2019-2021	Staff Scientist, Abbvie
Yiwu Zheng	2019-2022	Associate Professor, Sun Yet San University, PRC

Current students

Chayanid Ongpipattanakul	2016-present	
Andrea Garcia-Hernandez	2017-present	Westcott Fellow
Kaylee Kuzelka	2021-present	Westcott Fellow
Janhavi Borkar	2022-present	

Current Postdoctoral Fellow

Zing-fei Pei, Ph.D.	2019-present

Summary of Service

Thesis Committees:

Department of Biochemistry	127
Department of Chemistry	57
Center for Biophysics and Quant. Biology	42
Department of Cell & Dev. Biology	3
Department of Microbiology	6
Department of Physics	3
Department of Chemical Engineering	3
Tutorial mentor in Biophysics:	56

Department and Program:

Biophysics Admissions Committee	2007-2011
Biophysics Executive Committee (Elected to service)	2009-2013
MCB Courses and Curriculum Committee	2008-2014
Biochemistry Admissions Committee (Chair)	2010-2015
Biochemistry Awards Committee	2008-2015
MCB Executive Committee (Elected to service)	2010-2014
Biophysics Qualifying Exam Committee	2011-2013
Biochemistry Strategic Planning Committee	2012-2014
Director of Graduate Studies, Biochemistry	2017-2019
MCB Executive Committee	2017-2020
Director of Biophysics	2017-present
Head of Biochemistry	2020-present
Biophysics Admissions Committee (Chair)	2015-present
Biochemistry Admissions Committee (Chair	2018-present

Campus:

LS-CAT Executive Committee Board	2007-present
College of LAS Committee on Academic Standards	2015-2018

College of LAS Awards Committee 2017-2019

Campus Outreach and Diversity
Campus level mentor for the Alfred P. Sloan Center of Exemplary Mentoring (Biophysics)
Campus level guide for UIUC/ASPIRE program (Biophysics)
Established the Biochemistry Summer Research Opportunity Program
Sloan UCM advisor: Biophysics
Summer REU- Faculty Mentor to V. Quarles (2008) and L. Badmus (2013)
Current thesis advisor for two URM students: A. Hernandez-Garcia and M. Lazlo

Training Grants
Chemical Biology Training Grant Executive Committee (2007-2017).

Teaching activities
Spring 2022
Biochemistry 190: Biochemistry Orientation
Biophysics 595A: Biophysics Seminars
Spring 2021
Biochemistry 190: Biochemistry Orientation
Biophysics 595A: Biophysics Seminars
Spring 2020
Biochemistry 190: Biochemistry Orientation
Biophysics 595A: Biophysics Seminars
Spring 2019
Biochemistry 455: Current Topics in Biochemistry
Biophysics 595A: Biophysics Seminars
Spring 2018
Biochemistry 455: Current Topics in Biochemistry
Biophysics 595A: Biophysics Seminars
Spring 2017
Biochemistry 455: Current Topics in Biochemistry
Biophysics 595A: Biophysics Seminars
Spring 2016
Biochemistry 455: Current Topics in Biochemistry
Biophysics 595A: Biophysics Seminars
Spring 2015
Biochemistry 354: Biochemical and Physical Basis for Life
Fall 2014
Biochemistry 354: Biochemical and Physical Basis for Life
Spring 2014
Biochemistry 354: Biochemical and Physical Basis for Life
Spring 2013
Biochemistry 354: Biochemical and Physical Basis for Life
Fall 2012
Biochemistry 354: Biochemical and Physical Basis for Life
Spring 2012
Biochemistry 354: Biochemical and Physical Basis for Life
Spring 2007, 2008, 2009, 2010, 2011
Biochemistry 440 Introduction to Physical Chemistry I
Fall 2007, 2008, 2009, 2010, 2011, 2012
Biochemistry 446 Introduction to Physical Chemistry II
Spring 2003, Spring 2004, Spring 2005, Spring 2006:
Biophysics 420 “Introduction to Molecular Biophysics.

Office: Roger Adams Lab 494
Lab: Roger Adams Lab 496
E-mail: josephes@illinois.edu
Phone: 715-892-6811
Twitter: @sanfilippo_JE

Joseph E. Sanfilippo

Professional Experience

University of Illinois at Urbana-Champaign
2020-Present **Assistant Professor**
Department of Biochemistry

Education and Research Experience

Princeton University
2016-2020 **Post-doc, Molecular Biology**
Mentor: Professor Zemer Gitai

Indiana University-Bloomington
2011-2016 **Ph.D., Microbiology**
Mentors: Professors Dan Kearns and David Kehoe

University of Wisconsin-Madison
2007-2011 **B.S., Genetics, Honors**
Mentor: Professor Julius Adler

Publications

Padron, G. C., Shuppara, A. M., Palalay, J. S., Sharma, A., & Sanfilippo, J. E. Bacteria in Fluid Flow. ***Journal of Bacteriology*** (2023) 205(4):e0040022.

Padron, G. C., Shuppara, A. M., Sharma, A., Koch, M. D., Palalay, J. S., Radin, J. N., Kehl-Fie, T. E., Imlay, J. A., & Sanfilippo, J. E. Shear rate sensitizes bacterial pathogens to H_2O_2 stress. ***PNAS*** (2023) Mar 14;120(11):e2216774120.

Li, Y., Sanfilippo, J.E., Kearns, D.B., and Yang, J.Q. Corner flows induced by surfactant-producing bacteria *Bacillus subtilis* and *Pseudomonas fluorescens.* ***Microbiology Spectrum*** (2022) Oct 26;10(5):e0323322.

Haney, A.M., Sanfilippo, J.E., Garczarek, L., Partensky, F. and Kehoe, D.M. Multiple photolyases protect the marine cyanobacterium *Synechococcus* from ultraviolet radiation. ***mBio*** (2022) Aug 30;13(4):e0151122.

Yang, J.Q., Sanfilippo, J.E., Gitai, Z., Bassler B.L., and Stone, H.A. Surfactant-producing bacteria self-generate flows along corners in unsaturated porous media. ***PNAS*** (2021) Sep 21;118(38):e2111060118.

Carrigee, L.A., Mahmoud R.M., Sanfilippo, J.E., Frick, J.P., Strnat, J.A., Karty, J. A., Chen, B., Kehoe, D.M., and Schluchter, W.M. CpeY is a phycoerythrobilin lyase for cysteine 82 of the phycoerythrin I a-subunit in marine *Synechococcus*. ***BBA-Bioenergetics*** (2020) 1861(8):148215.

*Sanfilippo, J.E., *Lorestani, A, Koch, M.D., Bratton, B.P., Siryaporn, A., Stone, H.A., and Gitai, Z. Microfluidic-based transcriptomics reveal force-independent bacterial rheosensing. ***Nature Microbiology*** (2019) Aug;4(8):1274-1281.

-Highlighted in ***Nature Reviews Microbiology*** (2019) 17, 398-399. Go with the flow. York. A.

Sanfilippo, J.E., Garczarek, L., Partensky, F. and Kehoe, D.M. Chromatic Acclimation in Cyanobacteria: A Diverse and Widespread Process for Optimizing Photosynthesis. ***Annual Review of Microbiology*** (2019) Sep 8;73:407-433.

Sanfilippo, J.E., Nguyen, A. A., Partensky, F., Karty, J. A., Strnat, J.A., Garczarek, L., Schluchter, W.M. and Kehoe, D.M. Interplay between differentially expressed enzymes contributes to light color acclimation in marine *Synechococcus*. ***PNAS*** (2019) 116(13): 6457-6462.

*Mahmoud, R.M., *Sanfilippo, J.E., Nguyen, A.A., Strnat J.A., Partensky, F., Garczarek, L., Abo El-Kassem, N., Kehoe, D.M., and Schluchter, W.M. Adaptation to blue light in marine *Synechococcus* requires MpeU, an enzyme with similarity to phycoerythrobilin lyase isomerases. ***Frontiers in Microbiology*** (2017) Feb 21;8:243.

Sanfilippo, J.E., Nguyen, A. A., Karty, J. A., Shukla, A., Schluchter, W.M., Garczarek, L., Partensky, F., and Kehoe, D.M. Self-regulating genomic island encoding tandem regulators confers chromatic acclimation to marine *Synechococcus*. ***PNAS*** (2016) 113(21): 6077-6082.

Research Funding

2021-2024	NIH K22 Award, NIAID (3 years, $250,000 Total Direct Costs)

Academic Honors

2021	Teacher Ranked as Excellent, MCB 501: Advanced Biochemistry
2019	Best Poster Presentation Semifinalist, Phages 2019
2019	BLAST Founders Award for Best Post-Doctoral Oral Presentation, BLAST XV
2017	Best Poster Presentation Semifinalist, Phages 2017
2016	Indiana University Microbiology Best Paper Award
2016	Floyd Biology Graduate Fellowship
2015	Floyd Biology Graduate Fellowship
2012-2014	NIH T32 Genetics, Cellular and Molecular Sciences Training Grant Trainee
2012	Floyd Biology Graduate Fellowship
2011	College of Arts and Sciences Graduate Fellowship
2011	Graduated with Honors in Research, University of Wisconsin, Madison
2008-2011	Dean's List, University of Wisconsin, Madison
2007	University of Wisconsin Alumni Scholarship

Presentations

2023	(Oral Presentation) MCB Retreat, University of Illinois
2022	Molecular Genetics of Bacteria and Phages Conference
2022	(Oral Presentation) National Institutes of Health, Lambda Lunch
2021	(Oral Presentation) Microbial Systems Initiative, University of Illinois
2019	Gordon Research Conference on Microbial Adhesion and Signal Transduction
2019	Molecular Genetics of Bacteria and Phages Conference
2019	Invited Seminar, University of Pittsburgh, Department of Biological Sciences

2019 (Oral presentation) BLAST XV Conference
2018 (Oral presentation) BioEngineering Colloquium, Princeton University
2018 8th ASM Conference on Biofilms
2018 (Oral presentation) Molecular Genetics of Bacteria and Phages Conference
2018 (Oral presentation) Prokaryotic Biology Meeting, Princeton University
2018 (Oral presentation) Molecular Biology Colloquium, Princeton University
2018 Gordon Research Conference on Sensory Transduction in Microorganisms
2017 Molecular Genetics of Bacteria and Phages Conference
2015 Molecular Genetics of Bacteria and Phages Conference
2015 (Oral presentation) 41st Midwest/Southeast Photosynthesis Conference
2014 (Oral presentation) 40th Midwest/Southeast Photosynthesis Conference
2014 (Oral presentation) Indiana University Microbiology Retreat
2014 (Oral presentation) NIH GCMS Training Grant Symposium
2013 11th Workshop on Cyanobacteria
2013 39th Midwest/Southeast Photosynthesis Conference
2012 38th Midwest/Southeast Photosynthesis Conference

Teaching

2022 University of Illinois, Head Instructor, MCB 501: Advanced Biochemistry
2022 University of Illinois, Grader, MCB 540: Scientific Writing
2021 University of Illinois, Head Instructor, MCB 501: Advanced Biochemistry
2019 Princeton University, Instructor, Junior Tutorial of Scientific Literature
2018 Princeton University, Instructor, Junior Tutorial of Scientific Literature
2016 Indiana University, Associate Instructor, L113: Biology Laboratory
2015 Indiana University, Associate Instructor, L113: Biology Laboratory (Fall)
2015 Indiana University, Associate Instructor, L113: Biology Laboratory (Spring)
2014 Indiana University, Associate Instructor, M250: Microbiology
2012 Indiana University, Associate Instructor, L111: Evolution and Diversity

Mentoring

2021-present **Anuradha Sharma** (University of Illinois Biochemistry Ph.D. candidate), Ph.D. thesis mentor

2021-present **Alex Shuppara** (University of Illinois Biochemistry Ph.D. candidate), Ph.D. thesis mentor

2020-present **Gilberto Padron** (University of Illinois Biochemistry Ph.D. candidate), Ph.D. thesis mentor

2020-present **Jessica Palalay** (University of Illinois Biochemistry Ph.D. candidate), Ph.D. thesis mentor

2021-2022 **Emma Crawford** (University of Illinois MCB undergraduate student)

2014-2016 **Rania Mahmoud** (Indiana University Ph.D. student), research mentor for her Ph.D. thesis, resulted in 1st author publication in 2017

2013-2016 **Johann Strnat** (Indiana University undergraduate student), Indiana University, research mentor for his undergraduate research, resulted in co-authorship on two publications in 2017 and 2019

University Service

2021-present **MCB Diversity, Equity, and Inclusion Committee**, Biochemistry Representative

2021-present **Biochemistry Awards Committee**

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: **Shapiro, David J.**

eRA COMMONS USER NAME (credential, e.g., agency login): DAVID_SHAPIRO

POSITION TITLE: Eugene Howe Scholar and Professor of Biochemistry, Member, Cancer Center at Illinois

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Brooklyn College of CUNY	B.S.	1967	Chemistry
Purdue University, West Lafayette, Indiana	Ph.D.	1972	Biochemistry
Stanford University Medical School	Postdoc	1972-1974	Molecular Biology
MIT, Center for Cancer Res., Cambridge MA	Vis. Prof	1985-1986	Cancer Research

A. Personal Statement

Leveraging our expertise in estrogen receptor α, (ERα) action, we implemented screens to identify new pathways of hormone action in cancer and small molecules for development as selective anticancer therapeutics. This led to identification of a first-generation ERα biomodulator, BHPI and, through a medicinal chemistry partnership with Professor Paul Hergenrother's laboratory, to identification of ErSO, a much more potent, structurally related, second-generation biomodulator, ErSO. Mechanism of action studies led us to a new pathway of hormone action in cancer. Estrogen, EGF and other mitogenic hormones elicit a very rapid and functionally essential activation of the anticipatory pathway for activation of the endoplasmic reticulum stress sensor, the unfolded protein response (a-UPR). Activation of the conserved tumor-protective a-UPR is a powerful prognostic marker in ERα positive cancer. BHPI and ErSO work by inducing lethal hyperactivation of the a-UPR. ErSO's exhibits unprecedented ability to induce complete regression without recurrence in mouse xenografts of therapy-resistant ERα^+ primary and metastatic breast cancer. Moreover, ErSO also induced complete, or near complete, regression in xenograft models of ERα^+ endometrial cancer and ovarian cancer and it is effective in fresh ovarian cancer cell spheroids from patient ascites. BHPI and ErSO kills cancer cells by inducing necrosis, not apoptosis. From genome-wide CRISPR screens with negative selection against BHPI and ErSO we identified the executioner protein in anticancer drug induced necrosis This pathway is critical for the action not just of BHPI and ErSO, but is also important for completely unrelated necrosis inducing anticancer therapies. Thus a goal of this project is to test ErSO against PDOs from African American women. I and Prof. Olopade have the skills to carry this project.

Positions, Scientific Appointments, and Honors

1967 - 1972 Graduate Research, Dept. Biochemistry, Purdue Univ. (Lab of V.W. Rodwell)

1972 – 1974 Postdoctoral Fellow, Department of Biological Sciences, Stanford University, Stanford, California (Laboratory of Dr. Robert Schimke).

1974 – present 1974-1978 AssistanProfessor, 1978 – 1982 Associate Professor, 1982 – Present Professor Department of Biochemistry, University of Illinois, Urbana, Illinois

1985 – 1986 Visiting Professor, Department of Biology and Center for Cancer Research, MIT, Cambridge, MA (Laboratory of Dr. Phillip Sharp).

2010 – Present Member, Cancer Center at Illinois, Univ. Illinois

2016 - Present Eugene Howe Scholar in Biochemistry

Selected Other Experience: Editorial Boards and Meetings Organized

Steroids, 2015-present
J. Biol. Chem., 1982-1987;
Mol. Endocrinol., 1991-1995;
Receptor and Signal Trans., 1993-2002
Chairman, Gordon Conference on Hormone Action, Kimball New Hampshire, August, 1989.
Organizing Committee, Conference on Estrogens and Human Health, University of Illinois, 2001

Selected Awards, (financial)

1972 - 1974 Helen Hay Whitney Foundation Postdoctoral Fellow
1978 - 1982 NIH Research Career Development Award, National Heart, Lung and Blood Institute
1985 - 1986 Guggenheim Fellow
2016 – present Eugene Howe Scholar in Biochemistry

5 Recent or Notable Talks at Scientific Meetings

Endocrine Society National Meeting, Session on Novel Cancer Therapies (presented by Darjan Duraki of our laboratory) March 2021
FASEB Conference on Rapid Signaling & Genomic Hormone Action in Health & Disease, Snowmass Colorado, June 2017
San Antonio Breast Cancer Symposium (SABCS), Symposium on the Unfolded Protein Response In Cancer, San Antonio, Texas, Dec. 2016
Endocrine Society National Meeting (2 talks), Symposium on Novel Cancer Therapies and Session on Mechanisms of Hormone Action, Boston, MA, April 2016, ENDO, March 2020 (meeting cancelled)
FASEB Conference on Molecular and Systems Integration of Genomic and Nongenomic Steroid Hormone Action, Big Sky, Montana, Aug. 2015

C. Contributions to Science

1. ErSO-mediated UPR Hyperactivation as a Novel Cancer Targeting Strategy.

Endocrine therapy is ineffective in cancers in which estrogen does not drive proliferation. Moreover, endocrine therapy for estrogen receptor α (ERα) positive breast cancers often selects for resistance. To identify new classes of small molecules with therapeutic potential in breast, ovarian, uterine and other ERα$^+$ cancers, we used an innovative approach to molecular biology in which we carried out unbiased high throughput screening for ERα biomodulators and focused on small molecules with impressive therapeutic potential whose actions we could not explain with current knowledge. Using this strategy we identified BHPI, a proof-of-principle non-competitive ERα biomodulator that kills therapy-resistant ERα positive cancer cells. With our Chemistry partner, Paul Hergenrother and his laboratory a much more potent second-generation compound, ErSO, was synthesized and evaluated (U.S. Patent issued for "Activators of the Unfolded protein Response" June 30, 2021 and *Science Translational Medicine July 21, 2021*. We evaluated ErSO in cells containing ERα mutations D538G and Y537S, which are common in therapy-resistant metastatic breast cancer. In mouse xenografts, orally administered ErSO often induced complete regression of large orthotopic ERαD538G and ERαY537S breast tumors and eradicated metastases. Moreover, ErSO has a good toxicity profile. ErSO and BHPI are so effective because they work by distorting a recently identified normal pathway of estrogen-ERα action (see section (2) below). They hyperactivate the endoplasmic reticulum stress sensor, the unfolded protein response (UPR), converting it from protective to lethal. Thus, our studies established hyperactivation of the anticipatory UPR (a-UPR) as a novel therapeutic strategy and identified a first-in-class therapeutic with exceptional potential for therapy-resistant ERα positive, breast, endometrial and ovarian cancer and other ERα$^+$ cancers.

1. Boudreau, M.W., Duraki, D., Wang, L., Mao, C., Kim, J.E., Henn, M.A., Tang, B., Fanning, S.W., Kiefer, J., Tarasow, T.M., Bruckheimer, E.M., Moreno, R., Mousses, S., Greene, G.L., Roy, E.J., Park, B.H., Fan, T.M. Nelson, E.R., Hergenrother. P.J. and **Shapiro D.J.** 2021. A Small Molecule

Activator of the Unfolded Protein Response Eradicates Human Breast Tumors in Mice. *Science Translational Medicine*, online July 21, 2021. DOI: 10.1126/scitranslmed.abf1383 PMCID:PMC8456366 (Featured in *Nature Reviews Drug Discovery, Medical News Today* etc.)

2. Andruska, N., Zheng, X., Yang, X., Mao, C., Cherian, M., Mahapatra, L., Helferich, W.G. and **Shapiro, D.J.** (2015) An Estrogen Receptor α Inhibitor Activates the Unfolded Protein Response, Blocks Protein Synthesis and Induces Tumor Regression. *Proc Natl Acad Sci USA*, 112(15) 4737-4742 (Highlighted Paper) PMCID:PMC4403155.
3. Zheng, X., Andruska, N., Lambrecht, M., He, S., Parissenti, A., Hergenrother, P., Nelson, E.R. and **Shapiro D.J.** (2016) Targeting Multidrug Resistant Ovarian Cancer Through Estrogen Receptor α Dependent Hyperactivation of the UPR. *Oncotarget*, 9(19) 14471-14753 (Priority Paper) (Dept. of Biochemistry Univ. Illinois. The Outstanding Graduate Student Paper of 2016) PMCID:PMC5871075
4. Mao, C., Livezey, M., Kim, J.E., and **Shapiro, D.J.** (2016) Antiestrogen Resistant Cell Lines Expressing Estrogen Receptor α Mutations Upregulate the Unfolded Protein Response and are Killed by BHPI. *Scientific Reports*, PMCID: PMC05054422

2. An Essential Hormone-activated Pathway for Anticipatory Activation of the Unfolded Protein Response

The endoplasmic reticulum (EnR) stress sensor, the unfolded protein response (UPR) was known to react to diverse forms of stress by activating signaling pathways that reduce protein production and increase protein-folding capacity. We showed that estrogen-estrogen receptor α (E_2-ERα) activates a different kind of UPR activation pathway that occurs in the absence of cell stress and anticipates a future need for increased protein folding capacity (anticipatory UPR; a-UPR). Rapid extranuclear activation of the UPR is a new pathway of E_2-ERα action and a new role for the UPR. Notably, BHPI and ErSO, noncompetitive ERα biomodulators with impressive anticancer potential target this normally tumor-protective pathway (See section (1) above). Rapid activation of the a-UPR pathway is required for, and authorizes, subsequent actions of mitogenic hormones. Our studies show that anticipatory activation of the UPR is a common pathway used by most mitogenic hormones, including estrogen, progesterone and EGF; others have recently shown that VEGF and likely ecdysone in insects act through this recently unveiled pathway. Thus, the anticipatory UPR pathway is an essential pathway of hormone action, conserved across species and between different classes of hormones.

1. Yu, L., Wang, L., Kim, J.E., Mao, C., and **Shapiro, D.J.** (2020) Src Couples Estrogen Receptor to the Anticipatory Unfolded Protein Response and Regulates Cancer Cell Fate Under Stress. *Biochim Biophys Acta Mol Cell Res*. DOI: 10:1016/j.bbamcr2020.118765, PMCID: PMC 7653967
2. Andruska, N., Zheng, X., Yang, X., Helferich, W.G. and **Shapiro, D.J.** (2015) Anticipatory Estrogen Activation of the Unfolded Protein Response is Linked to Cell Proliferation and Poor Survival in Estrogen Receptor α Positive Breast Cancer. *Oncogene*, 34(29):3760-3769. PMCID:PMC4377305
3. Yu, L., Wang, L., Mao, C., Duraki, D., Kim JE, Huang, R., Helferich, W.G., **Nelson, E.R.**, Park, B.H., **Shapiro, D.J.** (2019) Estrogen-Independent Myc Overexpression Confers Endocrine Therapy Resistance on Breast Cancer Cells Expressing ERαY537S and ERαD538G Mutations. *Cancer Letters*, 442: 373-382 PMCID:PMC6351074
4. Livezey, M., Kim, J.E. and **Shapiro D.J.** (2018) A New Role for Estrogen Receptor α in Cell Proliferation and Cancer: Activating the Anticipatory Unfolded Protein Response. Frontiers in Endocrinology, June 15;9:325 doi: 103389/fendo.2018.00325. PMCID:PMC6013567

3. A Pathway for Anticancer-drug Induced Necrosis

Because necrosis was characterized primarily by morphology and lacked a compelling rationale for study, it has not received the same level of research focus as apoptosis and autophagy. The emergence of immunotherapy is one factor that has brought heightened attention to necrosis. Immunotherapy has been

largely restricted to tumors with a high mutational burden. One way to activate immune cells so they might kill cancer cells with a low mutational load may be to use necrosis-inducing anticancer drugs that activate macrophage. Cells that die by necrosis release Damage Associated Molecular Patterns (DAMPs), such as HMGB1 and ATP, that bind to receptors on immune cells, activating them and together with necrotic corpse cells, induce immunogenic cell death (ICD). Notably, BHPI and ErSO kill cells by necrosis, releasing the DAMPs HMGB1 and ATP into the medium and this medium robustly activates mouse and human macrophages. To take the next step and identify proteins involved in anticancer drug-induced necrosis, we carried out genome-wide CRISPR-Cas9 screens with negative selection against BHPI and ErSO. This led to identification of the executioner protein in anticancer drug induces necrosis two other necrosis pathway components (Ghosh S., *et al*., 2021. In preparation). This work has the potential to turn a pathway largely studied using descriptive methods into one in which molecular and biochemical studies combine with morphological and imaging work to give a much richer and more complete picture of anticancer therapy-induced necrosis.

1. Livezey, M., Huang, R., Hergenrother, P.J., and **Shapiro, D.J.** (2018) Strong and Sustained Activation of the Anticipatory Unfolded Protein Response Induces Necrotic Cell Death. *Cell Death and Differentiation*, 25(10) 1796-1807. PMCID:PMC6180055. (Dept. of Biochemistry, Univ. Illinois. The Outstanding Graduate Student Paper of 2018) PMCID:PMC6180055

2. **Shapiro, D.J.** and Ghosh, S. 08/11/2021. Anticancer Drug-induced Necrotic Cell Death Biomarker. U.S. Provisional Patent Application. 63/232,047 2021.

4. Targeting Hormone Regulation of mRNA Stability.

In early years, the focus of nearly all research on the action of estrogen and other hormones was transcriptional regulation at the level of DNA. Very early research from our laboratory was the first to convincingly demonstrate that a hormone could regulate the stability of an mRNA as part of its regulation of mRNA levels. This prompted a change in thinking that went beyond the hormone receptor field. Now it is routine to think in terms of transcriptional and posttranscriptional mechanisms controlling mRNA levels. Although mRNA binidnig proteins are well known to play key reoles in cancer , development and maintaining hoemostasis, small molecule probes and potential therapeutics targeting RNA binding proteins were nearly nonexistent. Using our expertise in mRNA degradation and in mRNA binding proteins together with our screening technology, we identified a novel anticancer drug candidate that works by blocking the interaction of an oncogenic mRNA stabilizing protein with MYC and with other oncogenic mRNAs. This work demonstrates the feasibility of extending small molecule technology to this class of regulatory proteins. Moreover, this small molecule is an attractive candidate for development because its target protein is only expressed in cancer cells and fetal cells, and because it is a master regulator, controlling levels of diverse oncogenes.

1. Mahapatra, L., Andruska, N., Mao, C., Gruber, S.B. Johnson. T.M. Fullen D.R. Raskin, L., and **Shapiro, D.J**. (2019) Protein Kinase C Alpha is Upregulated by IMP1 in Melanoma and Ovarian Cancer and is linked to Poor Survival in Melanoma, *Melanoma Research*, 29: 539-543, PMCID:PMC:6561837

2. Mahapatra, L., Andruska, N., Mao, C., Le, J. and **Shapiro D.J.** (2017) A Novel IMP1 inhibitor, BTYNB, Targets c-Myc and Inhibits Ovarian and Melanoma Cancer Cell Proliferation. *Translational Oncology*, 10(5) 818-827 PMCID:PMC5576976

3. Brock, M.I. and **Shapiro, D.J** (1983) Estrogen Stabilizes Vitellogenin mRNA Against Cytoplasmic Degradation. *Cell,* 34: 207-214.

4. Woo, H-H., Yi, X., Lamb, T., Menzl, L., Baker, T., **Shapiro, D.J.** and Chambers, S.K. (2011) Posttransriptional suppression of protoconcogene c-fms by vigilin in breast cancer. *Mol. Cell Biol.* 31: 215-225. PMCID:PMC3019847

List of Most of >115 pubs. in My Bibliography

http://www.ncbi.nlm.nih.gov/sites/myncbi/david.shapiro.1/bibliography/40598230/public/

Beth M. Stadtmueller, Ph.D.

Assistant Professor, University of Illinois Urbana-Champaign
Roger Adams Laboratory
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Urbana, IL 61853
(801) 557-3530 (cell)
bethms@illinois.edu
@StadtmuellerLab
https://www.stadtmuellerlab.org/

EDUCATION

Postdoctoral	**Ph.D. Biochemistry**	**B.S. Biochemistry**
2011-2018	2010	2003
California Institute of Technology	University of Utah	University of Wisconsin
Advisor: Dr. Pamela J. Bjorkman	Advisor: Dr. Christopher P. Hill	Advisor: Dr. Laura L. Kiessling

APPOINTMENTS

Assistant professor, Department of Biochemistry, School of Molecular and Cellular Biology, University of Illinois Urbana-Champaign
11/2018 – present
Research Topic: The structures, function and engineering of mucosal antibodies

Assistant professor, Department of Biomedical and Translational Sciences, Carle Illinois College of Medicine, University of Illinois Urbana-Champaign
11/2018 – present
Research Topic: The structures, function and engineering of mucosal antibodies

Affiliate, The Beckman Institute of Advanced Science and Technology, University of Illinois Urbana-Champaign
05/2019 – present
Faculty Champion, Surface Plasmon Resonance Core Laboratory

Postdoctoral Scholar, California Institute of Technology, Pamela J. Bjorkman Laboratory
4/2011– 10/2018
Research Topic: Structural characterization of proteins involved in mucosal immunity and HIV-1 envelope proteins

Graduate Research Assistant and Postdoctoral Fellow, University of Utah, Christopher P. Hill Laboratory
6/2004–2/2011
Research Topic: Structural and biochemical characterization of proteasome assembly chaperones and proteasome activators.

Graduate Research Assistant, University of Utah Graduate Rotations
8/2003– 6/2004
Chris Hill Laboratory – Uroporphyrinogen decarboxylase crystal structures
Michael Kay Laboratory – HIV host-cell entry
Alejandro Sánchez Alvarado Laboratory – Planarian regeneration
Brenda Bass Laboratory – RNA editing

Undergraduate Research Assistant, University of Wisconsin, Laura L. Kiessling Laboratory
6/2001–5/2003

Undergraduate Research Assistant, University of Wisconsin, Jess D. Reed Laboratory
5/2002–9/2002

PUBLICATIONS

Diefenbacher M, Tan TJC, Bauer DLV, **Stadtmueller BM**, Wu NC, Brooke CB. Interactions between Influenza A Virus Nucleoprotein and Gene Segment Untranslated Regions Facilitate Selective Modulation of Viral Gene Expression. **J Virol. 2022 Apr 25:e0020522. doi: 10.1128/jvi.00205-22. Epub ahead of print. PMID: 35467364.**

Tan, T.J.C., M. Yuan, K. Kuzelka, G.C. Padron, J.R. Beal, X. Chen, Y. Wang, J. Rivera-Cardona, X. Zhu, **B.M. Stadtmueller**, C.B. Brooke, I.A. Wilson, and N.C. Wu, Sequence signatures of two public antibody clonotypes that bind SARS-CoV-2 receptor binding domain. **Nat Commun, 2021. 12(1): p. 3815.PMC8217500**

Diard, M., E. Bakkeren, V. Lentsch, A. Rocker, N.A. Bekele, D. Hoces, S. Aslani, M. Arnoldini, F. Bohi, K. Schumann-Moor, J. Adamcik, L. Piccoli, A. Lanzavecchia, **B.M. Stadtmueller**, N. Donohue, M.W. van der Woude, A. Hockenberry, P.H. Viollier, L. Falquet, D. Wuthrich, F. Bonfiglio, C. Loverdo, A. Egli, G. Zandomeneghi, R. Mezzenga, O. Holst, B.H. Meier, W.D. Hardt, and E. Slack, A rationally designed oral vaccine induces immunoglobulin A in the murine gut that directs the evolution of attenuated Salmonella variants. **Nat Microbiol, 2021. 6(7): p. 830-841.PMC7611113**

Sonya Kumar Bharathkar*, Benjamin W. Parker*, Andrey Malyutin, Nandan Haloi, Kathryn Huey-Tubman, Emad Tajkhorshid, and **Beth M. Stadtmueller.** (2020) The Structures of Secretory and Dimeric Immunoglobulin A. **Elife. 2020 Oct 27;9:e56098.** doi: 10.7554/eLife.56098.
***Featured in MCB News**: https://mcb.illinois.edu/news/article/618/*

Stadtmueller B.M., Bridges M.D., Dam K-M., Lerch M.T., Huey-Tubman K.E., Hubbell W.L., Bjorkman P.J. (2018) DEER Spectroscopy Measurements Reveal Multiple Conformations of HIV-1 SOSIP Envelopes that Show Similarities with Envelopes on Native Virions. **Immunity 49(2):235-246.** https://www.ncbi.nlm.nih.gov/pubmed/30076100

Stadtmueller, B.M., Yang, Z., Huey-Tubman, K.E., Roberts-Mataric, H., Hubbell, W.L., and Bjorkman, P.J. (2016). Biophysical and biochemical characterization of avian secretory component provides structural insights into the evolution of the polymeric Ig receptor. **J Immunol. 197(4): 1408-1414.** http://www.ncbi.nlm.nih.gov/pubmed/27412418
***Featured "In this Issue**:" http://www.jimmunol.org/content/197/4/1007*

Stadtmueller, B.M., Huey-Tubman, K.E., Lopez, C.J., Yang, Z., Hubbell, W.L., and Bjorkman, P.J. (2016). The structure and dynamics of secretory component and its interactions with polymeric immunoglobulins. **eLife 5.** PMID: 26943617 https://www.ncbi.nlm.nih.gov/pubmed/26943617
***Featured in Caltech News:** https://www.caltech.edu/news/multitasking-protein-keeps-immune-system-healthy-51946*

Stadtmueller, B.M.*, Kish-Trier E.*, Ferrell K., Robinson H., Myszka D.G., Formosa, T. Hill, C.P. (2012) Crystal structure of the Pba1/2-proteasome complex and implications for HbYX-dependent proteasome interactions. **J Biol Chem 287(44):37371-82.** https://www.ncbi.nlm.nih.gov/pubmed/22930756

Stadtmueller, B.M. and Hill, C.P. (2011) "Proteasome Activators." **Mol Cell 41(1): 8-19.** https://www.ncbi.nlm.nih.gov/pubmed/21211719

Stadtmueller, B. M., Ferrell K., Whitby F.G., Heroux A., Robinson H., Myszka D.G., Hill C.P. (2010) Structural models for interactions between the 20S proteasome and its PAN/19S activators. **J Biol Chem 285(1): 13-7.** https://www.ncbi.nlm.nih.gov/pubmed/19889631

Phillips, J. D., Whitby, F.G., **Stadtmueller, B.M**. Edwards, C.Q., Hill, C.P., Kushner, J.P. (2007). Two novel uroporphyrinogen decarboxylase (URO-D) mutations causing hepatoerythropoietic porphyria (HEP). **Transl Res 149(2): 85-91.** https://www.ncbi.nlm.nih.gov/pubmed/17240319

*denotes equal authorship

INVENTIONS

CHIMERIC SECRETORY COMPONENT POLYPEPTIDES AND USES THEREOF
Inventors: Beth Marie Stadtmueller and Sonya Kumar Bharathkar
U.S. Provisional Patent Application No. 63/245,342

ACADEMIC AWARDS

2017-2018 Baxter Senior Postdoctoral Fellowship (Caltech)
2016 Rising Stars in Mucosal Immunity; finalist, The Society for Mucosal Immunity
2012-2014 Irvington Postdoctoral Fellowship, The Cancer Research Institute
2012 Life Sciences Research Foundation Postdoctoral Fellowship Finalist
(Top 50 out of 950 applications).
2006-2007 P.E.O. International Scholars Award
Merit-based awards for women from the United States and Canada who are pursuing a doctoral level degree or postdoctoral research.
2005-2006 NIH Training Grant in Biological Chemistry (T32 GM008537)
PIs: Cynthia J. Burrows and C. Dale Poulter Mentor: Christopher P. Hill
5/2003-life University of Wisconsin Iron Cross Society
The Iron Cross Society is one of the oldest and most prestigious honor societies at University of Wisconsin that honors 25 student leaders each year for contributions to the University community.
2002-2003 University of Wisconsin Mary Shine-Peterson Fellowship
This competitive fellowship provides support for University of Wisconsin Biochemistry Undergraduates while they complete senior thesis research.

RESEARCH SUPPORT

Ongoing Research Support

NIH R01 AI165570	9/24/2021- 8/31/26 (Role: PI)	$1,776,870.00 (total direct costs)
University of Illinois Start-up Funding	11/01/2018- (Role: PI)	

Completed Research Support

NIH R01 AI04123 Bjorkman (PI)	1/01/14-12/31/18 (Role: Key personnel)
Caltech Baxter Senior Postdoctoral Fellowship	6/01/2017-10/31/2018 (Role: PI)
The Cancer Research Institute Irvington Postdoctoral Fellowship	1/01/2012-12/31/2014 (Role: PI)

ACADEMIC SERVICE AND LEADERSHIP POSITIONS

Ad Hoc Reviewer:
2019 NIH/NIAID: NIH Support for Conferences and Scientific Meetings (R13)
2019 Medical Research Council (MRC) of the UK Research Grant
University of Illinois Trainees
2018-present Sonya Kumar Bharathkar (PhD Student)
2019-present Benjamin Parker (Postdoctoral Associate)
Rebecca Schneider (PhD Student)
Iris Lyu (PhD student)
Qianqiao (Heather) Liu (PhD Student)
2019-2020 Lauren Mazurkiewicz (Undergraduate)
Veronica Boron (Undergraduate)
Steven Hobbs, Jr. (Undergraduate)
2020-2021 Amber Lewis (undergraduate)
2021-present Kate Sanders (Undergraduate)
Bryan Himmel (undergraduate)
Caltech
2013-2016 Mentor: “The Women Mentoring Women” program
2014-2016 High school student research mentor

University of Utah
2008–2011 Graduate Student and Technician Mentor
2005–2009 University of Utah Biochemistry Student Advisory Committee
2006–2008 Biological Chemistry Training Grant Annual Retreat Co-organizer
2004–2005 Molecular Biology Graduate Program Curriculum Committee Member
University of Wisconsin
2002–2003 Ugandan Public Health and Nutrition Program – Student Leader

TEACHING EXPERIENCE

University of Illinois
2020 -present Instructor, MCB 408 "Immunology" https://www.life.illinois.edu/mcb/408/course_info.html
Instructor, Immunology, Carle Illinois College of Medicine
Caltech
2015 Instructor, Caltech BI023 "Form follows Function: Analyzing Protein Structure"
2011-2015 Certificate of Interest in Teaching: "The Caltech Project for Effective Teaching"
University of Utah
2005 Teaching Assistant: Univ. of Utah Biology 3540: Biochemistry of Membrane Processes

SCIENTIFIC PRESENTATIONS AND CONFERENCES

2022 20th International Congress of Mucosal Immunology, Seattle, WA (talk; July 2022)
2022 Opening the Doors to CryoEM Symposium"; UW Madison (June 2022)
2021 UIUC; Innovation Grand Rounds speaker "*The Structures, Functions and Therapeutic Potential of Secretory Antibodies"*
2021 ETH Zurich; Invited Speaker *"The structures of dimeric and secretory IgA*
2021 Cincinnati Children's Hospital Immunology Seminar Series; Invited Speaker *"The structures of dimeric and secretory IgA"*
2021 Society For Mucosal Immunology (virtual event)
2019 West Coast Structural Biology Workshop (session chair)
2018 Palm Springs HIV Symposium (talk)
2017 Rising Stars Symposium (University of Utah; invited speaker)
2017 NIGMS/NIAID conference: Structural Biology Related to HIV/AIDS
2017 West Coast Protein Crystallography Workshop (talk)
2016 Global Infectious Disease Seminar Series UW-Madison (Invited Speaker)
2016 Society for Mucosal Immunity Course and Symposium (Featured Talk)
2016 Cold Spring Harbor Retrovirus Meeting
2016 Biophysical Society Annual Meeting (poster)
2015 Caltech BBE Annual Retreat (poster)
2015 Keystone Symposia: Hybrid Methods in Structural Biology (poster)
2015 West Coast Protein Crystallography Workshop (talk)
2014 Keystone Symposia: Frontiers in Structural Biology (poster)
2014 Cancer Research Institute Symposium (poster)
2013 Cancer Research Institute Symposium (poster)
2013 West Coast Protein Crystallography Workshop (poster)
2011 Caltech BBE Annual Retreat (Poster)
2010 Northwest Crystallography Workshop (talk)
2010 Keystone Symposia: Structural Biology (poster)
2009 West Coast Protein Crystallography Workshop (poster, poster award)
2008 NSLS RapiData – Data Collection & Structure Solving Course
2007 P.E.O International Wisconsin State Convention (Invited Speaker)
2007 P.E.O International Utah State Convention (Invited Speaker)
2007 American Crystallographic Society Annual Meeting
2007 West Coast Protein Crystallography Workshop
2007 Univ. of Utah Biological Chemistry Training Grant Annual Retreat (poster)
2006 Northwest Crystallography Workshop
2006 Univ. of Utah Biological Chemistry Training Grant Annual Retreat (poster)

Emad Tajkhorshid, PhD

J. W. Hastings Endowed Chair of Biochemistry,
Professor of Chemistry, Bioengineering, Biophysics and Quantitative Biology,
Neuroscience, and Computational Science and Engineering
Director, NIH Biotechnology Resource for Macromolecular Modeling and Bioinformatics
Beckman Institute for Advanced Science and Technology
University of Illinois at Urbana-Champaign
405 N. Mathews, Urbana, IL 61801
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Short Biography

Emad Tajkhorshid is Hastings Endowed Chair in the Biochemistry Department, as well as holds additional appointments across multiple colleges that include Chemistry, Bioengineering, Pharmacology, Biophysics and Quantitative Biology, Computational Science and Engineering, and the Carle-Illinois College of Medicine at the University of Illinois. He received his Pharm. D. and attended a Ph.D. program in medicinal chemistry at Tehran University. Dr. Tajkhorshid also earned a Ph.D. in molecular biophysics from the University of Heidelberg, before moving to the University of Illinois at Urbana-Champaign, where he did his postdoctoral studies in computational biophysics at the Beckman Institute. He joined the faculty of the Departments of Biochemistry (LAS) and Pharmacology (UI COM) in 2007 and was fast tracked to associate professor with tenure in 2010 and then again to the rank of professor in 2013. His tenure dossier was selected as one of the two top UIUC tenure cases on campus. In 2015, Professor Tajkhorshid was named a University of Illinois Scholar, after being nominated by both UIUC and UIC campuses. In 2016, he was awarded the Faculty Excellence Award from the School of Molecular and Cellular Biology at UIUC. Later that year he was named Endowed Chair in Biochemistry. He was awarded the Research Excellence Award from the School of Molecular and Cellular Biology at UIUC in 2022.

Dr. Tajkhorshid is a world leader in developing and applying advanced computational techniques to characterization of membrane protein function, with the aim of achieving the most detailed microscopic view of structural and dynamical bases underlying biological function. Major areas of his extensive research portfolio, which have enjoyed continuous support from multiple federal funding agencies (NIH, NSF, DOE, DOD) over many years, include mechanistic studies of membrane transport proteins, principles of energy transduction and coupling in bioenergetic proteins, and lipid modulation of protein function, e.g., in signaling proteins associated with the cellular membrane. Dr. Tajkhorshid has authored more than 280 research articles (*Google H-index 76*) with more than 35,500 citations in such high-profile journals as *Nature, Science, Cell, eLife, and PNAS*. He has delivered more than 165 invited lectures at major conferences, universities, and research institutes, both nationally and internationally. He has served on the Editorial Boards of multiple major journals, including *Biophysical Journal*, *Journal of Biological Chemistry*, *PLoS Computational Biology*, *Biochemical and Biophysical Research Communication, ACS Journal of Chemical Information and Modeling,* and *Annual Reviews of Biophysics.*

Personal History and Professional Experience

A. Educational Background

- **1982: High School Diploma, Mathematics and Physics**, Kharazmi High School, Tehran, Iran.
- **1989: Pharm. D.**, School of Pharmacy, Tehran University, Iran
- **2001: Ph.D. in Biophysics**, **Suma Cum Laude**, University of Heidelberg, Germany

B. List of Academic Positions since Final Degree (all at UIUC)

- **2004-2006: Assistant Director for Research**, NIH Resource for Macromolecular Modeling and Bioinformatics, Beckman Institute for Advanced Science and Technology
- **2007-2010: Assistant Professor**, Department of Biochemistry; Department of Pharmacology, College of Medicine; Beckman Institute for Advanced Science and Technology; Computational Science and Engineering; and Center for Biophysics and Computational Biology
- **2010-2013: Associate Professor**, Department of Biochemistry; Department of Pharmacology, College of Medicine; Beckman Institute for Advanced Science and Technology; Computational Science and Engineering; and Center for Biophysics and Computational Biology
- **2013-present: Professor**, Department of Biochemistry; Department of Pharmacology, College of Medicine; Beckman Institute for Advanced Science and Technology; Computational Science and Engineering; and Center for Biophysics and Computational Biology
- **2013-2016: Head**, Department of Pharmacology, University of Illinois College of Medicine at Urbana-Champaign
- **2013-2014: Interim Head**, Department of Medical Biochemistry, University of Illinois College of Medicine at Urbana-Champaign
- **2014-2018: Director,** NSF nanoBIO Node
- **2016-present: J. W. Hastings Endowed Chair** of Biochemistry
- **2016-present: Professor**, Department of Bioengineering
- **2016-present: Director**, NIH Center for Macromolecular Modeling and Bioinformatics
- **2017-present: Professor**, Department of Chemistry
- **2017-2018: Interim Head**, Department of Biochemistry

C. Other Professional Employment

- **1989-1995:** Chemistry, Organic Chemistry and Medicinal Chemistry instructor, School of Pharmacy, Tehran University of Medical Sciences.
- **Jan 2000-Jul 2000:** Research fellow, Department of Theoretical Physics, University of Paderborn, Paderborn, Germany.
- **2001-2003:** Postdoctoral research associate, Theoretical and Computational Biophysics Group, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign.

D. Honors, Recognitions, and Outstanding Achievements

- **2003:** Animation displaying my simulations on aquaporin water channels deposited at the Nobel Museum web site, in conjunction with the 2003 Nobel Prize in Chemistry. http://nobelprize.org/chemistry/laureates/2003/animations.html
- **2004:** Winner of the 2004 Science and Engineering Visualization Challenge organized by the Science magazine and NSF and published in Science 305, 1905.

- **2010:** Recognized as exceptional by the campus committee on tenure and promotion in terms of the quality of work and achievement, selected as one of the two top assistant to associate tenure packages of the year in the entire UIUC campus.
- **2015-2018:** University Scholar at University of Illinois
- **2016:** Faculty Excellence Award, School of Molecular and Cellular Biology
- **2016-present:** Endowed Chair of Biochemistry
- **2016**: NIH Director's Transformative R01 (T-R01) Program Award
- **2020:** Thomas E. Thompson Award in Membrane Research, Biophysical Society, Membrane Structure and Function Subgroup
- **2022**: Research Excellence Award, School of Molecular and Cellular Biology

E. Editorships of Journals or Other Learned Publications

Journal of Biological Chemistry – Editorial Board (2015-present)

ACS Journal of Chemical Information and Modeling – Editorial Advisory Board (2019-present)

Annual Reviews in Biophysics – Editorial Board (2021-2022)

Faculty of 1000 (2019-present)

BMC Biophysics – Editorial Board (2012-present)

***in Silico* Pharmacology** – Editorial Board (2013-present)

DARU – Editorial Board (2011-present)

Trends in Peptide and Protein Sciences – Editorial Board (2016-present)

Biophysical Journal – Editorial Board (2014-2017)

PLoS Computational Biology – Editorial Board (2010-2017)

Biochemical and Biophysical Research Communication – Editorial Board (2018-2019)

F. Research Support

Hergenrother (PI), Metcalf, White, Tajkhorshid (Co-PIs)
National Institutes of Health – R01-AI136773
Predictive Guidelines for Penetrance and Discovery of Broad-Spectrum Antibiotics
3/1/18-2/28/23
Total: 5,999,641

Tajkhorshid, Rienstra, Morrissey (MPI)
National Institutes of Health – Transformative R01-GM123455
Toolkit for High-Resolution Structure and Dynamics of Functional Lipids
8/1/16-7/31/23 (NCE)
Total: $5,330,589 (Direct: $3,008,447)

Moore (PI), Chen, Schroder, Tajkhorshid (Co-PIs)
Department of energy, DE-SC0022035
Multi-Metalloporphyrin Synthetic Polymers for Long-Range Charge Transport
9/1/21-8/31/24
Total: $1,800,000

Boron and Tajkhorshid (MPI)
National Institutes of Health, R01- DK128315
Molecular mechanism of Na+ -coupled HCO3- transporters: transport of CO3= and CO2
4/1/21-3/31/25
Total: $2,700,000 (Direct: $1,800,000)

Imoukhuede, Wash U. (PI), Tajkhorshid, Procko (CoPIs)
National Institutes of Health, R01-HL159946
Systems analysis and prediction of endothelial cross-family signaling
9/1/22-7/31/25
Total: $2,500,000

Souse (PI), Tajkhorshid (CoPI)
National Science Foundation 2145849
Understanding Protein Mechanical Stability and its Impact on Secretion
1/1/22-12/31/25
Total: $400,000

Arkhipov and Tajkhorshid (MPI)
National Institutes of Health, U24-NS124001
Advancing Bio-Realistic Modeling via the Brain Modeling ToolKit and SONATA Data Format
6/1/21-5/31/26
Total: $2,500,000 (requested)

Tajkhorshid (PI), Luthey-Schulten, Aksimentiev, Kale, Bernardi (CoPIs)
National Institutes of Health, R24-GM145965
NIH Resource for Macromolecular Modeling and Visualization
8/1/22-4/30/27
Total: $6,000,000

Maru (PI) Tajkhorshid (UIUC PI)
National Science Foundation, 2209872

Collaborative Project – Cybershuttle: An End-to-End Cyberinfrastructure Continuum to Accelerate Discovery in Science and Engineering
7/1/22-6/30/27
Total: $1,600,000 (UIUC Component)

Tajkhorshid (PI), Aksimentiev, Kale, Luthey-Schulten (Co-PIs)
National Institutes of Health – R24-GM145965
NIH Resource for Macromolecular Modeling and Visualization
9/28/22-7/31/27
Total: $5,600,000

Wang, Gonzalez, Tajkhorshid (MPI)
National Institutes of Health, R01-DK135088
Dynamics and mechanism of sodium-dependent carboxylate transporters
01/01/23-11/01/27
Total: $2,600,000

Bodany and Tajkhorshid (MPI)
National Science Foundation / Texas Advanced Computing Center
Characteristic Science Applications for the Next Generation NSF LCCF
07/01/2022-08/01/2024
Total: $567,423

PENDING APPLICATIONS:

Ghaemi, Hu (MPI), Gruebele, Tajkhorshid (Co-PI)
National Institutes of Health, R01-AI162957
Mechanisms of HBV capsid disassembly and envelopment: From atomistic dynamics to viral life cycle
12/1/22-11/30/27
Total: $1,600,000 (requested)

Dastvan (PI), Tajkhorshid (Co-PI)
National Institutes of Health, R01-GM145783
Structural dynamics of sphingosine-1-phosphate transporters as key therapeutic targets for immune system modulation and cancer
12/1/22-11/30/27
Total: $2,570,000 (requested)

Clarke (PI)
National Institutes of Health, R01- R01-HL168178 (scored at 4%)
Architecture, dynamics, and regulation of erythrocyte ankyrin-1 complexes
4/1/23-3/31/28
Total: $2,500,000 (requested)

COMPLETED GRANTS:

Tajkhorshid (PI)
National Institutes of Health – P41-GM104601
NIH Center for Macromolecular Modeling and Bioinformatics.
8/1/17-8/31/22
Total: $11,000,000 (Direct: $7,000,000)

Kwok, Tajkhorshid, Camara (MPI)
National Institutes of Health – R01-HL131673
Transformation of mitochondrial VDAC1 between protective and lethal states
4/1/17-2/28/22
Total: $3,560,000 (Direct: $2,677,000)

Boron, Tajkhorshid, Malmstadt (MPI)
Office of Naval Research – N00014-16-1-2535
Molecular mechanisms and pathways for gas transport across biological membranes and implications for physiology and performance
8/1/16–7/31/21
Total: $7,500,000 (Direct: $4,500,000)

Ahern, Iowa (PI), Tajkhorshid (Co-PI)
National Institutes of Health – R01-GM122420
Photochemical determination of sodium channel voltage-dependent gating and composition
7/1/17-6/30/21
Total: $3,225,000 (Direct: $2,127,000)

E. Tajkhorshid (PI)
National Institutes of Health – R25-GM103771
Hands-on Workshops on Computational Biophysics.
9/27/13-8/31/20
Total: $737,000

E. Tajkhorshid (PI)
National Institutes of Health – R01-GM067887
System-Level Simulation of a Bioenergetic Membrane
7/1/16–6/30/20
Total: $1,300,000 (Direct: $850,000)

Maduke (Stanford), Tajkhorshid (MPI)
National Institutes of Health – R01-GM113195
Mechanisms of CLC Transporters and Channels
7/1/16–5/31/20
Total: $1,750,000 (Direct: $1,294,000)

Boron, Tajkhorshid, Somersalo (MPI)
National Institutes of Health – U01-GM111251
Multiscale Modeling of Gas Transport Through Channels in Living Cells.
1/1/15-12/31/19
Total: $2,865,000 (Direct: $2,075,000)

Tajkhorshid (PI/Director)
National Science Foundation – EEC-1227034
Network for Computational Nanotechnology NanoBIO Node.

9/1/12-8/31/18 (NCE 2017-2018)
Total: $3,500,000

Perozo (PI), Tajkhorshid and 10 other investigators (Co-PIs),
National Institutes of Health – U54-GM087519
GLUE GRANT: The Membrane Protein Structural Dynamics Consortium
8/10/10-6/30/18
Direct: ~$19,000,000 (2010-2015) + $10,000,000 (2015-2018)

Tajkhorshid (PI)
National Institutes of Health – R01-GM086749
Molecular Mechanisms of Active Transport Across Cellular Membrane
08/01/09-07/31/16
Total: $1,521,941 (Direct: $1,000,000)

Sligar, Tajkhorshid (MPI)
National Institutes of Health – R01-GM101048
Understanding the Role of Phospholipids in Integrin Signaling
06/01/12-05/31/16
Total: $1,160,000 (Direct: $760,000)

Weiner (PI), Tajkhorshid (Co-PI)
National Institutes of Health – R01-GM079800
TonB-Dependent Outer Membrane Transport
05/15/08-04/30/12
Total: $1,500,000 (Direct: $940,000)

Schulten (PI), Tajkhorshid (Co-PI),
National Institutes of Health – R01-GM067887
Mechanisms of Membrane Proteins Through in situ Modeling
07/01/06-06/30/11
Total: $1,075,000 (Direct: $775,000)

G. Major Panels Served

- Nominating Committee, Biophysical Society, 2016-2017.
- Program Committee of Annual Meeting of the American Society for Biochemistry and Molecular Biology (ASBMB), 2014-2015
- Program Committee of the Biophysical Society 2013-2014
- NSF regular reviewer 2009-present
- NIH BBM study section, permanent member: 2011-2015
- NSF National TeraGrid Resource Allocation Committee (TRAC), permanent member - 2008-2011
- NIH ad hoc Study Sections – 2008-2011
- PRACE (Partnership for Advanced Computing in Europe) – 2013-present
- Austrian Science Foundation – 2011-2012
- Swiss Center of Supercomputing, 2010-present
- European Union – 2008-present
- German Research Foundation (DFG) – 2008-present
- Human frontier Science Program (HFSP) – 2007, 2009
- ACS Petroleum Research Fund – 2006-present
- Natural Sciences and Engineering Research Council of Canada – 2009

II. Publications

Google Scholar H-index: 80 i10-index: 232 Times cited: 39,120

2023 (3 published, 1 in press)

297. L. T. M. Le, J. R. Thompson, S. Dehghani-ghahnaviyeh, S. Pant, P. X. Dang, T. Kanikeyo, E. Tajkhorshid, and A. Alam (2023) Capturing the interplay of membrane lipids and structural transitions in human ABCA7. ***EMBO J.***, 42, e111065.

296. G. D. Galles, D. T. Infield, C. J. Clark, S. Manikandan, A. Rasouli, E. Tajkhorshid, J. D. Galpin, R. B. Cooley, R. A. Mehl, and C. A. Ahern (2023) Tuning aromatic contributions by site-specific encoding of fluorinated phenylalanine residues in bacterial and mammalian cells. ***Nature Communications***, 14: 59.

295. I. Singaram, A. Sharma, S. Pant, M. Lihan, M.-J. Park, P. Buwaneka, Y. Hu, N. Mahmud, Y.-M. Kim, V. Gevorgyan, I. Khan, E. Tajkhorshid, and W. Cho (2023) Targeting lipid-protein interaction for drug development: Development of a novel resistance-proof Syk inhibitor for acute myeloid leukemia. ***Nature Chem. Biol.***, 19: 239–250.

294. Y. Li, A. Acharya, L. Yang, J. Liu, E. Tajkhorshid, H. Zgurskaya, M. Jackson, and J.C. Gumbart (2023) Insights into substrate transport and water permeation in the mycobacterial transporter MmpL3. ***Biophys. J.***, in press.

###. H. Park, R. Zhu, E. A. Huerta, S. Chaudhuri, E. Tajkhorshid, and D. Cooper (2023) End-to-end AI Framework for Interpretable Prediction of Molecular and Crystal Properties. ***Machine Learning: Science and Technology***, under revision.

###. Z. Ghaemi, O. Nafiu, E. Tajkhorshid, M. Gruebele, and J. Hu (2023) A spatial whole-cell model for hepatitis B viral infection and drug interactions. ***Scientific Reports***, under revision.

###. K. A. Muñoz, A. K. Vasan, M. Sinclair, P. Wen, J. R. Holmes, R. J. Ulrich, H. Y. Lee, C.-C. Hung, C. J. Fields, E. Tajkhorshid, G. W. Lau, and P. J. Hergenrother (2023) A Gram-negative-selective antibiotic spares the gut microbiome and prevents *Clostridioides difficile* infection. ***Science***, under review.

###. D. Yang, Z. Zhao, E. Tajkhorshid, and E. Gouaux (2023) Structures and membrane interactions of native serotonin transporter in complexes with psychostimulants. ***PNAS***, submitted.

###. S. Dey, A. Patel, N. Haloi, S. Srimayee, S. Paul, G. K. Barik, N. Akhtar, D. Shaw, G. Hazarika, B. Prusty, M. Kumar, M. K. Santra, E. Tajkhorshid, S. Bhattacharjee, and D. Manna (2023) Quinoline-based Zinc Ionophores with Antimicrobial Activity. ***J. Med. Chem.***, submitted.

###. D. D. Dhavale, A. M. Barclay, C. G. Borcik, K. Basore, D. A. Berthold, I. R. Gordon, J. Liu, M. H. Milchberg, J. Y. O'Shea, M. J. Rau, Z. Smith, S. Sen, B. Summers, J. Smith, O. A. Warmuth, Q. Chen, J. A. J. Fitzpatrick, C. D. Schwieters, E. Tajkhorshid, C. M. Rienstra, and P. T. Kotzbauer (2023) Structure of alpha-synuclein fibrils derived from human Lewy body dementia tissue. ***Nature Communications***, submitted.

###. M. Sinclair, R. A. Stein, J. Sheehan, E. M. Hawes, R. M. O'Brien, E. Tajkhorshid, and D. P. Claxton (2023) Molecular mechanisms of functional impairment for active site mutations in glucose-6-phosphatase catalytic subunit 1 linked to glycogen storage disease type 1a. **XXXX**, submitted.
BioRXiv: https://doi.org/10.1101/2023.03.13.532485

###. C. D. Kinz-Thompson, M. L. Redondo, C. Mulligan, D. B. Sauer, J. J. Marden, J. Song, E. Tajkhorshid, J. F. Hunt, D. L. Stokes, J. A Mindell, D.-N. Wang, and R. L. Gonzalez Jr. (2023) Elevator mechanism dynamics in a sodium-coupled dicarboxylate transporter. ***PNAS***, ~~submitted~~.
BioRXiv: https://doi.org/10.1101/2022.05.01.490196

###. Q. Yu, S. Dehghani-Ghahnaviyeh, A. Rasouli, A. P. Sadurni, D. Ni, J. Kowal, R. Bang-Søerensen, P. Wen, M. Zechner, R. Irobalieva, H. Stahlberg, K.-H. Altmann*, E. Tajkhorshid*, and K. P. Locher* (2023) Modulation of ABCG2 activity by new Ko143 derivatives. ***JACS***, ~~submitted~~.

###. Y. Zhang , O. Soubias , S. Pant , F. Heinrich , A. Vogel , J. Li , Y. Li , L. A. Clifton , S. Daum , K. Bacia , D. Huster , P. A. Randazzo , M. Lösche , E. Tajkhorshid , and R. A. Byrd (2023) Myr-Arf1 conformational flexibility at the membrane surface: insights for ArfGAP ASAP1 interactions. ***PNAS***, ~~submitted~~.

###. S. B. Mamer, K. Kapoor, K. E. Schaberg, S. R. Schad, J. R. Beal, T. S. Kaszuba, E. Tajkhorshid, and P. I. Imoukhuede (2023) Discovery of cross-family PDGF:VEGFR2 signaling. ***Scientific Reports***, ~~submitted~~.

###. H. Wang, J. A. Kulas, S. Pant, G. Licari, J. Tan, B. Xu, E. Tajkhorshid, H. A. Ferris, D. Kozlowski, and S. B. Hansen (2023) Regulation of the beta amyloid 42/40 ratio in Alzheimer's disease and traumatic brain injury. ***Science***, ~~submitted~~.

2022 (22 papers)

293. H. Jeong, S. Clark, A. Goehring, S. Dehghani-Ghahnaviyeh, A. Rasouli, E. Tajkhorshid, and E. Gouaux (2022) Structure of *C. elegans* TMC-1 complex illuminates auditory mechanosensory transduction. ***Nature***, 610: 796–803.

292. S. Dehghani-Ghahnaviyeh, Z. Zhao, E. Tajkhorshid (2022) Lipid-mediated organization of prestin in the outer hair cell membrane and its implications in sound amplification. ***Nature Communications,*** 13:6877.

291. K. Kapoor*, T. Chen*, and E. Tajkhorshid (2022) Post-Translational Modifications Optimize the Ability of SARS-CoV-2 Spike for Effective Interaction with Host Cell Receptors. ***PNAS***, 119: e2119761119.

290. R. Dastvan, A. Rasouli, S. Dehghani-Ghahnaviyeh, S. Gies, and E. Tajkhorshid (2022) Proton-driven alternating access in a spinster transporter, an emerging family of broad-specificity efflux pumps. ***Nature Communications,*** 13: 5161.

289. A. K. Vasan, N. Haloi, R. M. Ulrich, M. E. Metcalf, P.-C. Wen, W. W. Metcalf, P. J. Hergenrother, D. Shukla, and E. Tajkhorshid (2022) Role of internal loop dynamics in antibiotic permeability of outer membrane porins. ***PNAS***, 119(8): e2117009119.

288. A. Rasouli, Q. Yu, S. Dehghani-Ghahnaviyeh, P.-C. Wen J. Kowal, K. P. Locher, and E. Tajkhorshid (2022) Differential Effects of Cholesterol and Phospholipids on Ligand Binding of Multidrug Transporter ABCG2. ***PNAS***, 120(1): e2213437120.

287. J. V. Vermaas, C. G. Mayne, E. J. Shinn, and E. Tajkhorshid (2022) Assembly and Analysis of Cell-Scale Membrane Envelopes. ***J. Chem. Inf. Model.***, 62: 602–617. (Cover Article)

286. S. Pant, Q. Wu, R. Ryan*, and E. Tajkhorshid* (2022) Microscopic Characterization of the Chloride Permeation Pathway in the Human Excitatory Amino Acid Transporter 1 (EAAT1). ***ACS Chem. Neurosci.***, 2022, 13: 776–785. (Cover Article)

285. G. Licari, S. Dehghani-Ghahnavieh, and E. Tajkhorshid (2022) Membrane Mixer: a toolkit for efficient shuffling of lipids in heterogeneous biological membranes. ***J. Chem. Inf. Modeling***, 62: 986-996. (Cover Article)

284. C. K. Chan, A. Singharoy, and E. Tajkhorshid (2022) Anionic lipids confine cyt. c_2 to the surface of bioenergetic membranes without compromising its interaction with redox partners. ***Biochemistry***, 61: 385-397. (Cover Article)

283. K. Kapoor, S. Thangapandian, and E. Tajkhorshid (2022) Extended-Ensemble Docking to Probe Dynamic Variation of Ligand Binding Sites During Large-Scale Structural Changes of Proteins. ***Chem. Sci.*** 13: 4150-4169.

282. M. Soroush Barhaghi, B. Crawford, G. Schwing, D. Hardy, J. E. Stone, L. Schwiebert, J. Potoff, and E. Tajkhorshid (2022) py-MCMD: Python Software for Performing Hybrid Monte Carlo - Molecular Dynamics Simulations with GOMC and NAMD. ***J. Chem. Theo. Comp.***, 18: 4983-4994. (Cover Page)

281. M. Muller, J. H. Morrissey, and E. Tajkhorshid (2022) Molecular View into Preferential Binding of the Factor VII GLA Domain to Phosphatidic Acid. ***Biochemistry***, 16: 1694-1703.

280. L. Leisle, K. Lam, S. Dehghani-Ghahnaviyeh, E. Fortea, J. Galpin, C. A. Ahern, E. Tajkhorshid, and A. Accardi (2022) Backbone amides are key determinants of Cl^- selectivity in CLC ion channels. ***Nature Communications,*** 13: 7508.

279. D. Hardy, J. Choi, W. Jiang, and E. Tajkhorshid (2022) Experiences porting NAMD to the Data Parallel C++ programming model. **International Workshop on OpenCL (IWOCL'22)**, Association for Computing Machinery, New York, USA. May 2022, 15: 1-5. DOI: 10.1145/3529538.3529560.

278. Q. Wu, A. Akhter, S. Pant, E. Cho, J. X. Zhu, A. Garner, T. Ohyama, E. Tajkhorshid, D. J. van Meyel, and R. M. Ryan (2022) Ataxia-linked SLC1A3 mutations alter EAAT1 chloride channel activity and glial regulation of CNS function. ***J. Clin. Inv.***, 132: e154891, doi:10.1172/JCI154891.

277. H. Chen, D. Ogden, S. Pant, W. Cai, E. Tajkhorshid, M. Moradi, B. Roux, and C. Chipot (2022) A Companion Guide to the String Method with Swarms of Trajectories: Characterization, Performance, and Pitfalls. ***J. Chem. Theo. Comp.***,18: 1406-1422.

276. J. S. Kim*, A. S. Arango*, S. Shah, W. R. Arnold, E. Tajkhorshid, and A. Das (2022) Anthracycline Derivatives Inhibit Cardiac CYP2J2. ***J. Inorg. Biochem.***, 229: 111722.

275. J. M. Gullett, M. G. Cuypers, C. R. Grace, S. Pant, C. Subramanian, E. Tajkhorshid, C. O. Rock and S. W. White (2022) Identification of Structural transitions in bacterial fatty acid binding proteins that permit ligand entry and exit at membranes. ***J. Biol. Chem.***, 298: 101676.

274. D. D. Meling, K. M. De La Torre, A. S. Arango, A. R. K. Deviney, A. M. Neff, M. J. Laws, G. R. Warner, E. Tajkhorshid, and J. A. Flaws (2022) Phthalate Metabolites Act Through Peroxisome Proliferator-Activated Receptors (PPAR) in the Mouse Ovary. **Reproductive Toxicology**, 110:113-123.

273. A. Trifan*, D. Gorgun*, M Salim, Z. Li, A. Brace, M. Zvyagin, H. Ma, A. Clyde, D. Clark, D. J. Hardy, T. Burnley, L. Huang, J. McCalpin, M. Emani, H. Yoo, J. Yin, A. Tsaris, V. Subbiah, T. Raza, J. Liu, N. Trebesch, G. Wells, V. Mysore, T. Gibbs, J. C. Phillips, S. C. Chennubhotla, I. Foster, R. Stevens, A. Anandkumar, V. Vishwanath, J. E. Stone, E. Tajkhorshid, S. A. Harris, and A. Ramanathan (2022) Intelligent Resolution: Integrating cryo-EM with AI-driven multi-resolution simulations to observe the SARS-CoV-2 replication-transcription machinery in action. ***Int. J. High-Performance Computing Applications***, 36 (5-6): 603-623.

272. R. P. Sparks*, A. Becker*, A. S. Arango*, E. Tajkhorshid, R. A. Fratti (2022) Use of Microscale Thermophoresis to Measure Protein-Lipid Interactions. ***J. Vis. Exp.***, 180: e60607, doi:10.3791/60607.

2021 (23 papers)

271. Z. Ghaemi, M. Gruebele, and E. Tajkhorshid (2021) Molecular Mechanism of Capsid Disassembly in Hepatitis B Virus. ***PNAS***, 118, e2102530118.

270. I. Chen*, S. Pant*, Q. Wu, R. Cater, M. Sobti, R. Vandenberg, A. G. Stewart, E. Tajkhorshid*, J. Font*, and R. Ryan* (2021) Glutamate Transporters Contain a Conserved Chloride Channel with Two Hydrophobic Gate. ***Nature***, 591: 327-331.

269. N. Haloi, A. K. Vasan, E. Geddes, A. Prasanna, P.C. Wen, W. W. Metcalf, P. Hergenrother, and E. Tajkhorshid (2021) Rationalizing the generation of broad-spectrum antibiotics with the addition of a positive charge. ***Chemical Science***, 12: 15028-15044. (**Cover Article**)

268. J. Ge, J. Elferich, S. Dehghani-Ghahnaviyeh, Z. Zhao, M. Medows, H. von Gersdorff, E. Tajkhorshid, and E. Gouaux (2021) Molecular mechanism of prestin electromotive signal amplification. ***Cell***, 184: 4669-4679.e13.

267. S. Pant, J. Zhang, E. C. Kim, K. Lim, H. J. Chung*, and E. Tajkhorshid* (2021) PIP_2-dependent coupling of voltage sensor and pore domains in $K_v7.2$. ***Communications Biology.***, 4, 1189.

266. D. Gorgun, M. Lihan, K. Kapoor, and E. Tajkhorshid (2021) Binding Mode of SARS-CoV2 Fusion Peptide to Human Cellular Membrane. ***Biophys. J.***, 120, 2914–2926.

265. C. Mayne, W. Toy, K. Carlson, T. Bhatt, S. W. Fanning, G. L. Greene, B. S. Katzenellenbogen, S. Chandarlapaty, J. A. Katzenellenbogen*, and E. Tajkhorshid* (2021) Defining the Energetic Basis for a Conformational Switch Mediating Ligand-Independent Activation of Mutant Estrogen Receptors in Breast Cancer. ***Mol. Cancer Res.***, 19: 1559-1570. (**Cover article**)

264. S. Dehghanighahnavieh, K. Kapoor, and E. Tajkhorshid, (2021) Conformational changes of the nucleotide binding domains of P-glycoprotein induced by ATP hydrolysis. ***FEBS Lett.***, 595: 735-749.

263. N. Haloi, P.-C. Wen, Q. Cheng, M. Yang, G. Natarajan, A. K. S. Camara, W.-M. Kwok, and E. Tajkhorshid (2021) Structural Basis of Complex Formation Between Mitochondrial Anion Channel VDAC1 and Hexokinase-II. ***Communications Biology***, 4, 667.

262. K. Kapoor, S. Pant, and E. Tajkhorshid (2021) Active Participation of Membrane Lipids in Inhibition of Multidrug Transporter P-Glycoprotein. ***Chemical Science***, 12: 6293-6306. (**Cover Article**)

261. C. L. Brooks III, D. A. Case, S. Plimpton, B. Roux, D. van der Spoel, and E. Tajkhorshid (2021) Classical Molecular Dynamics. ***J. Chem. Phys.***, 154: 10041.

260. M. Michenkova, S. Taki, M. Blosser, H. J. Hwang, T. Kowatz, F. J. Moss, R. Occhipinti, X. Qin, S. Sen, E. Shinn, D. Wang, B. Zeise, P. Zhao, N. Malmstadt, A. Vahedi-Faridi, E. Tajkhorshid, W. F. Boron (2021) CO_2 Transport across Membranes. ***Interface Focus***, 11: 20200090.

259. L. Sun, H.-J. Cho, S. Sen, A. S. Arango, T. T. Huynh, Y. Huang, N. Bandara, B. E. Rogers, E. Tajkhorshid, and L. M. Mirica (2021) Amphiphilic Distyrylbenzene Derivatives as Potential Therapeutic and Imaging Agents for Soluble and Insoluble Amyloid β Aggregates in Alzheimer's Disease. ***JACS***, 143: 10462–10476.

258. W. R. Arnold, L. N. Carnevale, Z. Xie, J. L. Baylon, E. Tajkhorshid, H. Hu, and A. Das (2021) Anti-inflammatory dopamine- and serotonin-based endocannabinoid epoxides reciprocally regulate cannabinoid receptors and the TRPV1 channel. ***Nature Communications***, 12: 926.

257. J. Li, L. Han, F. Vallese, Z. Ding, S. K. Choi, S. Hong, Y. Luo, B. Liu, C. K. Chan, E. Tajkhorshid, J. Zhu. O. Clarke, K. Zhang, and R. Gennis (2021) Cryo-EM structures of *E. coli* cytochrome bo_3 reveal bound phospholipids and ubiquinone-8 in a dynamic substrate binding site. ***PNAS***, 118, e2106750118.

256. J. Zabret, S. Bohn, S. K. Schuller, O. Arnolds, M. Möller, J. Meier-Credo, P. Liauw, A. Chan, E. Tajkhorshid, J. D. Langer, R. Stoll, A. Krieger-Liszkay, B. D. Engel, T. Rudack, J. M. Schuller, and M. M. Nowaczyk (2021) How to build a water-splitting machine: structural insights into photosystem II assembly. ***Nature Plants***, 7**:** 524–538.

255. M. Shekhar, G. Terashi, C. Gupta, D. Sarkar, J. Nguyn, N. J. Sisco, A. Mondal, J. Vant, P. Fromme, W. D. Van Horn, E. Tajkhorshid, D. Kihara, K. Dill, A. Perez, and A. Singharoy (2021) CryoFold: determining protein structures and data-guided ensembles from cryo-EM density maps. ***Matter***, 4: 3195-3216. **(cover article)**

254. D. T Infield; A. Rasouli; G. G. Galles; C. Chipot; E. Tajkhorshid, and C. Ahern (2021) Cation-π interactions and their functional roles in membrane proteins. ***J. Mol. Biol.***, 433: 167035.

253. W.-M. Kwok, E. Tajkhorshid and A. K. S. Camara (2021) Editorial: Mitochondrial Exchangers and Transporters in Cell Survival and Death. ***Frontiers in Physiology***, 12: 1415.

252. H. C. Huff, A. Vasan, A. Kaul, E. Tajkhorshid, and Aditi Das (2021) Differential Interactions of Selected Phytocannabinoids with Human CYP2D6 Polymorphisms. ***Biochemistry***, 60, 2749–2760.

251. A. Rasouli, Y. Jamali, E. Tajkhorshid, O. Bavi, and H. Nejat Pishkenari (2021) Mechanical properties of Ester- and Ether-DPhPC bilayers: a molecular dynamics study. ***J. Mech. Behavior Biomedical Materials***, 117, 104386.

250. D. J. Hardy, J. E. Stone, B. Isralewitz, and E. Tajkhorshid (2021) Lessons Learned from Responsive Molecular Dynamics Studies of the COVID-19 Virus. IEEE/ACM HPC for Urgent Decision Making (UrgentHPC), 1-10. doi: 10.1109/UrgentHPC54802.2021.00006

249. J. Sprenger, A. Trifan*, N. Patel*, A. Vanderbeck, J. Bredtfelt, E. Tajkhorshid, R. Rowlett, L. L. Leggio, K. S. Åkerfeldt, and S. Linse (2021) Calmodulin complexes with brain and muscle creatine kinase peptides. ***Curr. Res. Struct. Biol.***, 3: 121-132.

2020 (26 papers)

248. J. C. Phillips, D. J. Hardy, J. D. C. Maia, J. E. Stone, J. V. Ribeiro, R. C. Bernardi, R. Buch, G. Fiorin, J. Hénin, W. Jiang, R. McGreevy, M. C. R. Melo, B. Radak, R. D. Skeel, A. Singharoy, Y. Wang, B. Roux, A. Aksimentiev, Z. Luthey-Schulten, L. V. Kale, K. Schulten, C. Chipot, and E. Tajkhorshid (2020) Scalable molecular dynamics on CPU and GPU architectures with NAMD. ***J. Chem. Phys.*** 153: 044130.

247. T. Jiang, P.-C. Wen, N. Trebesch, Z. Zhao, Z. Pant, K. Kapoor, M. Shekhar, and E. Tajkhorshid (2020) Computational Dissection of Membrane Transport at a Microscopic Level. ***Trends in Biochemical Sciences (TiBS)***, 45: 202-216.

246. G. Licari, K. Strakova, S. Matile, and E. Tajkhorshid (2020) Twisting of a Mechanosensitive Molecular Probe Detects Order in Membranes. ***Chemical Science (RSC)***, 11: 5637-5649.

245. S. Pant and E. Tajkhorshid (2020) Microscopic Characterization of GRP1 PH Domain Interaction with Anionic Membranes. ***J. Comp. Chem.***, 41: 489-499 (Cover Article).

244. D. B. Sauer, N. Trebesch, J. J. Marden, N. Cocco, J. Song, A. Koide, A. Blaustein Rejto, S. Koide, E. Tajkhorshid*, and D.-N. Wang* (2020) Structural basis for the reaction cycle of DASS dicarboxylate transporters. ***eLife***, 9:e61350.

243. H. Chen, J. Maia, B. Radak, D. Hardy, W. Cai, C. Chipot, and E. Tajkhorshid (2020) Boosting Free-Energy Perturbation Calculations with GPU-Accelerated NAMD. ***J. Chem. Inf. Model.***, 60: 5301-5307.

242. S. Thangapandian, K. Kapoor, and E. Tajkhorshid (2020) Probing Cholesterol Binding and Translocation in P-glycoprotein. ***BBA Biomembranes***, 1862: 183090 (Cover Article).

241. K. Lam and E. Tajkhorshid (2020) Membrane Interactions of Cy3/Cy5 Fluorophores and Their Effects on Membrane Protein Dynamics. ***Biophysical J.***, 119: 24-34.

240. T. S. Chavan, R. C. Cheng, T. Jiang, I. I. Mathews, R. A. Stein, A. Koehl, H. S. Mchaourab, E. Tajkhorshid*, and M. Maduke* (2020) A CLC-ec1 mutant reveals global conformational change and suggests a unifying mechanism for the CLC Cl^-/H^+ transport cycle. ***eLife***, 9: e53479.

239. R. Shahoei and E. Tajkhorshid (2020) Menthol binding to the human α4β2 nicotinic acetylcholine receptor, facilitated by its strong partitioning in membrane. ***J. Phys. Chem. B***, 124: 1866-1880.

238. P. Kumar, Y. Wang, Z. Zhang, Z. Zhao, G. D. Cymes, E. Tajkhorshid, and C. Grosman (2020) Cryo-EM structures of a lipid-sensitive pentameric ligand-gated ion channel embedded in a phosphatidylcholine-only bilayer. ***PNAS***, 117: 1788-1798.

237. A. K. Yadav, C. J. Reinhardt, A. S. Arango, H. C. Huff, L. Dong, M. G. Malkowski, A. Das, E. Tajkhorshid, and J. Chan (2020) An Activity-based Sensing Approach for the Detection of Cyclooxygenase-2 in Live Cells. ***Angewandte Chemie***, 59: 3307-3314.

236. O. Soubias*, S. Pant*, F. Heinrich, Y. Zhang, N. S. Roy, J. Li, X. Jian, M. E Yohe, P. A. Randazzo, M. Lösche*, E. Tajkhorshid*, and R. A. Byrd* (2020) Membrane Surface Recognition by the ASAP1 PH Domain and Consequences for Interactions with the small GTPase Arf1. ***Science Advances,*** 6, eabd1882.

235. S. Ciudad, E. Puig, T. Botzanowski, M. Meigooni, A. S. Arango, J. Do, M. Mayzel, M. Bayoumi, S. Chaignepain, G. Maglia, S. Cianferani, V. Orekhov, E. Tajkhorshid, B. Bardiaux, and N. Carulla (2020) Aβ(1-42) tetramer and octamer structures reveal edge conductivity pores as a mechanism for membrane damage. ***Nature Communications***, 11: 3014.

234. J. W. Smith, X. Jiang, H. An, A. Barclay, G. Licari, E. Tajkhorshid, E. Moore, C. Rienstra, J. Moore, and Q. Chen (2020) Polymer–peptide conjugates induce uniform fragmentation and bundling of amyloid fibrils into ordered nanostructures. ***ACS Applied Nano Materials***, 2: 937-945 (Cover Article).

233. J. Zhang, E. C. Kim, C. Chen, E. Procko, S. Pant, K. Lam, J. Patel, R. Choi, M. Hong, D. Joshi, E. Bolton, E. Tajkhorshid, and H.-J. Chung (2020) Identifying mutation hotspots reveals pathogenetic mechanisms of KCNQ2 epileptic encephalopathy. ***Scientific Reports***, 10: 4756.

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6. H.-C. Siebert, E. Tajkhorshid, C.-W. von der Lieth, R. Kleineidam, S. Kruse, R. Schauer, R. Kaptein, H.-J. Gabius, and J. F. G. Vliegenthart (1996) Knowledge-based homology modeling and experimental determination of amino acid side chain accessibility by the laser photo CIDNP (chemically induced dynamic nuclear polarization) approach in solution: lessons from the small sialidase of *Clostridium perfringens*. **J. Mol. Model.,** 2, 446-455.

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Invited Lectures and Oral Conference Presentations (*reverse* chronological):

1. Seeing is Believing - Microscopic View of Lipid Modulation of Protein Function Using Advanced Simulations (Apr 2023) Mathematical Molecular Biosciences (MMB), online.
2. Direct Observation of Modulated Structure and Dynamics of Membrane Proteins by Lipids (Apr 2023) Department of Physiology and Cellular Biophysics, Columbia University, New York, NY, USA.
3. Integrative Modeling Tools and Simulation Technologies for Cell-Scale Structural Biology (Aug 2022) Integrative Modeling in Biophysics seminar, Indian Institute of Science, online.
4. Lipid-protein Interactions and Sound Amplification in Hearing (June 2022) Canadian Chemistry Conference and Exhibition - Symposium on Frontiers of Biophysical Chemistry, Calgary, Canada.
5. Lipid-mediated organization of prestin in the outer hair cell membrane and its implications in sound amplification (June 2022) *2nd COMPPÅ Symposium on Membrane Protein Production and Analysis.* New York Structural Biology Center, New York City, NY, USA.
6. Novel Modeling Tools and Simulation Approaches for Exascale Structural Biology (May 2022) The Biophysics at the Dawn of Exascale Computers thematic BPS meeting, Hamburg, Germany.
7. Molecular Pharmacology at Atomic Resolution- Lessons from Advanced Computational Biophysics to Inspire Drug Design of the Future (Oct 2021) Department of Biophysics, Medical College of Wisconsin, Milwaukee, WI.
8. Modeling robust complete viral envelopes for molecular simulation studies - Challenges and opportunities (Aug 2021) Symposium Talk, 262nd ACS National Meeting, online.
9. Characterizing a Passive Ion-Conducting State in an Active Membrane Transporter (Aug 2021) Symposium Talk, 262nd ACS National Meeting, online.
10. Lipid-protein Interaction Reveals the Mechanism of Prestin in Hearing (Aug 2021) Symposium Talk, 262nd ACS National Meeting, online.
11. Chemomechanical (Ion) Coupling in Human EAATs (Jul 2021) talk at "Ion Channel Biophysics", Telluride Science Research Center, Telluride, CO.
12. Microscopic Regulation of Membrane Protein Function by Lipid Molecules (Apr 2021) Department of Molecular Biosciences, Northwestern University, Chicago, Illinois, online.
13. Binding Mode of SARS-CoV2 Fusion Peptide to Human Cellular Membrane (Apr 2021) Symposium Talk, 261st ACS National Meeting, online.
14. Molecular Pharmacology at Atomic Resolution- Lessons from Advanced Computational Biophysics to Inspire Drug Design of the Future (Mar 2021) Department of Pharmacology, Case Western Reserve University, Cleveland, OH.
15. Microscopic Characterization of Cellular Membrane as an Active Platform for Biological Function (Mar 2021) Department of Biological chemistry, University of Michigan, online.
16. Atomic-Level Dissection of Membranes and Membrane Protein Function Using Advanced Computational Technologies (Feb 2021) Biomedical Engineering seminar, Oregon Health Sciences University, online.
17. Atomic-Level Dissection of Membrane Protein Function Using Advanced Computational Technologies (Feb 2021) Department of Structural Biology and Chemistry, Institut Pasteur, Paris, France, online.
18. The Cellular Membrane as a Major Platform for Drug Interaction with the Cell (Jan 2021) "Biologics by Design", Chemical Computing Group Symposium, Berlin/Zurich, online.
19. Microscopic View of Lipid Regulation of Membrane Protein Function Using Advanced Simulation Technologies (Dec 2019) 7th annual Structural Dynamics of Biomolecules Symposium, St. Louis University, St. Louis, MO.
20. Microscopic Dissection of Lipid-Mediated Modulation of Membrane Protein Function (Dec 2019) Department of Physiology and Biophysics, Institute for Computational Biomedicine, Weill Cornell Medical College, New York City, NY.
21. Lipid Modulation of Structure, Dynamics, Energetics, and Function of Membrane Proteins (Jul 2019) Invited talk at "Ion Channel Biophysics", Telluride Science Research Center, Telluride, CO.
22. Lipid Regulation of Structure, Dynamics, Energetics, and Function of Membrane Proteins (July 2019) Invited talk at "12th European Biophysics Congress", Madrid, Spain.
23. Lipid Modulation of Energy Landscapes Governing Dynamics and Function of Membrane Proteins (June 2019) Invited talk at "Free Energy Calculations: Entering the fourth decade of adventure in chemistry and biophysics", Santa Fe, NM.

24. Electrostatic Lipid Modulation of Diffusion and Binding of Electron Shuttling Proteins on the Surface of Bioenergetic Membranes (May 2019) Invited talk at the Gordon Research Conference on Bioenergetics, Proctor College, Andover, NH.
25. Multimodal Control of Membrane Protein Function by Biological Membranes (Apr 2019) Symposium Talk, 257th ACS National Meeting, Orlando, FL.
26. Visualizing Molecular Mechanisms of Lipid Modulation of Protein Function with Advanced Simulation Techniques (Apr 2019) Symposium Talk, 257th ACS National Meeting, Orlando, FL.
27. High-Resolution Modeling and Simulation of Cellular Structures and Processes, One Atom at a Time (Mar 2019) Invited Symposium at 60th Annual Meeting of the Biophysical Society, Baltimore, MD.
28. Biomolecular Modeling and Simulation Guided by Diverse Sources of Experimental Data (Mar 2019) Integrative Structure Determination Federation (iSDF) Workshop, Satellite Meeting associated with 60th Annual Meeting of the Biophysical Society, Baltimore, MD.
29. Visualizing Membrane Channels and Transporters at Work at an Atomic Resolution (Feb 2019) Department of Cell Physiology and Molecular Biophysics, Texas Tech University Health Sciences Center, Lubbock, TX.
30. Dissecting the Molecular Mechanisms of Membrane Channels and Transporters at An Atomic Resolution (Jan 2019) Visiting Professorship Seminar jointly by Department of Anesthesiology and the Cancer Center, Medical College of Wisconsin, Milwaukee, WI.
31. Dissecting Molecular Pathways Involved in Cancer at a Microscopic Level with Advanced Computational Techniques (Jan 2019) Illinois Cancer Center, University of Illinois at Urbana-Champaign, Urbana, IL.
32. Deciphering Biological Complexity of Membrane Proteins One Atom at a Time (Sep 2018) Physics Colloquium, Department of Physics, Chinese University of Hong Kong, Hong Kong.
33. GPU Acceleration of Biomolecular Simulation and Visualization in NAMD and VMD (Dec 2018) International Workshop on GPU Accelerated Molecular Dynamics Simulations, Hong Kong University of Science and Technology, Hong Kong.
34. Deciphering Biological Complexity of Membrane Proteins One Atom at a Time (Sep 2018) Physics Colloquium, Department of Physics, University of Missouri at Columbia, Columbia, MO.
35. Visualizing Biological Membranes and Membrane Proteins Using Advanced Modeling and Simulation Technologies (Aug 2018) Department of Chemistry, University of Illinois Chicago, Chicago, IL.
36. Multidimensional Free Energy Landscape Governing Structural Transitions of a Neurotransmitter Transporter in Membrane (Aug 2018) Symposium Talk, 256th ACS National Meeting, Boston, MA.
37. Lipid modulation of energy landscapes governing structural transitions in membrane transporters (Jun 2018) 15th FASEB Research Conference on “Molecular Biophysics of Membranes”, St. Bonaventure University, Olean, NY.
38. Visualizing Biological Membranes and Membrane Proteins Using Advanced Modeling and Simulation Technologies (Jun 2018) Center for Quantitative Biology, Peking University, Beijing, China.
39. High-Resolution Characterization of Biological Membranes and Membrane Proteins in Action (May 2018) Beijing Center for Computational Sciences, Beijing, China.
40. Advanced Computational Technology to Enhance Quality of EM-Derived Biological Structures (May 2018) Third Coast Workshop on Biological Cryo-EM, University of Chicago, Chicago, IL.
41. Microscopic Visualization of Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (Apr 2018) Tsinghua International Symposium of Computational Structural Biology and Biophysics, Tsinghua University, Beijing, China.
42. Microscopic description of membrane proteins using advanced simulation techniques (Feb 2018) Laboratoire International Associé (LIA) CNRS–University of Illinois at Urbana-Champaign, Kickoff meeting, University of Lorraine, Nancy, France.
43. Microscopic View of Mechanisms and Pathways for Material Transport Across the Cellular Membrane (Oct 2017) Physiology and Molecular Biophysics Seminar, Department of Physiology, Case Western Reserve University, Cleveland, OH.
44. NAMD: Innovation Towards Exascale Enabling Simulation of Complex and Large-Scale Biological Phenomena (Aug 2017) Symposium Talk, 254th ACS National Meeting, Washington, DC.

45. Modeling and Molecular Dynamics of Membrane Proteins (Aug 2017) Invited lecture, IV Brazilian Molecular Modeling School, Federal University ABC (UFABC), Santo André, São Paulo, Brazil.
46. Molecular Modeling and Molecular Dynamics Simulation of Complex Biomolecular Systems and Processes (Aug 2017) Invited lecture, IV Brazilian Molecular Modeling School, Federal University ABC (UFABC), Santo André, São Paulo, Brazil.
47. Multidimensional Free Energy Landscape Governing Structural Transitions of a Neurotransmitter Transporter in Membrane (Jun 2017) Invited lecture at Gordon Research Conference on Membrane Transport Proteins, Colby Sawyer College, New London, NH.
48. Capturing Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (Mar 2017) Physics Colloquium, Department of Physics, University at Buffalo, SUNY, Buffalo, NY.
49. Atomic-Level Visualization of Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (Jan 2017) Invited Talk, Caltech Bioengineering Lecture Series, California Institute of Technology, Pasadena, CA.
50. A More Efficient Computational Model for Studying Lipid-Protein Interaction at Atomic Resolution (Oct 2016) Invited talk at NCI Symposium on "RAS Structure and Dynamics in Cellular Membranes", NCI, Frederick, MD.
51. Visualizing Functional Motions of Membrane Transporters Using Advanced Simulation Technologies (Sep 2016), Invited talk at CHI 14th Annual Discovery on Target, Boston, MA.
52. Multiscale Modeling and Simulation of Biological Membranes and Membrane Proteins (Jul 2016) Invited talk at "Coarse-Grained Modeling of Structure and Dynamics of Biomacromolecules", Telluride Science Research Center, Telluride, CO.
53. Microscopic Description and Structural Basis of the Mechanism of a Bacterial Drug Transporter (Jul 2016) Invited lecture at "Novel Approaches to Fight Bacteria", Jacobs University, Bremen, Germany.
54. Atomic-Level Characterization of Structural Transitions and Energy Landscapes in Membrane Transporters (Jun 2016) Invited lecture at Gordon Research Conference on Membrane Transport Proteins, Il Ciocco, Italy.
55. Atomic-Level Visualization of Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (May 2016) Department of Physics, City University of Hong Kong, Hong Kong.
56. Atomic-Level Visualization of Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (May 2016) Invited talk at "IAS Focused Program on Molecular Machines of Life: Simulation Meets Experiment", Hong Kong University of Science and Technology, Hong Kong.
57. Atomic-Level Visualization of Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (Mar 2016) Chemistry Colloquium Series, Vanderbilt University, Nashville, TN.
58. Atomic-Level Visualization of Biological Membranes and Membrane Proteins in Action Using Advanced Simulation Technologies (Feb 2016) Biological Physics Seminar, Department of Physics, Arizona State University, Tempe, AZ.
59. Visualizing Functional Motions of Biological Membranes and Membrane Proteins at Full Atomic Resolution Using Advanced Simulation Technologies (Jan 2016) Departmental Seminar, Department of Biochemistry and Molecular Biology, Kansas University Medical Center, Kansas City, KS.
60. Characterizing large--scale conformational changes in membrane transporters at high spatial and temporal resolutions (Dec 2015) PACIFICHEM 2015, Honolulu, HI.
61. Computational Imaging of Functional Motions of Membrane Proteins at High Temporal and Spatial Resolutions (Oct 2015) Departmental Seminar, Department of Molecular Biophysics and Physiology, Rush University Medical Center, Chicago, IL.
62. Visualizing Complex Functional Motions of Membrane Transporters at an Atomic Resolution (Jul 2015) Invited talk at "Ion Channel Biophysics", Telluride Science Research Center, Telluride, CO.
63. Visualizing Complex Functional Motions of Membrane Transporters at an Atomic Resolution (Jul 2015) Invited symposium at 10th European Biophysical Societies Meeting EBSA 2015, Dresden, Germany.

64. Highly Mobile Membrane Mimetic (HMMM) – In Quest of a More Efficient Computational Model for Sampling Lipid-Protein Interactions at Atomic Resolution (Jul 2015) Invited talk at "Membrane Biophysics", Telluride Science Research Center, Telluride, CO.
65. Characterizing Complex Functional Motions of Membrane Transporters at an Atomic Resolution (July 2015) Invited talk at "Free Energy Calculations: Three decades of adventure in chemistry and biophysics", Snowmass, CO.
66. Characterizing Large--scale Conformational Changes in Membrane Transporters at High Spatial and Temporal Resolutions with Advanced Computational Methods (May 2015) Invited talk at Cold Spring Harbor Asia conference on Membrane Proteins: Structure & Function, Suzhou Dushu Lake Conference Center, Suzhou, China.
67. Computational imaging of complex functional motions of membrane transporters using advanced simulation and free energy techniques (Apr 2014) Departmental Seminar, Department of Chemistry, Department of Physiology and Biophysics, University of Virginia, Charlottesville, VA.
68. Visualizing Complex Functional Motions of Membrane Transporters at an Atomic Resolution Using Advanced Simulation and Free Energy Techniques (Mar 2015) Departmental Seminar, Center for Physics of the Living Cells, Department of Physics, University of Illinois at Urbana-Champaign, IL.
69. Visualizing Complex Functional Motions of Membrane Transporters at an Atomic Resolution (Mar 2015) Invited Symposium Talk at "What's New in Membrane Transport Proteins?" Experimental Biology 2015, Boston, MA.
70. Visualizing complex functional motions of membrane transporters using advanced simulation and free energy techniques (Mar 2015) Invited talk at "Modeling complex biomolecules: from structure to dynamics and function" Symposium, 249th National Meeting of the American Chemical Society, Denver, CO.
71. Atomic-level simulations of large-scale functional motions of membrane transporters (Feb 2015) Invited Symposium talk at "Advances in Computing Large Systems" workshop, at the Biophysical Society 59th Annual Meeting, Baltimore, MD.
72. Visualizing Functional Motions of Biological Membranes and Membrane Proteins at Full Atomic Resolution Using Advanced Simulation Technologies (Dec 2014) Department of Chemistry, University of Colorado at Denver, Denver, CO.
73. Visualizing Functional Motions of Membrane Transporters at High Temporal and Spatial Resolutions (July 2014) Invited symposium talk at "European Bioenergetics Conference", Lisbon, Portugal.
74. Visualizing Functional Motions of Membrane Transporters at High Temporal and Spatial Resolutions (May 2014) Invited talk at "Beilstein Bozen Symposium – Chemistry and Time", Prien (Chimsee), Germany.
75. Characterizing Large-Scale Structural Transitions in Membrane Transporters (May 2014) Invited talk at "Frontiers in Membrane Protein Structural Dynamics 2014", Chicago, Illinois, USA.
76. Capturing a dynamic, atomic-detailed view of large-scale structural transitions in ABC transporters (Mar 2014) Invited talk at "ABC2014 - 5th FEBS Special Meeting on ABC Proteins", Innsbruck, Austria.
77. Computational Imaging of Biological Membranes and Membrane Proteins (Oct 2013) **Beckman Director's Seminar**, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL.
78. Atomic Resolution Description of Structural Transition Pathways in Membrane Transporters with Advanced Molecular Simulation Technologies (Sep 2013) Invited talk at "6th SFB35 Symposium 2013: Membrane Transporters", Vienna, Austria.
79. Visualizing Membrane Proteins at Work with Molecular Dynamics Simulations (Aug 2013) Invited talk at "Membrane Protein Biology and Biochemistry", University of Stockholm, Sweden.
80. Sampling Transition Pathways for Large-Scale Conformational Changes in Membrane Transporters (July 2013) Invited talk at "Free Energy Calculations: Three decades of adventure in chemistry and biophysics", Snowmass, CO.
81. Extending the Application of the Highly Mobile Membrane Mimetic (HMMM) Model to Transmembrane Phenomena (July 2013) Invited talk at "Biological Membranes and Membrane Proteins", Snowmass, CO.

82. Accelerated Simulation of Membranes and Membrane-Associated Phenomena with a Novel Atomistic Membrane Mimetic Model (May 2013) Membrane Protein Folding, Seoul, South Korea.
83. Seeing is Believing – A Journey to the Molecular World of the Human Body (Apr 2013) University of Illinois High School, Urbana, IL.
84. Accelerating Membrane-Associated Phenomena with a Novel Atomistic Membrane Mimetic Model (Mar 2013) Membrane Biophysics, Telluride Science Research Center, Telluride, CO.
85. Membrane Transporters - Molecular Machines Coupling Cellular Energy to Vectorial Transport Across the Membrane (Sep 2012) Laurence H. Baker Center for Bioinformatics & Biological Statistics, Iowa State University, Ames, IA.
86. Visualizing the Highly Dynamical Role of the Cellular Membrane in Recognition, Signaling, and Transport Phenomena at sub-A Resolution (Sep 2012) Department of Biochemistry, University of Illinois at Urbana-Champaign, Urbana, IL.
87. Visualizing gas permeation pathways through proteins at sub-Angstrom resolution (Sep 2012) Gas Channel Workshop, Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH.
88. Characterizing Optimal Pathways for Large-Scale Conformational Changes of Membrane Transporters (May 2012) Frontiers in Membrane Protein Structural Dynamics, University of Chicago Gleacher Center, Chicago, IL.
89. Developing an Atomistic, Highly Mobile Membrane Model (HMMM) and Its Wide Applications (May 2012) Frontiers in Membrane Protein Structural Dynamics – Computational Mini-Symposium, Gordon Center for Integrative Science, University of Chicago, Chicago, IL.
90. Capturing Functional Motions of Membrane Transporters at an Atomic Resolution (Apr 2012) Department of Physiology and Biophysics, Rosalind Franklin University of Medicine and Science, Chicago, Illinois, USA.
91. Visualizing the Dynamics of the Alternating Access Mechanism in Membrane Transporters at Atomic Resolution (Mar 2012) Department of Structural and Chemical Biology, Mount Sinai School of Medicine, New York City, New York, USA.
92. Accelerating Membrane Insertion of Peripheral Proteins with a Novel Membrane Mimetic Model (Feb 2012) Invited Symposium at 56th Annual Meeting of the Biophysical Society, San Diego, California, USA.
93. Characterizing Functional Motions and Chemomechanical Coupling Mechanisms in Membrane Transporters (Feb 2012) Invited lecture at Gordon Research Conference on Protons and Membrane Reactions, Ventura, California, USA.
94. Dynamical View of Energy Coupling Mechanisms in Active Membrane Transporters (Feb 2012) Physics Colloquium, Department of Physics, Indiana University Purdue University Indianapolis, Indianapolis, Indiana, USA.
95. Capturing Functional Motion of Membrane Transporters at an Atomic Resolution (Dec 2011) Department of Physiology, School of Medicine, Johns Hopkins University, Baltimore, Maryland, USA.
96. Capturing Functional Motion of Membrane Transporters at an Atomic Resolution with Large-Scale Molecular Dynamics Simulations (Nov 2011) Departments of Physics and Physiology, University of Montreal, Montreal, Quebec, Canada.
97. Membrane Transporters - Molecular Machines Coupling Cellular Energy to Vectorial Transport Across the Membrane (Aug 2011) Rise of The Machines: Integration of experiment, simulation and theory for a mechanistic understanding of biomolecular machines, Telluride Science Research Center, Telluride, Colorado, USA.
98. Structural and dynamical roles of Ca^{2+} in binding and activation of coagulation proteins on the surface of anionic lipid bilayers (Jul 2011) The 17th International Symposium on Ca^{2+}-Binding Proteins and Ca^{2+} Function in Health and Disease, Beijing, China.
99. Dynamics of Insertion of Peripheral Proteins into Lipid Bilayers Captured at Atomic Resolution Using a Highly Mobile Membrane Mimetic Model (Jun 2011) Invited talk at “Biological Membranes and Membrane Proteins”, Snowmass, Colorado, USA.
100. Molecular Dynamics Simulations of Gas Transport Through Membrane Channels (Apr 2011) Invited talk at “Gas Channels” symposium, Experimental Biology 2011, Washington DC, USA.

101. Dynamical View of Energy Coupling Mechanisms in Active Membrane Transporters (Apr 2011) **Plenary lecture** at 25th Molecular Modelling Workshop, Erlangen, Germany.
102. Molecular Mechanisms of Energy Coupling in Active Membrane Transporters (Mar 2011) Invited talk at 241st National Meeting of the American Chemical Society, Anaheim, California, USA.
103. Dynamical View of Energy Coupling Mechanisms in Active Membrane Transporters. (Feb 2011) Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
104. Visualizing the Art of Active Transport Across the Cellular Membrane (Oct 2010) Invited lecture at "Imaging Without Boundaries", Beckman Institute, Urbana, Illinois, USA.
105. Combining Different Time and Resolution Scales to Describe Functionally Relevant Structural Transitions in Membrane Proteins (Sep 2010) Invited lecture at International Conference on "Celebrating Computational Biology: A Tribute to Frank Blaney", Oxford, England.
106. A Dynamical View of Membrane Transporter Function. (Aug 2010) Invited lecture at Gordon Research Conference on Membrane Transport Proteins, University of New England at Biddeford, Maine, USA.
107. Visualizing the Art of Active Transport Across Cellular Membranes at Sub-Angstrom Resolution (Jul 2010) Invited lecture at "Summer School in Biophysics at UT/ORNL: Computational and Experimental Challenges", Knoxville, Tennessee, USA.
108. Dynamical View of Energy Coupling Mechanisms in Active Membrane Transporters. (Jun 2010) Invited lecture at "From Computational Biophysics to Systems Biology (CBSB10)", Traverse City, Michigan, USA.
109. Next Generation Drug Design by Large-Scale Simulation of Biomolecules. (May 2010) BIO International Convention 2010, McCormick Place, Chicago, Illinois, USA.
110. Dynamical View of Energy Coupling Mechanisms in Active Membrane Transporters. (Mar 2010) National Biomedical Computing Resource, University of California at San Diego, San Diego, California, USA.
111. Dynamics of Membrane Binding and Activation of Coagulation Factors Captured at Atomic Resolution. (Mar 2010) Department of Biochemistry and Molecular Biology, St. Louis University, St. Louis, Missouri, USA.
112. A Dynamical View of Membrane Transporter Function at Sub-Angstrom Resolution. (Feb 2010) Invited Symposium at 54th Annual Meeting of the Biophysical Society, San Francisco, California, USA.
113. Visualizing the art of active transport across cellular membranes at sub-angstrom resolution. (Feb 2010) Invited lecture at "17th Mardi Gras Conference 2010 on Computational Materials and Methods", Louisiana State University, Baton Rouge, Louisiana, USA.
114. Molecular Dynamics Simulation of Biomolecular Systems and Processes. (Feb 2010) Invited lecture at "17th Mardi Gras Conference 2010 on Computational Materials and Methods", Louisiana State University, Baton Rouge, Louisiana, USA.
115. Unraveling the Dynamical Basis of Membrane Transporter Function at Sub-Angstrom Resolution. (Oct 2009) Department of Physiology and Biophysics, Institute for Computational Biomedicine, Weill Cornell Medical College, New York City, New York, USA.
116. Simulating the Art of Active Transport Across the Cellular Membrane. (Sep 2009) Symposium on "Computational Biology of the Cell - the Next Decade", Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
117. Computational Studies of Membrane Proteins and Processes at Different Size and Time Scales. (Sep 2009) Intelligent Molecular Laboratory, University of Tokyo, Tokyo, Japan.
118. Visualizing the Dynamics of Membrane Transport at Sub-Angstrom Resolution. (Sep 2009) Invited lecture at Riken Institute, Tokyo, Japan.
119. Coupling of Protein Conformational Transitions and Vectorial Substrate Translocation in Membrane Transporters. (Sep 2009) Invited lecture at "International Symposium on Innovative Nanoscience of Supermolecular Motor Proteins Working in Biomembranes", Kyoto, Japan.
120. Dynamical View of Membrane Binding and Complex Formation of Human Tissue Factor and Factor VIIa. (Jul 2009) Oral presentation at "XXII Congress of the International Society on Thrombosis and Haemostasis", Boston, Massachusetts, USA.

121. Molecular Dynamics Studies of Mechanisms of Permeation, Selectivity, and Gating in Membrane Channels. (Jun 2009) Invited lecture at Summer School on "Quantum and Classical Simulation of Biological Systems and Their Interaction with Technical Materials". University of Bremen, Bremen, Germany.
122. Dynamical View of Energy Coupling Mechanisms in Active Membrane Transporters. (Jun 2009) Invited lecture at Summer School on "Quantum and Classical Simulation of Biological Systems and Their Interaction with Technical Materials". University of Bremen, Bremen, Germany.
123. Visualizing the art of active transport across cellular membranes at sub-angstrom resolution. (May 2009) Invited lecture at International Workshop on "From Structure to Function: Influx and Efflux Systems", Cagliari, Italy.
124. Dynamics of Active Transport Across Cellular Membranes at Full Atomic Resolution (Feb 2009), Invited lecture at 49rd Sanibel Symposium 2009, Saint Simons, Georgia, USA.
125. Dynamics of active transport across cellular membranes at full atomic resolution. (Jan 2009) Department of Physiology, Yale University, New Haven, Connecticut, USA.
126. An Atomic-Resolution View of Membrane Binding and Activation of Blood Coagulation Factors (Oct 2008) Department of Pharmacology, University of Illinois at Chicago, Chicago, Illinois, USA.
127. Dynamics of Active Transport Across Cellular Membranes at Full Atomic Resolution (Oct 2008) Delaware Membrane Protein Symposium, University of Delaware, Newark, Delaware, USA
128. Visualizing the Art of Active Transport Across Cellular Membranes at Sub-Angstrom Resolution (Sep 2008) New York University, New York City, New York, USA.
129. A Dynamical View of Membrane Transporters - Electrostatic Aspect of Transport (Jul 2008) Protein Electrostatic Workshop, Telluride Science Research Center, Telluride, Colorado, USA.
130. Visualizing the Art of Active Transport Across Cellular Membranes at Full Atomic Resolution (May 2008) University of Calgary, Calgary, Alberta, Canada.
131. Ion Binding and Channel Opening of Acid Sensing Ion Channel-1 (May 2008) Conference on "Force-Gated Ion Channels: From Structure to Sensation". HHMI Janelia Farm Research Campus, Ashburn, Virginia, USA.
132. A Dynamical View of Membrane Transport at Full Atomic Resolution: Molecular Dynamics Simulation of Membrane Transporters (Mar 2008) University of California Davis, Sacramento, California, USA.
133. A Dynamical View of Membrane Transport at Full Atomic Resolution: Simulation of Membrane Channels and Transporters (Mar 2008) Case Western Reserve University, Cleveland, Ohio, USA.
134. Dynamics of substrate binding, gating, and energy coupling in membrane transporters (Mar 2008) Gordon Research Conference – Ligand Recognition and Molecular Gating, Ventura, California, USA.
135. Membrane Transport at sub-Angstrom Resolution (Jan 2008) University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
136. Membrane Transport at sub-Angstrom Resolution (Nov 2007) Purdue University, West Lafayette, Indiana, USA.
137. Large-scale simulations of gating and transport in membrane channels and transporters (Aug 2007) 234th ACS National Meeting, Boston, Massachusetts, USA.
138. Combining all-atom and coarse-grained models to simulate transport across lipid bilayers (Jul 2007) Invited lecture at Experimental and Computational Approaches to Understanding Membrane Assemblies and Permeation. National Center for Supercomputing Applications (NCSA), University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
139. Treble role of calcium in membrane binding of blood coagulation factors (Jun 2007) Invited lecture at Membranes and Membrane Proteins meeting, Park City, Utah, USA.
140. Atomic Resolution Mechanisms of Membrane Channels and Transporters (Nov 2006) Invited lecture at 19th annual Research Symposium of Cellular and Molecular Biology/Molecular Biophysics, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
141. Visualizing the Art of Selective Transport in Membrane Channels at Full Atomic Resolution (Sep 2006) University of Arizona, Tucson, Arizona, USA.
142. Visualizing the Art of Selective Transport in Membrane Channels at Full Atomic Resolution (Jul 2006) Invited lecture at Transdisciplinary International Conference on Aromatic Amino Acids and Related Substances: Chemistry, Biology, Medicine, and Application, Vancouver, Canada.

143. Many Faces of Aquaporins - Far More Than Innocent Water Channels! (Jun 2006) Invited lecture at The First Glial Endfoot Meeting: Physiology and pathophysiology at the brain blood interface, University of Oslo, Oslo, Norway.
144. Visualizing the Art of Selective Transport in Membrane Channels at Full Atomic Resolution (Mar 2006). Plenary talk. International Workshop on "Dynamics of Membranes", German Biophysical Society, Gomadingen, Germany.
145. Unraveling molecular mechanisms of permeation, selectivity, and gating of membrane channels at full atomic resolution (Mar 2006) Max Planck Institute for Biophysics, Frankfurt, Germany.
146. Visualizing the Art of Selective Transport in Membrane Channels at Full Atomic Resolution (Mar 2006) Purdue University, West Lafayette, Indiana, USA.
147. Coupling of Proton Translocation and Protein Conformational Changes in Lactose Permease (Feb 2006) 50th Annual Meeting of the Biophysical Society, Salt Lake City, Utah, USA.
148. Visualizing the Art of Selective Transport in Membrane Channels at Full Atomic Resolution (Feb 2006) Brandeis University, Boston, Massachusetts, USA.
149. Visualizing the Art of Selective Transport in Membrane Channels at Full Atomic Resolution (Feb 2006) School of Molecular and Cellular Biology, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
150. Transmembrane traffic of materials through pure lipid bilayers and membrane channels (Nov 2005) Departmental seminar, Department of Physiology, Yale University, New Haven, Connecticut, USA.
151. Visualizing the Art of Selective Transport in Membrane Channels (Oct 2005) Departmental seminar, Department of Physiology, Rush University, Chicago, Illinois, USA.
152. Understanding Membrane Transport at Full Atomic Resolution: Molecular dynamics simulations of lipid bilayers and membrane channels (Oct 2005) Invited lecture at Membranes and Ion Channels, e-cheminfo 2005, Philadelphia, Pennsylvania, USA.
153. Transmembrane Traffic of Materials Through Pure Lipid Bilayers and Membrane Channels (Oct 2005) Invited lecture at Biological Membranes: Structure and Function, Ohio State University, Columbus, Ohio, USA.
154. Visualizing the Art of Selective Transport in Membrane Channels (Oct 2005) Departmental seminar, Rush Medical Center, Chicago, Illinois, USA.
155. The Art of Water Conduction in Living Cells (Feb 2005) Theoretical and Computational Biophysics 4D lecture series, Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
156. Gating, Permeation, and Selectivity of Membrane Channels (Nov 2004) Departmental seminar, Theoretical Chemistry Institute, department of Chemistry, University of Wisconsin-Madison, Madison, Wisconsin, USA.
157. Structure-Activity Relationship of Aquaporin Water Channels (Nov 2004) Invited lecture at the Applications of Cheminformatics and Chemical Modelling to Drug Discovery, electronic online conference.
158. Mechanism of Storage of Light Energy in Rhodopsins (Sep 2004) Invited lecture at the International Symposium on Retinal Proteins: Experimental and Theory, Heidelberg, Germany.
159. Novel Mechanisms of Substrate Selectivity in Membrane Channels (Sep 2004) Invited lecture at 2004 Annual Meeting of the German Biophysical Society, Freiburg, Germany.
160. Selective Transport of Substrates across Biological Membranes: Lessons from Computational Studies of Membrane Channels (Jun 2004) Departmental seminar, Department of Medicine, University of Chicago, Chicago, Illinois, USA.
161. Structural Basis of Substrate Permeation and Selectivity in Membrane Channels: Lessons from Non-Equilibrium Simulations (Feb 2004) Invited lecture at the Permeation/Transport Subgroup of the 48th Annual Meeting of the Biophysical Society, Baltimore, Maryland, USA.
162. Electrostatics Regulation of Substrate Permeation and Selectivity of Aquaporins. (Feb 2004) 48th Annual Meeting of the Biophysical Society, Baltimore, Maryland, USA.
163. Largest-Scale Full-Atomic Simulations of Biomolecular Processes (Nov 2003) Invited lecture at “Multi-scale simulation of biological systems, International Conference on Systems Biology 2003”, St. Louis, MI, USA.

164. Molecular mechanisms of photoactivation and spectral tuning in retinal proteins (Oct 2003) Invited lecture at "Software Solutions to Large Scale Problems in Computational Chemistry" Computational Chemistry GRID Conference, University of Kentucky, Lexington, Kentucky, USA.
165. Large Scale Molecular Dynamics Simulations of Membrane Proteins. (Jul 2003) Invited lecture at Computing for Biology, IBM-BNL Blue-Gene Science Workshop 2003. Long Island, New York, USA.
166. Computational Studies of Aquaporin Function and Mechanism. (Jun 2003) Invited lecture at Gordon Research Conference on Mechanisms of Membrane Transport, Holderness, New Hampshire, USA.
167. Novel Selectivity Mechanisms of Membrane Channels: Insights from Computational Investigations of Aquaporins. (May 2003) Departmental seminar, Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
168. Molecular dynamics simulation of aquaporin mutants in congenital cataracts. (Mar 2003) 47th Annual Meeting of Biophysical Society, San Antonio, Texas, USA.
169. Computational Modeling of Substrate Transport Through Membrane Channels (Feb 2003) Invited lecture at 43rd Sanibel Symposium, St Agustine, Florida, USA.
170. Architectural Design of a Highly Selective Membrane Channel. (Oct 2002) Molecular and Electronic Nanostructures Seminar Series (Nanohour), Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
171. Large scale molecular dynamics simulation of biomolecular systems. (Oct 2002) Invited lecture at "Software Solutions to Large Scale Problems in Computational Chemistry" Computational Chemistry GRID Conference, University of Kentucky, Lexington, Kentucky, USA.
172. Computational chemistry for membrane channels. (Jul 2002) Invited lecture at Gordon Research Conference on Computational Chemistry, Colby-Sawyer College, New London, New Hampshire, USA.
173. Aquaporin membrane channels. (Apr 2002) NCSA Workshop on "Biomedical Applications of Molecular Dynamics on the TeraGrid", NCSA, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
174. Computational exploration of structure-function relationship in aquaporin water channels (Feb 2002) Departmental seminar, Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
175. Structural determinants of spectral tuning in retinal proteins (Aug 2001) German Cancer Research Center, Heidelberg, Germany.
176. Exploring Glycerol and Water Transport in the E. Coli Glycerol Facilitator (GlpF) by Molecular Dynamics Simulations. (Jun 2001) German Cancer Research Center, Heidelberg, Germany.
177. Molecular basis of function in retinal proteins. (Feb 2001) Invited lecture at Molecular and Electronic Nanostructures Seminar Series (Nanohour), Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
178. Simulation of the structure and function of retinal proteins. (2000) Departmental seminar, Department of Physics, Central Michigan University, Mt. Pleasant, Michigan, USA.
179. Theoretical study of the interaction of chromophore and protein environment in bacteriorhodopsin (2000) Workshop on Theoretical studies of biological function of molecules, University of Paderborn, Paderborn, Germany.
180. Theoretical study of the structure and function of the retinal chromophore in bacteriorhodopsin. (2000) Invited lecture at University of Freiburg, Freiburg, Germany.
181. The central role of the retinal Schiff base in the photoabsorption and proton transfer activities of bacteriorhodopsin. (2000) University of Paderborn, Paderborn, Germany.
182. Interaction of retinoids with their biological receptive sites. (1999) German Cancer Research Center, Heidelberg, Germany.
183. The effect of different structural characteristics of the retinal Schiff base on the isomerization barriers and the pKa of the chromophore. (1998) Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.
184. Theoretical study of the structure and electronic configuration of retinoids. (1998) Supercomputing Workshop, German Cancer Research Center, Heidelberg, Germany.

III. Teaching and Training Activities

A. Summary of Instruction

- MCB590C / BIOP590C - Computational Structural Biology, Sp07. A new computational course in molecular modeling and simulation, developed for biophysics graduate level students to train them in setting up and conducting molecular dynamics simulations and analysis. The course is primarily hands-on. The computational lab was set up in the new "MCB Learning Center" with all programs and tutorial materials installed. Graduate students attended the course from Biophysics, Chemistry, Chemical Engineering, and Biochemistry. The class work of the course is for 6 weeks, each week 7 hours (3 hours of lecture and 4 hours of lab). Students are assigned homework every week, and are also required to complete and present an independent term project on a molecular system best relevant to their own thesis research, over the remainder of the semester.
- MCB590C / BIOP590C - Computational Structural Biology, Sp10
- MCB586/BIOP586 – Computational Structural Biology, Sp12. Same as MCB590C/BIOP590C, but offered under a different rubric.
- College of Medicine - Medical Pharmacology, Fa07. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa08. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa09. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa10-Sp11. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa11-Sp12. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa12-Sp13. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa13-Sp14. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa14-Sp15. ~25 M2 medical students
- College of Medicine - Medical Pharmacology, Fa15-Sp16. ~25 M2 medical students
- CHEM440B/BIOC440 – Physical Biochemistry, Fa16. 110 students.
- CHEM440B/BIOC440 – Physical Biochemistry, Fa17. 108 students.
- CHEM440B/BIOC440 – Physical Biochemistry, Fa19. 105 students.
- CHEM440B/BIOC440 – Physical Biochemistry, Fa21. 100 students.

B. Supervision of Graduate Students

Directly supervised graduate students (all PhD students):

Current graduate students:

- Noah Trebesch, PhD student, UIUC Biophysics, Jan 2015 – present.
- Melanie Mueller, MD/PhD student, UIUC Biophysics, Jan 2015 – present.
- Eric Shinn, PhD student, UIUC Biophysics, Jan 2016 – present.
- Muyun Lihan, PhD student, UIUC Biophysics, Jan 2017 – present.
- Shashank Pant, PhD student, UIUC Biophysics, Jan 2017 – present.
- Andres Arango, PhD student, UIUC Biophysics, Jan 2017 – present.
- Aaron Chan, PhD student, UIUC Biophysics, Jan 2018 – present.
- Anda Trifan, PhD student, UIUC Biophysics, Jan 2018 – present.

- Sepehr Dehgahni, PhD student, UIUC Biophysics, Jan 2018 – present.
- Moeen Meigooni, PhD student, UIUC Biophysics, Jan 2018 – present.
- Archit Kmar Vasan, PhD student, UIUC Biophysics, Jan 2018 – present.
- Defne Gorgun, PhD student, UIUC Biophysics, Jan 2019 – present.
- Ali Rasouli, PhD student, UIUC Biophysics, Jan 2019 – present.
- Tianle Chen, PhD student, UIUC Biophysics, Jan 2019 – present.
- Hyun Park, PhD student, UIUC Biophysics, Jan 2019 – present.
- Hale Hasdemir, PhD student, UIUC Biophysics, Jan 2020 – present .
- Matt Sinclair, PhD student, UIUC Biochemistry, Jan 2020 – present.
- Carlos Cuellar Rodriguez, PhD student, UIUC Biophysics, Jan 2021 – present
- Yupeng Li, PhD student, UIUC Biophysics, Jan 2022 – present

Former graduate students:

- Wang, Yi, PhD., 2008, (PhD student, UIUC Biophysics 2005-2009), moved on as an HHMI postdoctoral research associate at UCSD; currently Associate Professor at Chinese University of Hong Kong
- Gumbart, James, PhD., 2009 (PhD student, UIUC Physics 2005-2009, co-advisor), received a President's Postdoctoral Fellowship at Argonne National Laboratory; Currently Associate Professor at Georgia Institute of Technology
- Khalili, Fatemeh, 2010 (PhD student, UIUC Physics 2005-2010, co-advisor), currently Assistant Professor at University of Illinois at Chicago
- Celik, Leyla (Visiting Graduate student, Aarhus University, Denmark), Oct 2006-Apr 2007, currently postdoctoral research associate at Yale
- Maria Musgaard (Visiting Graduate student, Aarhus University, Denmark), Oct 2011-Apr 2012, currently Assistant Professor at Ottawa.
- Wen, Po-Chao, PhD student, UIUC Biophysics, May 2007 – Aug 2013, currently Research Scientist at UIUC.
- Katrine Skeby (Visiting Graduate student, Aarhus University, Denmark), Feb 2013-Aug 2013.
- Enkavi, Giray, PhD student, UIUC Biophysics, Jan 2008 – Dec 2013; currently Research Scientist at University of Helsinki, Finland.
- Li, Jing, PhD student, UIUC Biophysics, Jan 2009 – Apr 2014, currently **Assistant Professor** at University of Mississippi.
- Mohamad Kalani (Visiting Graduate Student, Molecular Medicine, Gorgan University, Iran), Feb 2012 – Feb 2014; currently faculty member, University of Gorgan, Iran.
- Arcario, Mark, PhD student, UIUC Biophysics, Jan 2010 – Nov 2014, currently medical resident at Washington University.
- Vermaas, Joshua, PhD student, UIUC Biophysics, Jan 2011 – May 2016, currently **Assistant Professor** at Michigan State University.
- Baylon, Javier, PhD student, UIUC Biophysics, Jan 2011 – Aug 2016, currently research associate at pharma.
- Mahinthichaichan, Paween, PhD student, UIUC Biochemistry, Jan 2010 – Dec 2016, currently postdoctoral research associate at U. Maryland.
- Jiang, Tao, PhD student, UIUC Biophysics, Jan 2010 – Aug 2017, currently Scientist at Pharma.
- Wang, Yuhung (Steven), PhD student, UIUC Biophysics, Jan 2012 – Dec 2017, currently research associate at Biotechnology.
- Shekhar, Mrinal, PhD student, UIUC Biophysics, Jan 2013 – Aug 2018, currently research associate at pharma.

- Kin Lam, PhD student, UIUC Physics, Jan 2017 – May 2020, currently Research Associate, industry.
- Rezvan Shahoei, PhD student, UIUC Physics, Jan 2017 – 2020.
- Nandan Haloi, PhD student, UIUC Biophysics, Jan 2017 – Mar 2021, currently postdoctoral associate at Stockholm University.
- Chun Kit Chan, PhD student, UIUC Physics, Jan 2018 – Feb 2022, currently postdoctoral associate at Arizona State University..
- Zhiyu Zhao, PhD student, UIUC Biophysics, Jan 2016 – Mar 2022.
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C. Postdoctoral and Research Associates

- Po-Chao Wen, 2013 – 2021 (currently Research Scientist)
- Mariano Spivak, Aug 2018 – present
- Mohammad Soroush Barhaghi, Dec 2019 – present

Former postdoctoral trainees:

- Lea Thogersen (visitor, Aarhus University, Denmark), May-Jun 2006, and Mar 2007
- Jankuai Diao, Feb 2007 – May 2008; joined industry in 2008
- Saher Shaikh, Aug 2007 – Dec 2011, currently Research Associate at Cambridge, UK
- Wenxun Gan, Feb 2011 – Feb 2012
- Zenmei Ohkubo, Nov 2006 – Aug 2013
- Zhijian Huang, Apr 2007 – Dec 2013
- Taras Pogorelov, Aug 2009 – Aug 2012; currently **Research Assistant Professor of Chemistry**, UIUC
- Giray Enkavi, 2014 – Aug 2014; currently postdoctoral research associate, University of Helsinki
- Wei Han, Mar 2011 – 2014; currently **Associate Professor**, Peking University Shenzhen Graduate School
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- Li, Jing, May 2014 – Jun 2015, currently **Assistant Professor of Medicinal Chemistry**, University of Mississippi
- Mahmoud Moradi, Mar 2011 – Aug 2015; currently **Associate Professor of Chemistry and Biochemistry**, University of Arkansas.
- Danial Sabri Dashti, Aug 2013 – June 2015
- Ahmad Raeisi Najafi, Jul 2016 – Aug 2017; currently **Assistant Professor of Mechanical Engineering**, University of Drexel.
- Christopher Mayne, Jan 2011 – Aug 2017; currently Computational Chemist at Pharma
- Sundar Thangapandian, Mar 2013 – Aug 2018; currently Research Associate at Industry.
- Paween Mahinthichaichan, Jan 2017 – 2018
- Prithviraj Nandigrami, Oct 2017 – Oct 2018
- Charles Sun, Aug 2017 – June 2019; currently postdoctoral associate at Oregon Health Science University
- Yuhang Wang, Jan 2018 – Dec 2018; currently Research Associate at Biotechnology.
- Giuseppe Licari, Aug 2018 – 2020; currently Research Scientist at Boehringer Ingelheim
- Soumyo Sen, Jan 2019 – Feb 2021; currently postdoctoral associate at Mount Sinai School of Medicine
- Tao Jiang, Aug 2017 – Jul 2021; currently Scientist at Pharma

- Sunny Hwang, June 2019 – Jul 2021; currently Scientist at Pharma
- Zhaleh Ghaemi, Aug 2019 – Apr 2021 (currently Research Scientist at UIUC)
- Karan Kapoor, Aug 2017 – Apr 2022; currently Scientist at Pharma

D. Undergraduate trainees

- Ming Jeong (Integrative Biology Honors program), Oct 2008 – Dec 2010.
- Ding He (Undergraduate student, University of York, England), May-Aug 2007.
- Geoffrey Christensen (Biochemistry undergraduate student), 2007 – May 2008. Currently PhD student at the University of Missouri at Columbia.
- Said Zeyd (Biochemistry undergraduate student), 2007.
- Sun Min Lee (Biochemistry undergraduate student), 2007.

E. Thesis Committee:

- Peter Freddolino (UIUC Biophysics) – Jan 2007
- Chutintorn Punwong (UIUC Biophysics) – Oct 2007
- Danielle Chandler (Chair, UIUC Physics) – Apr 2008
- Lingling Miao (Chair, UIUC Physics) – May 2008
- Anjan Raghunathan (UIUC, Mechanical Science and Engineering) – May 2008
- David Wells (UIUC, Physics) – Mar 2009
- Li Li (UIUC, Biophysics) – Oct 2009
- Hsin-Yang Chang (UIUC, Biochemistry) – Nov 2009
- Jaya Sarkar (UIUC Biochemistry) – Jul 2010
- Vinayak Agrawal (UIUC, Biophysics) – Sep 2010
- Elizabeth Villa (UIUC Biophysics, PhD) – Graduated Feb 2008
- Ying Li (UIUC Chemistry, PhD) – Graduated Feb 2008
- Amy Shih (UIUC Biophysics, PhD) – Graduated Feb 2008
- Hanneli Hudock (UIUC Chemistry, PhD) – Graduated Jun 2008
- Yi Wang (Chair, UIUC Biophysics, PhD) – Graduated Oct 2008
- Chutintorn Punwong (UIUC Biophysics) – Graduated Mar 2009
- Peter Freddolino (UIUC Biophysics, PhD) – Graduated Apr 2009
- Oleksandr Kokhan (UIUC Biophysics, PhD) – Graduated Apr 2009
- Eric Lee (UIUC Biophysics, PhD) – Graduated May 2009
- Ying Yin (UIUC Physics, PhD) – Graduated May 2009
- Lingling Miao (Chair, UIUC Physics, PhD) – Graduated July 2009
- Vincent Pureza (UIUC Biochemistry, PhD) – Graduated Sep 2009
- Sharlene Denos (UIUC Biophysics, PhD) – Graduated Oct 2009
- Anjan Raghunathan (UIUC Mechanical Science and Engineering, PhD) – Graduated Mar 2010
- Hsin-Yang Chang (UIUC Biochemistry, PhD) – Graduated Mar 2010
- Alexis Anne Black Pyrkosz (UIUC Chemistry, PhD) – Graduated Apr 2010
- Fatemeh Khalili-Araghi (UIUC Physics, PhD) – Graduated Aug 2010
- Danielle Chandler (Chair, UIUC Physics, PhD) – Graduated Sep 2011
- Heidi Koldso (University of Aarhus, Denmark) – Graduated Oct 2011
- Jaya Sarkar (UIUC Biochemistry) – Graduated Mar 2012
- Li Li (UIUC, Biophysics) – Graduated Apr 2012
- David Wells (UIUC, Physics) – Graduated May 2012

- Jinrang Kim (Columbia University, Biological Sciences) – Graduated Aug 2012
- Narjes Tavoosi (UIUC, Biochemistry) – Graduated Mar 2013
- Po-Chao Wen (UIUC Biophysics) – Graduated Apr 2013
- Ramya Gamini (UIUC, Biophysics) – Graduated Jun 2013
- Giray Enkavi (UIUC, Biophysics) – Graduated Nov 2013
- Sharon Hyonju Choi (UIUC, Biochemistry) – Graduated 2013
- Jing Li (UIUC Biophysics) – Graduated Apr 2014
- Salehe Ghasempur (UIUC Biochemistry) – Graduated Oct 2014
- SeyedFakhreddin Torabi (UIUC Biochemistry) – Graduated Nov 2014
- Mary Catherine Clay (UIUC, Chemistry) – Graduated Nov 2014
- Stephen Alan Davis (UIUC, Chemistry) – Graduated Dec 2014
- Kristin Marie Nuzzio (UIUC, Chemistry) – Graduated May 2015
-
- Vinayak Agrawal (UIUC, Biophysics)
- Ke Ke (UIUC Biochemistry) –
- Zhi Li (UIUC Biochemistry) –
- Igor Petrik (UIUC Chemistry) –
- Terry Sasser (UIUC Biochemistry) –

H. Mentoring NIH K01 grant:

- Joong Youn Shim, North Carolina Central University, funded 2007-2012.

I. Hands on workshops organized and taught

Organized and taught several hands-on workshops on Computational Biophysics and Structural Biology. Each workshop was attended mostly by PhD students and postdoctoral researchers, but also by faculty members and other researchers from public universities and other research institutions. Here is the list of presented workshops. Several other workshops are planned for each coming year. The web site links provided include detailed information on the workshops, including evaluation results provided by the participants after completing the workshops. Examples are provided below. For full list see: http://www.ks.uiuc.edu/Training/Workshop/

- Computational Biophysics Summer School, Beckman Institute, UIUC, Jun 2003 (93 participants)
- Computational Biophysics Workshop, Beckman Institute, UIUC, Nov 2004 (21 participants)
- Computational Biophysics Workshop, Boston, Dec 2004 (20 participants)
- Computational Biophysics Workshop, Tahoe City, May 2005 (20 participants)
- Computational Biophysics Workshop, Chicago, Jun 2005 (20 participants)
- Computational Biophysics Workshop, San Francisco, Jun 2005 (20 participants)
- Computational Biophysics Workshop, Pittsburgh Supercomputing Center (PSC), Pittsburgh, Nov-Dec 2005 (24 participants)
- Computational Biophysics Workshop, Max Planck Institute, Frankfurt, Germany, Mar 2006 (28 participants)
- Computational Biophysics Workshop, University of Pittsburgh, Nov 2006 (20 participants)
- Computational Biophysics Workshop, NIH Center for Information Technology, Nov 2007 (24 participants)
- Computational Biophysics Summer School, UIUC, Jul 2009 (23 participants)
- Computational Biophysics Summer School, UIUC, Aug. 2009 (21 participants)

- Computational Biophysics Workshop, Pittsburgh Supercomputing Center, May 2010 (25 participants)
- Computational Biophysics Workshop, UCSD, Jul 2010 (25 participants)
- Computational Biophysics Workshop, UIUC, Nov 2010 (25 participants)
- Computational Biophysics Workshop, UIUC, Nov-Dec 2010 (25 participants)
- Computational Biophysics Workshop, GeorgiaTech, Mar 2011 (40 participants)
- Computational Biophysics Workshop, Pittsburgh Supercomputing Center, May 2011 (35 participants)
- Computational Biophysics Workshop, Jacobs University, Bremen, Germany, Oct 2011 (45 participants)
- Computational Biophysics Workshop, UIUC, Feb 2012 (20 participants)
- Computational Biophysics Workshop, UIUC, Oct 2012 (20 participants)
- Computational Biophysics Workshop, Pittsburgh Supercomputing Center, Oct 2012 (30 participants)
- Computational Biophysics Workshop, UIUC, Nov 2013 (20 participants)
- Computational Biophysics Workshop, Jacobs University, Bremen, Jun 2014 (45 participants)
- Computational Biophysics Workshop, Georgia InstituteTech, Nov 2014 (30 participants)
- Computational Biophysics Workshop, UIUC, Apr 2015 (30 participants),
- Computational Biophysics Workshop, Berkeley, Aug 2015 (30 participants)
- Computational Biophysics Workshop, UCSD, Sep 2015 (30 participants)
- Computational Biophysics Workshop, U. Southern Denmark, Oct 2015 (40 participants)
-

IV. Service (Public Engagement, Professional/Disciplinary, and University)

A. Committees Served

- Carle Illinois College of Medicine Internal Research Advisory Board, 2017-present
- Center for Biophysics & Computational Biology – Exec. Committee, 2011-2012 & 2013-2016, 2018-present.
- College of Medicine, Executive Committee, 2012-2015.
- College of Medicine, Committee on Appointments, Reappointments & Promotions, 2012-2015.
- College of Medicine - Committee on Research, 2008-present; Chair 2011-2015.
- College of Medicine - Student Progress and Promotions Committee, 2009-2016.
- College of Medicine – Basic Science Subcommittee 2013-2016.
- Beckman Institute - Program Advisory Committee, 2008-2011 and 2015-present
- Department of Biochemistry – Awards Committee, 2011-present.
- Department of Biochemistry - Undergraduate and Graduate Curriculum, 2007-2008.
- Illinois Informatics Institute (I3) - 2008-2010.
- Center for Biophysics and Computational Biology - Admissions Committee, 2006-2011, chair 2008-2011.
- Department of Biochemistry – Director of Graduate Studies, 2010-2011.
-

B. Research related news and press releases:

- UIUC News release – 2006. On a paper in Structure, Cell Press.
- UIUC News release – 2007. On a paper in Biophysical Journal.
- Science Editor's Choice – 2007. On the above paper in Biophysical Journal.
- NIH NIGMS web site – 2007. On the above paper, also listed on Eureka, NCSA, TeraGrid, NCRR, and several other highly visible web sites.
- UIUC News release – 2008. On a PNAS paper.
- UIUC MCB – May 2011
- UIUC Beckman Feature Video – 2013
- UIUC MCB News – Leaky proteins, May 2013
- NIH Biomedical Beat (Research news from NIGMS, NIH) – Jan 2014
- UIUC LAS/MCB – Mega Supercomputing allocation – Nov 2014

Memberships

- Biophysical Society, 2000-present.
- Federation of American Societies for Experimental Biology, 2001-present.
- American Chemical Society, 2007-present
- American Society for Biochemistry and Molecular Biology, 2013-present.
- American Association for the Advancement of Science, 2019-present.

NICHOLAS CHING HAI WU

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APPOINTMENTS

Assistant Professor, Department of Biochemistry, UIUC	2020–Present
Assistant Professor, Carle Illinois College of Medicine, UIUC	2020–Present
Member, Center for Biophysics and Quantitative Biology, UIUC	2020–Present
Member, Carl R. Woese Institute for Genomic Biology, UIUC	2020–Present
Member, Microbial Systems Initiative, UIUC	2020–Present
Member, Cancer Center at Illinois, UIUC	2021–Present
Adjunct Assistant Professor, The Scripps Research Institute	2021–Present
Visiting Research Scientist, National University of Singapore	2023–Present

EDUCATION & TRAINING

The Scripps Research Institute, Postdoc (Advisors: Drs. Ian Wilson & Andrew Ward)	2015–2020
University of California, Los Angeles, PhD in Molecular Biology (Advisor: Dr. Ren Sun)	2010–2015
University of Virginia, BSc in Biochemistry (Advisor: Dr. Lei Li)	2007–2010

HONORS & AWARDS

Viruses Early Career Investigator Award	2022
MCB Outstanding Junior Faculty Award, UIUC	2022
ASV Ann Palmenberg Junior Investigator Award	2022
Searle Scholar Award	2022
Michelson Prize	2021
ESWI Young Scientist Innovative Award	2021
NIH Director's New Innovator Award (DP2)	2021
NIH Pathway to Independence Award (K99/R00)	2019
Croucher Postdoctoral Fellowship	2015–2017
Dissertation Year Fellowship, UCLA	2014–2015
Audree Fowler Fellowship in Protein Science, UCLA	2014
Philip Whitcome Pre-Doctoral Fellowship, UCLA	2011–2014
DMMP Graduate Travel Award, UCLA	2014
Best Poster Presentation at DMMP Annual Retreat, UCLA	2013
Best Poster Presentation at MBIDP Annual Conference, UCLA	2011, 2012
Small Research and Travel Grant, University of Virginia	2010
College Science Scholar Summer Research Stipend, University of Virginia	2009
Echols Scholar, University of Virginia	2008
College Science Scholar, University of Virginia	2008

FUNDINGS (amount in USD, *multi-investigator grant with my portion listed)

Active

HHMI Emerging Pathogens Initiative, 01/2023–12/2025 (Role: co-I)	$2,106,453* (total cost)
NIH/NIAID CEIRR 75N93021C00015, 08/2022–07/2024 (Role: PI)	$376,006 (total cost)
Searle Scholar, 07/2022–06/2025 (Role: PI)	$300,000 (direct cost)
NIH/NIAID R01 AI165475, 06/2022–05/2026 (Role: PI)	$1,344,468 (direct cost)
NIH/NIAID R01 AI167910, 01/2022–12/2026 (Role: PI)	$1,512,940 (direct cost)
NIH/OD DP2 AT011966, 09/2021–09/2026 (Role: PI)	$1,500,000 (direct cost)

Completed

Michelson Prize, 01/2022–12/2022 (Role: PI)	$150,000 (direct cost)
NIH/NIAID R00 AI139445, 09/2020–08/2022 (Role: PI)	$491,774 (total cost)
NIH/NIAID K99 AI139445, 08/2019–08/2020 (Role: PI)	$132,379 (total cost)

TEACHING

Instructor, "Introduction to Biophysics" (BIOP401), UIUC	2021–Present
Instructor, Immunology Lecture for M1 Medical Student	2022
Tutor, 15th HKU-Pasteur Virology Course: Coronaviruses, HKU-Pasteur Research Pole	2019
Teaching assistant, Structural Biology Tutorial, The Scripps Research Institute	2017–2018
Teaching assistant, "Microbial Genomics" (MIMG158), UCLA	2013
Teaching assistant, "Biochem: Intro to Structure, Enzyme and Metabolism" (CHEM153A), UCLA	2011

TRAINEES

Postdoctoral Fellow

Yang Wei Huan (PhD in Quantitative Biology, Biochem and Biotech, University of Edinburgh)	2023–Present
Huibin Lv (PhD in Virology and Immunology, University of Hong Kong)	2022–Present
Qiwen Teo (PhD in Cell Biology, University of Hong Kong)	2021–Present
Ruipeng Lei (PhD in Biochemistry, Florida International University)	2020–Present

Graduate Students

William Howe, PhD student in the UIUC Biophysics and Quantitative Biology program	2022–Present
Akshita Gopal, PhD student in the UIUC Biochemistry program	2022–Present
Katrine Dailey, PhD student in the UIUC Biochemistry program	2022–Present
Owen Ouyang, PhD student in the UIUC Biochemistry program	2021–Present
Timothy Tan, PhD student in the UIUC Biophysics and Quantitative Biology program	2020–Present
Yiquan Wang, PhD student in the UIUC Biochemistry program	2020–Present
Chuyun Teo, MSc student in the UIUC Biochemistry program	2021–2022

SERVICES & CONSULTING ACTIVITIES

University Service

MD admission committee	2022–2023
Faculty search committee for Microbiology	2022–2023
Faculty search committee for Biochemistry	2021–2022
Medical Scholars Program (MD/PhD) admissions committee	2021–2023
Biophysics PhD qualifying exam committee	2021–2023
Biochemistry PhD preliminary exam committee	2021–2023
MCB communication committee	2021–2022
Microbiology PhD preliminary exam committee	2021

PhD thesis committee member (in addition to my own students):

- Iris Lyu (Biochemistry)
- Sonya Kumar Bharathkar (Biochemistry)
- Graeme Lindsey (Biochemistry)
- Krishna Narayanan (Biochemistry)
- Andrea Hernandez Garcia (Biochemistry)

External Service

Editor board member of Viruses	2023–Present
Editor board member of Journal of Virology	2023–Present
Ad hoc award reviewer for ESWI	2023
Ad hoc proposal reviewer for NIH CMIA study section	2023
Ad hoc proposal reviewer for NIH SEP from VIRA and VIRB study sections	2022

Ad hoc proposal reviewer for European Research Council 2022
Ad hoc proposal reviewer for UK Research and Innovation 2022
Session co-chair, 8th ESWI Influenza Conference, Virtual 2021
Ad hoc proposal reviewer for Swiss National Science Foundation 2021
Ad hoc proposal reviewer for NSF CAREER Award 2017
Ad hoc manuscript reviewer for journals:

Science, Science Translational Medicine, Science Advances, Cell, Immunity, Cell Host and Microbe, Cell Reports, Nature Microbiology, Nature Communications, Communications Biology, PNAS, eLife, Trends in Biochemical Sciences, Trends in Pharmacological Sciences, Trends in Immunology, Epidemics, mBio, mSphere, NPJ Vaccines, PLoS Pathogens, PLoS Computational Biology, Molecular Biology and Evolution, Journal of Virology, Virus Evolution, Virus Research, Virology, BMC Genomics, Genome Medicine, Emerging Microbes & Infections, PLoS One, iScience, Frontiers in Immunology, Journal of Molecular Evolution, Computational and Structural Biotechnology, Acta Crystallographica Section F, ACS Pharmacology & Translational Science, Evolutionary Bioinformatics, Cellular and Molecular Life Sciences

Consulting activities
HeliXon 2022–Present
InvVax 2022–Present
Human Vaccine Project 2018
NantBioscience 2018

INVITED TALKS

Department of Microbiology and Immunology, University of Illinois at Chicago, IL 2023
Department of Biochemistry, University of Missouri, Columbia, MO 2023
Antibody Engineering & Therapeutics Conference, San Diego, CA 2022
National University of Singapore, Infectious Diseases Translational Research Program, Virtual 2022
Indiana University, Department of Microbiology and Immunology, Indianapolis, IN 2022
41st Annual Meeting of the American Society for Virology, Madison, WI 2022
Washington University in St. Louis, Department of Pathology and Immunology, St. Louis, MO 2022
Carle Illinois College of Medicine, International Donor Event, Virtual 2022
8th ESWI Influenza Conference, Virtual 2021
Carle Illinois College of Medicine, Innovation Grand Rounds, Urbana, IL 2021
UIUC Microbial Systems Initiative Virtual Symposium 2021
University of Hong Kong, Department of Chemistry, Hong Kong, China 2019
Chinese Academy of Sciences, Shenzhen Institutes of Advanced Technology, Shenzhen, China 2018
Guangzhou Medical University, Guangzhou, China 2017
Chinese University of Hong Kong, School of Life Sciences, Hong Kong, China 2017

PREPRINTS (*co-first, #co-corresponding)

- Lamers MM*, Breugem TI*, Mykytyn AZ*, Wang Y, Groen N, Knoops K, Schipper D, van der Vaart J, Koopman CD, Zhang J, Wu DC, van den Doel PB, Bestebroer T, GeurtsvanKessel CH, Peters PJ, Muraro MJ, Clevers H, **Wu NC**, Haagmans BL. Human organoid systems reveal in vitro correlates of fitness for SARS-CoV-2 B.1.1.7. *bioRxiv* DOI: 10.1101/2021.05.03.441080 (2021)

PUBLICATIONS (*co-first, #co-corresponding)

1. Daulagala P, Mann BR, Leung K, Lau EHY, Yung L, Lei R, Nizami SIN, Wu JT, Chiu SS, Daniels RS, **Wu NC**, Wentworth D, Peiris M#, and Yen HL#. Imprinted anti-hemagglutinin and anti-neuraminidase antibody responses after childhood infections of A(H1N1) and A(H1N1)pdm09 influenza viruses. *mBio* (In Press)

2. Tan TJC, Mou Z, Lei R, Ouyang WO, Yuan M, Song G, Andrabi R, Wilson IA, Kieffer C, Dai X, Matreyek KA, **Wu NC**. High-throughput identification of prefusion-stabilizing mutations in SARS-CoV-2 spike. *Nature Communications* 14:2003 (2003)
3. Yin Q*, Luo W*, Mallajosyula V, Bo Y, Guo J, Xie J, Sun M, Verma R, Li C, Constantz CM, Wagar LE, Li J, Sola E, Gupta N, Wang C, Kask O, Chen X, Yuan X, **Wu NC**, Rao J, Chien YH, Cheng J, Pulendran B[#] and Davis MM[#]. A novel TLR7-nanoparticle adjuvant promotes broad immune responses against heterologous strains of Influenza and SARS-CoV-2. *Nature Materials* 22:380-390 (2023)
4. Lei R, Hernandez Garcia A, Tan TJC, Teo QW, Wang Y, Zhang X, Luo S, Nair SK, Peng J, **Wu NC**. Mutational fitness landscape of human influenza H3N2 neuraminidase. *Cell Reports* 42:111951 (2023)
5. Luo Y*, Lv H*, Zhao S*, Sun Y, Liu C, Chen C, Liang W, Kwok KO, Teo QW, So RTY, Lin Y, Deng Y, Li B, Dai Z, Zhu J, Zhang D, Fernando J, **Wu NC**, Tun HM, Bruzzone R, Mok CKP[#], Mu X[#]. Age-related seroprevalence trajectories of seasonal coronaviruses in children. *International Journal of Infectious Diseases* 127:26-32 (2023)
6. Ouyang WO*, Tan TJC*, Lei R, Song G, Kieffer C, Andrabi R, Matreyek KA, **Wu NC**. Probing the biophysical constraints of SARS-CoV-2 spike N-terminal domain using deep mutational scanning. *Science Advances* 8:eadd7221 (2022)
7. Yuan M, Wang Y, Lv H, Wilson IA, **Wu NC**. Molecular analysis of a public cross-neutralizing antibody response to SARS-CoV-2. *Cell Reports* 41:111650 (2022)
8. Lei R, Tan TJC, Hernandez Garcia A, Wang Y, Diefenbacher M, Teo C, Gopan G, Tavakoli Dargani Z, Teo QW, Graham CS, Brooke CB, Nair SK, **Wu NC**. Prevalence and mechanisms of evolutionary contingency in human influenza H3N2 neuraminidase. *Nature Communications* 13:6443 (2022)
9. Liu T, Wang Y, Tan TJC, **Wu NC**[#], Brooke CB[#]. Influenza A virus hemagglutinin evolution is highly constrained by intersegment epistasis. *Cell Host and Microbe* 30:1363-1369.e4 (2022)
10. Liang W, Tan TJC, Wang Y, Lv H, Sun Y, Bruzzone R, Mok CKP[#], **Wu NC**[#]. Egg-adaptive mutations of human influenza H3N2 virus are contingent on natural evolution. *PLoS Pathogens* 18:e1010875 (2022)
11. Lv H, So RTY, Teo QW, Yuan M, Liu H, Lee CCD, Yip GK, Ng WW, Wilson IA, Peiris M, **Wu NC**[#], Mok CKP[#]. Neutralizing antibody response to sarbecovirus is delayed in sequential heterologous immunization. *Viruses* 14:1382 (2022)
12. Wang Y*, Yuan M*, Lv H, Peng J, Wilson IA, **Wu NC**. A large-scale systematic survey reveals recurring molecular features of public antibody responses to SARS-CoV-2. *Immunity* 55:1105-1117.e4 (2022)
13. Diefenbacher M, Tan TJC, Bauer DLV, Stadtmueller B, **Wu NC**, Brooke CB. Interactions between influenza A virus nucleoprotein and gene segment untranslated regions facilitate selective modulation of viral gene expression. *Journal of Virology* 96:e0020522 (2022)
14. Knyazev S, Chhugani K, Sarwal V, Ayyala R, Singh H, Karthikeyan S, Deshpande D, Baykal PI, Comarova Z, Lu A, Porozov Y, Vasylyeva TI, Wertheim JO, Tierney BT, Chiu CY, Sun R, Wu A, Abedalthagafi MS, Pak VM, Nagaraj SH, Smith AL, Skums P, Pasaniuc B, Komissarov A, Mason CE, Bortz E, Lemey P, Kondrashov F, Beerenwinkel N, Lam TTY, **Wu NC**, Zelikovsky A, Knight R, Crandall KA, Mangul S. Unlocking capacities of genomics for the COVID-19 response and future pandemics. *Nature Methods* 9:374-380 (2022)
15. Qiang M*, Ma P*, Li Y*, Liu H*, Harding A, Min C, Wang F, Liu L, Yuan M, Ji Q, Tao P, Shi X, Li Z, Li T, Wang X, Zhang Y, **Wu NC**, Lee CCD, Zhu X, Gilbert-Jaramillo J, Zhang C, Saxena A, Huang X, Wang H, James W, Dwek RA, Wilson IA[#], Yang G[#], Lerner RA[#]. Neutralizing antibodies to SARS-CoV-2 selected from a human antibody library constructed decades ago. *Advanced Science* 9:2102181 (2022)
16. Wang Y*, Lei R*, Nourmohammad A, **Wu NC**. Antigenic evolution of human influenza H3N2 neuraminidase is constrained by charge balancing. *eLife* 10:e72516 (2021)
17. Cho H*, Gonzales-Wartz KK*, Huang D*, Yuan M*, Peterson M*, Liang J, Beutler N, Torres JL, Cong Y, Postnikova E, Bangaru S, Talana CA, Shi W, Yang ES, Zhang Y, Leung K, Wang L, Peng L, Skinner J, Li S, **Wu NC**, Liu H, Dacon C, Moyer T, Cohen M, Zhao M, Lee EHF, Weinberg RS, Douagi I, Gross

R, Schmaljohn C, Pegu A, Mascola JR, Holbrook M, Nemazee D, Rogers TF, Ward AB, Wilson IA, Crompton PD[#], Tan J[#]. Ultrapotent bispecific antibodies neutralize emerging SARS-CoV-2 variants. *Science Translational Medicine* 13:eabj5413 (2021)

18. Lv H*, Tsang OTY*, So RTY, Wang Y, Yuan M, Liu H, Yip GK, Teo QW, Yihan Lin Y, Liang W, Wang J, Ng WW, Wilson IA, Peiris JSM, **Wu NC**[#], Mok CKP[#]. Homologous and heterologous serological response to the N-terminal domain of SARS-CoV-2 in humans and mice. *European Journal of Immunology* 51:2296-2305 (2021)
19. Yuan M*, Huang D*, Lee CCD*, **Wu NC***, Jackson AM, Zhu X, Hejun Liu H, Peng L, van Gils MJ, Sanders RW, Burton DR, Reincke M, Prüss H, Jakob Kreye J, Nemazee D, Ward AB, Wilson IA. Structural and functional ramifications of antigenic drift in recent SARS-CoV-2 variants. *Science* 373:818-823 (2021)
20. Tan TJC*, Yuan M*, Kuzelka K, Padron GC, Beal JR, Chen X, Wang Y, Rivera-Cardona J, Zhu X, Stadtmueller BM, Brooke CB, Wilson IA[#], **Wu NC**[#]. Sequence signatures of two public antibody clonotypes that bind SARS-CoV-2 receptor binding domain. *Nature Communications* 12:3815 (2021)
21. Montague Z*, Lv H*, Otwinowski J, DeWitt WS, Isacchini G, Yip GK, Ng WW, Tsang OTY, Yuan M, Liu H, Wilson IA, Peiris JSM, **Wu NC**[#], Nourmohammad A[#], Mok CKP[#]. Dynamics of B-cell repertoires and emergence of cross-reactive responses in COVID-19 patients with different disease severity. *Cell Reports* 35:109173 (2021)
22. Liu H*, Yuan M*, Huang D, Bangaru S, Zhao F, Lee CCD, Peng L, Barman S, Zhu X, Nemazee D, Burton DR, van Gils MJ, Sanders RW, Kornau HC, Reincke SM, Prüss H, Kreye J, **Wu NC**, Ward AB, Wilson IA. A combination of cross-neutralizing antibodies synergizes to prevent SARS-CoV-2 and SARS-CoV pseudovirus infection. *Cell Host and Microbe* 29:806-818.e6 (2021)
23. Zhou X*, Ma F*, Xie J*, Yuan M*, Li Y*, Shaabani N*, Zhao F, Huang D, **Wu NC**, Lee CCD, Liu H, Li J, Chen Z, Hong Y, Liu WH, Xiao N, Burton DR, Tu H, Li H, Chen X, Teijaro JR, Wilson IA[#], Xiao C[#], Huang Z[#]. Diverse immunoglobulin gene usage and convergent epitope targeting in neutralizing antibody responses to SARS-CoV-2. *Cell Reports* 35:109109 (2021)
24. Dai L*, Du Y*, Qi H, Huber CD, Chen D, Zhang TH, **Wu NC**, Wang E, Lloyd-Smith JO, Sun R. Quantifying the evolutionary constraints and potential of HCV NS5A protein. *mSystems* 6:e01111-20 (2021)
25. Lamers MM, Mykytyn AZ, Breugem TI, Wang Y, Wu DC, Riesebosch S, van den Doel PB, Schipper D, Bestebroer T, **Wu NC**, Haagmans BL. Human airway cells prevent SARS-CoV-2 multibasic cleavage site cell culture adaptation. *eLife* 10:e66815 (2021)
26. Lee CCD*, Watanabe Y*, **Wu NC**, Han J, Kumar S, Seabright GE, Allen JD, Lin CW, Yang JR, Liu MT, Wu CY, Ward AB, Crispin M[#], Wilson IA[#]. A cross-neutralizing antibody between HIV-1 and influenza virus. *PLoS Pathogens* 17:e1009407 (2021)
27. Yuan M, Liu H, **Wu NC**, Wilson IA. Recognition of the SARS-CoV-2 receptor binding domain by neutralizing antibodies. *Biochemical and Biophysical Research Communications* 538:192-203 (2021)
28. Koenig PA, Das H, Liu H, Kümmerer BM, Gohr FN, Jenster LM, Schiffelers LDJ, Tesfamariam YM, Uchima M, Wuerth JD, Gatterdam K, Ruetalo N, Christensen MH, Fandrey CI, Normann S, Tödtmann JMP, Pritzl S, Hanke L, Boos J, Yuan M, Zhu X, Schmid-Burgk JL, Kato H, Schindler M, Wilson IA, Geyer M, Ludwig KU, Hällberg BM[#], **Wu NC**[#], Schmidt FI[#]. Structure-guided multivalent nanobodies block SARS-CoV-2 infection and suppress mutational escape. *Science* 371:eabe6230 (2021)
29. Liu H*, **Wu NC***, Yuan M*, Bangaru S, Torres JL, Caniels TG, van Schooten J, Zhu X, Lee CCD, Brouwer PJM, van Gils MJ, Sanders RW, Ward AB, Wilson IA. Cross-neutralization of a SARS-CoV-2 antibody to a functionally conserved site is mediated by avidity. *Immunity* 53:1272-1280.e5 (2020)
30. **Wu NC***, Yuan M*, Bangaru S*, Huang D*, Zhu X, Lee CD, Turner HL, Peng L, Yang L, Nemazee D, Ward AB[#], Wilson IA[#]. A natural mutation between SARS-CoV-2 and SARS-CoV determines neutralization by a cross-reactive antibody. *PLoS Pathogens* 16:e1009089 (2020)

31. Kreye J*, Reincke SM*, Kornau HC, Sanchez-Sendin E, Corman VM, Liu H, Yuan M, **Wu NC**, Zhu X, Lee CD, Trimpert J, Hoeltje M, Dietert K, Stoeffler L, von Wardenburg N, van Hoof S, Homeyer MA, Hoffmann J, Abdelgawad A, Gruber AD, Bertzbach LD, Vladimirova D, Li LY, Barthel PC, Skriner K, Hocke AC, Hippenstiel S, Witzenrath M, Suttorp N, Kurth F, Franke C, Endres M, Schmitz D, Jeworowski LM, Richter A, Schmidt ML, Schwarz T, Mueller MA, Drosten C, Wendisch D, Sander LE, Osterrieder N, Wilson IA, Pruess H. A therapeutic non-self-reactive SARS-CoV-2 antibody protects from lung pathology in a COVID-19 hamster model. *Cell* 183:1058-1069.e19 (2020)

32. **Wu NC***, Yuan M*, Liu H*, Lee CCD, Zhu X, Bangaru S, Torres JL, Caniels TG, Brouwer PJM, van Gils MJ, Sanders RW, Ward AB, Wilson IA. An alternative binding mode of IGHV3-53 antibodies to the SARS-CoV-2 receptor binding domain. *Cell Reports* 33:108274 (2020)

33. **Wu NC**, Wilson IA. Structural biology of influenza hemagglutinin: an amaranthine adventure. *Viruses* 12:E1053 (2020)

34. **Wu NC***, Andrews SF*, Raab JE, O'Connell S, Schramm CA, Ding X, Chambers MJ, Leung K, Wang L, Zhang Y, Mascola JR, Douek DC, Ledgerwood JE, McDermott AB[#], Wilson IA[#]. Convergent evolution in breadth of two V_H6-1-encoded influenza antibody clonotypes from a single donor. *Cell Host and Microbe* 28:434-444.e4 (2020)

35. Yuan M*, Liu H*, **Wu NC***, Lee CCD, Zhu X, Zhao F, Huang D, Yu W, Hua Y, Tien H, Rogers TF, Landais E, Sok D, Jardine JG, Burton DR, Wilson IA. Structural basis of a shared antibody response to SARS-CoV-2. *Science* 369:1119-1123 (2020)

36. Yao Y, Kadam RU, Lee CCD, Woehl JL, **Wu NC**, Zhu X, Kitamura S, Wilson IA[#], Wolan DW[#]. An influenza A hemagglutinin small-molecule fusion inhibitor identified by a new high-throughput fluorescence polarization screen. *PNAS* 117:18431-18438 (2020)

37. Rogers TF*, Zhao F*, Huang D*, Beutler N*, Burns A, He WT, Limbo O, Smith C, Song G, Woehl J, Yang L, Abbott RK, Callaghan S, Garcia E, Hurtado J, Parren M, Peng L, Ramirez S, Ricketts J, Ricciardi MJ, Rawlings SA, **Wu NC**, Yuan M, Smith DM, Nemazee D, Teijaro JR, Voss JE, Wilson IA, Andrabi R, Briney B, Landais E, Sok D, Jardine JG, Burton DR. Isolation of potent SARS-CoV-2 neutralizing antibodies and protection from disease in a small animal model. *Science* 369:956-963 (2020)

38. Thai E*, Costa G*, Weyrich A*, Murugan R, Oyen D, Flores-Garcia Y, Prieto K, Bosch A, Valleriani A, **Wu NC**, Pholcharee T, Scally SW, Wilson IA, Wardemann H[#], Julien JP[#], Levashina EA[#]. A high-affinity antibody against the CSP N-terminal domain lacks Plasmodium falciparum inhibitory activity. *Journal of Experimental Medicine* 217:e20200061 (2020)

39. **Wu NC**, Wilson IA. Influenza hemagglutinin structures and antibody recognition. *CSH Perspectives in Medicine* 10:a038778 (2020)

40. Lv H, **Wu NC**[#], Mok CKP[#]. COVID-19 vaccines: knowing the unknown. *European Journal of Immunology* 50:939-943 (2020)

41. **Wu NC***, Thompson AJ*, Lee JM, Su W, Arlian BM, Xie J, Lerner RA, Yen HL, Bloom JD, Wilson IA. Different genetic barriers for resistance to HA stem antibodies in influenza H3 and H1 viruses. *Science* 368:1335-1340 (2020)

42. Lv H*, **Wu NC***, Tsang OTY*, Yuan M, Perera RAPM, Leung WS, So RTY, Chan JMC, Yip GK, Chik TSH, Wang Y, Choi CYC, Lin Y, Ng WW, Zhao J, Poon LLM, Peiris JSM[#], Wilson IA[#], Mok CKP[#]. Cross-reactive antibody response between SARS-CoV-2 and SARS-CoV infections. *Cell Reports* 31:107725 (2020)

43. Yuan M*, **Wu NC***, Zhu X, Lee CCD, So RTY, Lv H, Mok CKP[#], Wilson IA[#]. A highly conserved cryptic epitope in the receptor-binding domains of SARS-CoV-2 and SARS-CoV. *Science* 368:630-633 (2020)

44. Perera RA*, Mok CK*, Tsang OT*, Lv H*, Ko RL, **Wu NC**, Yuan M, Leung WS, Chan JM, Chik TS, Choi CY, Leung K, Chan KH, Chan KC, Li KC, Wu JT, Wilson IA, Monto AS, Poon LL, Peiris M. Serological assays for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). *Eurosurveillance* 25:2000421 (2020)

45. Mitchell K*, Brito JJ*, Mandric I*, Wu Q, Knyazev S, Chang S, Martin LS, Karlsberg A, Gerasimov E, Littman R, Hill BL, **Wu NC**, Yang HT, Hsieh K, Chen L, Littman E, Shabani T, Enik G, Yao D, Sun R, Schroeder J, Eskin E, Zelikovsky A, Skums P, Pop M, Mangul S. Benchmarking of computational error-correction methods for next-generation sequencing data. *Genome Biology* 21:71 (2020)

46. **Wu NC**, Otwinowski J, Thompson AJ, Nycholat CM, Nourmohammad A, Wilson IA. Major antigenic site B of human influenza H3N2 viruses has an evolving local fitness landscape. *Nature Communications* 11:1233 (2020)

47. Lin CW, Xie J, Zhang D, Han KH, Grande G, **Wu NC**, Yang Z, Yea K, Lerner RA. Immunity against cancer cells may promote their proliferation and metastasis. *PNAS* 117:426-431 (2020)

48. Zost SJ, Lee J, Gumina ME, Parkhouse K, Henry C, **Wu NC**, Lee CCD, Wilson IA, Wilson PC, Bloom JD, Hensley SE. Identification of antibodies targeting the H3N2 hemagglutinin receptor binding site following vaccination of humans. *Cell Reports* 29:4460-4470.e8 (2019)

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93. **Wu NC***, Young AP*, Al-Mawsawi LQ, Olson CA, Feng J, Qi H, Chen SH, Lu IH, Lin CY, Chin RG, Luan HH, Nguyen N, Nelson SF, Li X, Wu TT, Sun R. High-throughput profiling of influenza A virus hemagglutinin gene at single-nucleotide resolution. *Scientific Reports* 4:4942 (2014)

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96. Qi H, Olson CA, **Wu NC**, Ke R, Loverdo C, Chu V, Truong S, Remenyi R, Chen Z, Du Y, Su SY, Al-Mawsawi LQ, Wu TT, Chen SH, Lin CY, Zhong W, Lloyd-Smith JO, Sun R. A quantitative high-resolution genetic profile rapidly identifies sequence determinants of viral fitness and drug sensitivity. *PLoS Pathogens* 10:e1004064 (2014)

97. Ke R, Loverdo C, Qi H, Olson CA, **Wu NC**, Sun R, Lloyd-Smith JO. Modelling clinical data shows active tissue concentration of daclatasvir is 10-fold lower than its plasma concentration. *Journal of Antimicrobial Chemotherapy* 69:724-727 (2014)

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100. He H, Zhang H, Wang X, **Wu N**, Yang X, Chen R, Li Y, Deng XW, Li L. Development of a versatile, target-oriented tiling microarray assay for measuring allele-specific gene expression. *Genomics* 96:308-315 (2010)

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APPOINTMENT

Associate Professor, University of Illinois at Urbana-Champaign (UIUC) 2021-present
Associate Department Head, Department of Biochemistry, UIUC 2021-present
Director of Graduate Studies, Department of Biochemistry, UIUC 2021-present
Assistant Professor, Department of Biochemistry, UIUC 2014-2021
Affiliate Faculty, Neuroscience Program, UIUC
Affiliate Faculty, Cancer Center at Illinois, UIUC
Affiliate Faculty, Center for Biophysical and Computational Biology, UIUC
Affiliate Faculty, Beckman Institute, UIUC
Affiliate Faculty, Chemistry-Biology Interface Training Program, UIUC

PROFESSIONAL PREPARATION

Postdoctoral Scholar **Stanford University,** Stanford, California **2009-2014**
Department of Chemistry
Research Advisor: Dr. Bianxiao Cui

Ph.D. **University of California, Berkeley,** Berkeley, California **2002-2008**
Department of Chemistry
Research Advisor: Dr. Haw Yang
Dissertation title: Methodology Development for Single-Molecule/Particle Optical Study of Biological Systems

B.S. University of Science and Technology of China (USTC), Hefei, Anhui, PRC **1997-2002**
Department of Chemical Physics
Research Advisor: Dr. Hongfei Wang

HONORS AND AWARDS

Inaugeral "Light Lecture" Speaker *University of Cincinnati* **2021**
Scialog Fellow Award *Research Corporation for Science Advancement* **2021**
Scialog Fellow *Research Corporation for Science Advancement* **2020**
Spotlight on Early Career Researchers Journal of Molecular Biology **2017**
Innovative Teaching and Learning Grant *UIUC* **2016**

American Cancer Society Postdoctoral Fellowship	*American Cancer Society*	**2013**
Biophysical Society Education Travel Award	*Biophysical Society*	**2013**
American Society for Cell Biology (ASCB) Travel Award	*ASCB*	**2012**
Irving Fatt/Samuel Ruben Award	*UC Berkeley*	**2004**
Guo Moruo Fellowship, Top Fellowship	*USTC*	**2001**
Award for Best Undergraduate Research	*USTC*	**2001**
Asian Spectra Physics Corporation Fellowship	*USTC*	**2000**
Legend (now Lenovo) Fellowship	*USTC*	**1999**
He Duohui Academician Fellowship	*USTC*	**1998**
Outstanding Undergraduate Award	*USTC*	**1997**

EDITORSHIP

Journal of Molecular Biology – Associate Editor	2018-present
Edited work: Article collection: Chemogenetics and Optogenetics [Link]	
Frontiers in Molecular Neuroscience	
- Review Editor	2015-2019
- Associate Editor	2020-present
CRC Methods in Signal Transduction – Editor	2021
Edited work: Opsin-free optogenetics – Technology and Applications (in press)	2022

RESEARCH SUPPORT

Ongoing Research Support

Scialog Award #27937 Zhang (PI) Levy (PI) Ross (PI) 07/01/2021-06/30/2023
Engineering enteric neuron activity to enhance antimicrobial immunity in the gut
The goal of this study is to determine the regulatory role of enteric neuronal system in antimicrobial response.
Role: PI

R01GM132438 Zhang (PI) 09/15/2019-06/30/2023
Precise regulation of native transcription factor at the single-cell level
The goal of this study is to develop an optogenetic approach to control the transcriptional activity of native transcription factor.
Role: PI

Cancer Center at Illinois #9572 Zhang (PI) Nelson (CoI) 07/01/2022-06/30/2023
Optogenetic Modulation of the Tumor Microenvironment to Improve Cancer Immunotherapy
The goal of this study is to use optogenetic stimulation to tune the immune landscape of the tumor microenvironment.
Role: PI

R01 MH124827 Tsai (PI), Zhang (MPI) 12/01/2020-10/31/2025
Mechanism of Gp1 mGluR-dependent translation and plasticity
The goal of this study is to determine the role of mGluR dependent translation and neuronal plasticity.
Role: PI

NSF 2121003 Cao (PI) Zhang, Cheng, Schroeder (Co-PI) 10/01/2021-09/30/2026
GCR: Synthetic Neurocomputers for Cognitive Information Processing
The goal of this study is to understand cognitive information processing through the experimental buildup of neuronal cell networks and machine learning modeling
Role: Co-PI

R01GM141298 Pogorelov(PI) Zhang (CoI) 09/20/2021-07/31/2025
Capturing structure and dynamics of transmembrane signaling proteins
The goal of this project is to use computational prediction and in-cell signaling to quantitatively map out the structure-function relationship of single-transmembrane receptor tyrosine kinases.
Role: Co-Investigator

R01 MH119149-01 Wang (PI) 04/01/2019-01/31/2024
Nonconventional role of ADCY in Gq-mediated neuronal signaling and neuroplasticity.
The goal of this study is to determine the role of adenylate cyclases (ADCY) in the development of neuroplasticity.
Role: Co-Investigator

R01MH124992 Wang (PI) 12/01/2020-10/31/2024
Mechanism underlying cognitive and synaptic flexibility
The goal of this study is to determine the role of adenylate cyclases 8-PI3K/Akt-GSK3β signaling in the regulation of synaptic depotentiation reversal/suppression of memory.
Role: Co-Investigator

Completed Research Support

American Cancer Society PF-13-030-01-DDC, Zhang (PI) 2013/01/01-2013/12/31
Cell-fate determination by light-gated MAPK and AKT signaling pathways
The goal of this study is to compare the effects of light-activated MAPK and AKT pathway on cell proliferation and differentiation.
Role: PI

R56MH118908 Wang (PI) 08/02/2019-08/01/2020
Mechanism underlying cognitive and synaptic flexibility
The goal of this study is to determine the role of adenylate cyclases 8-PI3K/Akt-GSK3β signaling in the regulation of synaptic depotentiation reversal/suppression of memory
Role: Co-Investigator

R03NS120516 Tsai (PI) 08/01/2020-07/31/2021
Study of PAK3 in epilepsy-associated defects in synaptic plasticity

The goal of this project is to determine how nuclear and cytoplasmic PAK3 contributes to epilepsy-associated defects in synaptic plasticity.
Role: Co-Investigator

PATENT

Glimpse: generalizable light modulated protein stabilization system, UIUC Ref. No. UIUC2019-080-01(PRO).

PUBLICATIONS (*CORRESPONDING AUTHOR)

Complete List of Published Work in My Bibliography:
https://www.ncbi.nlm.nih.gov/myncbi/kai.zhang.9/bibliography/public/

Peer-reviewed journal publications – independent career (UIUC)

1. Bing Bu, Zhiqi Tian, Dechang Li, **Kai Zhang,** Wei Chen, Baohua Ji, Jiajie Diao, "Double-transmembrane domain of SNAREs decelerates the fusion by increasing the protein-lipid mismatch", Journal of Molecular Biology, 2023. (accepted).
2. Ye Tian, Matthew Jellinek, Kritika Mehta, Sun Mi Seok, Shanny Hsuan Kuo, Wei Lu, Rucheng Shi, Richard Lee, Gee Lau, Jongsook Kim Kemper, **Kai Zhang**, David Ford, Bo Wang, "Membrane phospholipid remodeling modulates nonalcoholic steatohepatitis progression by regulating mitochondrial homeostasis", Hepatology, 2023, doi: 10.1097/HEP.0000000000000375.
3. Huaxun Fan†, Collin Barnes†, Hyojeong Hwang, **Kai Zhang***, Jing Yang*, "Precise modulation of embryonic development through optogenetics", Genesis, The journal of Genetics and Development, 2022, 60(10-12), e23505. [Link] (Invited Review).
4. Qi Wang, Xiaomin Huang, Yixun Su, Guowei Yin, Shouyu Wang, Bin Yu, Hui Li, Junhua Qi, Hui Chen, Wen Zeng, **Kai Zhang**, Alexei Verkhratsky, Jianqin Niu, Chenju Yi, "Activation of Wnt/β-catenin pathway mitigates blood-brain barrier dysfunction in Alzheimer's disease" Brain, 2022, awac236. [Link] (**Front Cover**)
5. Kangqiang Qiu, Weiwei Zou, Hongbao Fang, Mingang Hao, Kritika Mehta, Zhiqi Tian, Jun-Lin Guan*, **Kai Zhang***, Taosheng Huang*, Jiajie Diao*, "Light-activated mitochondrial fission through optogenetic control of mitochondria-lysosome contacts," Nature Communications, 2022, 13, 4303. [Link]
6. Savanna Sharum Skeeters; Tyler Camp; Huaxun Fan; Kai Zhang*, "The expanding role of split protein complementation in opsin-free optogenetics", Current Opinion in Pharmacology, 2022, 65:102236. [Link] (Invited Review)
7. Vishnu V. Krishnamurthy, Hyojeong Hwang, Jia Fu, Jing Yang,* **Kai Zhang***, "Optogenetic control of the canonical Wnt signaling pathway during Xenopus laevis embryonic development", Journal of Molecular Biology, 2021, 433, Issue 18, 167050. [Link] **(Front Cover)**

8. Teak-Jung Oh†, Huaxun Fan†, Savanna S. Skeeters†, **Kai Zhang*** "Steering Molecular Activity with light: Recent Advances and Perspectives", ***Advanced Biology***, 2021, 2000180. [Link].
9. Parinaz Fathi, Ayman Roslend, Kritika Mehta, Parikshit Moitra, **Kai Zhang**, Dipanjan Pan "UV-Trained and Metal-Enhanced Fluorescence of Biliverdin and Biliverdin Nanoparticles", ***Nanoscale***, 2021, 13, 4785-4798. [Link] (Inside Front Cover)
10. Qixin Chen, Hongbao Fang, Xintian Shao, Zhiqi Tian, Yuming Zhang, Huaxun Fan, **Kai Zhang***, Weijiang He*, Zijian Guo*, Jiajie Diao*, "A dual-labeling probe to track functional mitochondria–lysosome interactions in live cells", ***Nature Communications,*** 2020,11, 6290. [Link]
11. Savanna S. Skeeters, Ana C. Rosu, Divyanshi, Jing Yang, **Kai Zhang*** "Comparative determination of cytotoxicity of sub-10-nm copper nanoparticles to prokaryotic and eukaryotic cells", ***ACS Applied Materials & Interfaces,*** 2020,12, 45, 50203–50211. [Link]
12. Qin Wang, Huaxun Fan, Feng Li, Savanna S. Skeeters, Vishnu Krishnamurthy, Yuanquan Song*, **Kai Zhang***, Optical control of ERK and AKT signaling promotes axon regeneration and functional recovery of PNS and CNS in Drosophila, ***eLife***, 2020, 9, e57395 [Link]. Highlighted in the School of MCB.
13. Taida Huang, Yan Zhang, Zitian Wang, Hongda Chen, Nan Wang, Huaxun Fan, Zhangsen Huang, Yixun Su, Xiaomin Huang, Hui Chen, **Kai Zhang***, Chenju Yi*, Optogenetically-controlled TrkA activity improves the regenerative capacity of hair-follicle-derived stem cells to differentiate into neurons and glia", ***Advanced Biology***, 2020, 2000134. [Link]
14. Miaoling Li§, Teak-Jung Oh§, Huaxun Fan§, Jiajie Diao*, **Kai Zhang***, "Role of SNARE protein conformation in synaptic transmission: Challenges and Perspectives", ***Journal of Molecular Biology***, 2020, 432, 4773-4782. (§ These authors contributed to this work equally).[Link]
15. Yixun Su, Xiaomin Huang, Zhangsen Huang, Taida Huang, Tao Li, Huaxun Fan, **Kai Zhang***, Chenju Yi*, "Early but not Delayed RAF Activation Promotes Astrocytogenesis in Mouse Neural Progenitors Resolved by Optogenetics", ***Journal of Molecular Biology***, 2020, 432, 4358-4368 [Link].
16. Vishnu V. Krishnamurthy, Jia Fu, Teak-Jung Oh, John Khamo, Jing Yang*, **Kai Zhang*** "A Generalizable Optogenetic Strategy to Regulate Receptor Tyrosine Kinases during Vertebrate Embryonic Development", ***Journal of Molecular Biology***, 2020, 432, 10, 3149-3158. [Link]
17. Melody Esmaeili, Shelby Blythe, **Kai Zhang**, Jing Yang, Peter Klein "Loss of Competence in early development is mediated by loss of chromatin accessibility", ***Developmental Biology***, 2020, 452, 1, 20-35. [Link]
18. Tyler Camp, Kritika Mehta, Stephen Sligar*, **Kai Zhang***, "Molecular Orientation Determination in Nanodiscs at the Single-Molecule Level", ***Analytical Chemistry***, 2020, 92, 2, 2229-2236 [Link].
19. Zichen Wang, Huaxun Fan, Xiao Hu, John Khamo, Jiajie Diao*, **Kai Zhang***, Taras Pogorelov* "Coaction of Electrostatic and Hydrophobic Interactions: Dynamic Constraints on

Disordered TrkA Juxtamembrane Domain", ***Journal of Physical Chemistry B***, 2019, 123, 50, 10709-10717. [Link].

20. Payel Mondal, Vishnu V. Krishnamurthy, Savanna R. Sharum, Neeka Haack, Huiwen Zhou, Jenifer Cheng, Jing Yang, **Kai Zhang*** "Repurposing protein degradation for optogenetic modulation of protein activities" ***ACS Synthetic Biology***, 2019, 8, 11, 2585-2592 [Link] (Cover)

    Highlighted in Science Daily, Nanowerk, Illinois News Bureau

21. I. Srivastava, J. S. Khamo, S. Pandit, P. Fathi, X. Huang, A. Cao, R. T. Haasch, S. Nie, **K.Zhang***, D. Pan* "Influence of Electron Acceptor and Electron Donor on the Photophysical Properties of Carbon Dots: A Comparative Investigation at the Bulk-State and Single-Particle Level. ***Advanced Functional Materials*** 2019, 1902466. [Link]
22. H. Hwang, Z. Jin, V. V. Krishnamurthy, A. Saha, P. S. Klein, B. Garcia, W. Mei, M. L. King, **K. Zhang**, J. Yang "Novel functions of the ubiquitin-independent proteasome system in regulating Xenopus germline development", ***Development***, 2019, 146, 8, dev172700. [Link]
23. P. Fathi, J. S. Khamo, X. Huang, I. Srivastava, M. B. Esch, **K. Zhang***, D. Pan* "Bulk-state and single-particle imaging are central to understanding carbon dot photo-physics and elucidating the effects of precursor composition and reaction temperature", ***Carbon***, 2019, 145, 572-585. [Link]
24. Q. Chen, X. Shao, Z. Tian, Y. Chen, P. Mondal, F. Liu, F. Wang, P. Ling*, W. He*, **K. Zhang***, Z. Guo, and J. Diao* "Nanoscale monitoring of mitochondria and lysosome interactions for drug screening and discovery", ***Nano Research***, 2019, 12, 5, 1009–1015. [Link]
25. B. Cai, L. Yu, S. R. Sharum, **K. Zhang***, J. Diao* "Single-vesicle measurement of protein-induce membrane tethering", ***Colloids and Surfaces B: Biointerfaces***, 2019, 177, 267-273. [Link].
26. J. S. Khamo, V. V. Krishnamurthy, Q. Chen, J. Diao, **K. Zhang***, "Optogenetic delineation of receptor tyrosine kinase subcircuits in PC12 cell differentiation", ***Cell Chemical Biology***, 2019, 26, 400-410 [Link]

    Highlighted in School of MCB and Neuroscience Program News at UIUC.

27. S. K. Misra, I. Srivastava, J.S. Khamo, V. V. Krishnamurthy, D. Sar, A. S. Schwartz-Duval, J. A. N. T. Soares, **K. Zhang*** and D. Pan* **"**Carbon Dots with Induced Surface Oxidation Permits Imaging at Single-Particle Level for Intracellular Studies", ***Nanoscale***, 2018, 10, 18510-18519. [Link]

    Highlight in the School of MCB at UIUC.

28. V. V. Krishnamurthy, **K. Zhang*** "Chemical physics in living cells – using light to visualize and control intracellular signal transduction" ***Chinese Journal of Chemical Physics***, 2018 31(4), 375-392. [Link]
29. K. Sung, L. F. Ferrari, W. Yang, C. Chung, X. Zhao, Y. Gu, S. Lin, **K. Zhang**, B. Cui, M. L. Pearn, M. T. Maloney, W. C. Mobley, J. D. Levine and C. Wu " Swedish Nerve Growth Factor Mutation (NGFR100W) Defines a role for TrkA and p75NTR in Nociception", ***Journal of Neuroscience***, 2018, 38(14), 3394-3413. [Link]

30. J.S. Khamo, V. V. Krishnamurthy, P. Mondal, S. R. Sharum, and **K. Zhang*** "Applications of optobiology in intact cells and multi-cellular organisms", ***Journal of Molecular Biology***, 2017, 429, 2999-3017. [Link]
31. V. V. Krishnamurthy, A. J. Turgeon, J. S. Khamo, W. Mei, P. Mondal, S. R. Sharum, J. Yang*, and **K. Zhang* "**Light-mediated, reversible modulation of protein localization and kinase activity during cell differentiation and *Xenopus* embryonic development" ***Journal of Visualized Experiments (JoVE)***, 2017, 124, e55823. [Link]
32. Y. Osakada, **K. Zhang** "Single particle tracking reveals a dynamic role of actin filaments in assisting long-range axonal transport in neurons" ***Bulletin of the Chemical Society of Japan (BCSJ)***, 2017, 90, 714-719. [Link]
33. P. Mondal, J. S. Khamo, V. V. Krishnamurthy, Q. Cai, and **K. Zhang*** "Drive the car(go)s—new modalities to control cargo trafficking in live cells" ***Frontiers in Molecular Neurosciences***, 2017, 10, 4. doi: 10.3389/fnmol.2017.00004. [Link]
34. V. V. Krishnamurthy, J.S. Khamo, W. Mei, A. J. Turgeon, H. M. Ashraf, P. Mondal, D. B. Patel, N. Risner, E. E. Cho, J. Yang*, and **K. Zhang*** "Reversible optogenetic control of kinase activity during differentiation and embryonic development" ***Development***, 2016, 143, 4085-4094. [Link]
35. V. V. Krishnamurthy, J. S. Khamo, E. Cho, C. Schornak, and **K. Zhang*** "Multiplex gene removal by two-step polymerase chain reactions", ***Analytical Biochemistry***, 2015, 481, 7-9. [Link]
36. V. V. Krishnamurthy, J. S. Khamo, E. Cho, C. Schornak, and **K. Zhang*** "Polymerase chain reaction-based gene removal from plasmids", ***Data in Brief***, 2015, 4, 75-82. [Link]

Contributed journal perspective and book chapter – independent career (UIUC)

37. **Kai Zhang***, Vishnu V. Krishnamurthy, "Enabling versatile control of molecular activity with small molecules and light", ***Journal of Molecular Biology***, 2020, 432, 19, 5209-5211. [Link]
38. Vishnu Krishnamurthy, John Khamo, Payel Mondal, Savanna Sharum, Jing Yang, and **Kai Zhang*** "Reversible Optogenetic Control of Growth Factor Signaling During Cell Differentiation and Vertebrate Embryonic Development", ***Biophotonics Congress: Optics in the Life Sciences Congress***, 2019, AW1E.1. [Link]
39. V. V. Krishnamurthy, **K. Zhang*** "Simultaneous removal of multiple DNA segments by polymerase chain reactions" ***Methods Mol Biol.***, Synthetic DNA, Ed R. Hughes. (Springer New York) 2017, 1472, 193-203. [Link]

Peer-reviewed journal publications – prior to UIUC

40. **K. Zhang*** and B. Cui* "Optogenetic control of intracellular signaling pathways", ***Trends in Biotechnology***, 2015, 33, 92-100. (*corresponding author) [Link]
41. P.D. Chowdary, D. Che, **K. Zhang**, B. Cui "Retrograde NGF axonal transport – coordination of opposite polarity motors near unidirectional motility regime" ***Biophysical Journal***, 2015, 108, 2691-2703. [Link]

42. D. L. Che, L. Duan, **K. Zhang**, B. Cui, The dual characteristics of light-induced cryptochrome 2 homo-oligomerization and hetero-dimerization for optogenetic manipulation in mammalian cells, ***ACS Synthetic Biology***, 2015, accepted. [Link]
43. L. Duan, D. Che, **K. Zhang**, Q. Ong, S. Guo, and B. Cui, Optogenetic control of molecular motors and organelle distributions in cells, ***Chemistry & Biology***, 2015, 22, 671-682. [Link]
44. Q. Ong, S. Guo, L. Duan, **K. Zhang**, E. A. Collier, and B. Cui "The Timing of Raf/ERK and AKT Activation in Protecting PC12 Cells against Oxidative Stress", ***PLOS ONE***, 2016, e0153487. [Link]
45. Q. Ong, S. Guo, **K. Zhang**, and B. Cui "U0126 Protects Cells against Oxidative Stress Independent of Its Function as a MEK Inhibitor", ***ACS Chem. Neurosci.***, 2015, 6,130–137. [Link]
46. **K. Zhang** and B. Cui "Lighting up FGFR signaling", ***Chemistry & Biology***, 2014, 21, 806-808. [Link]
47. **K. Zhang**, L. Duan, Q. Ong, Z. Lin, P. Varman, K. Sung, and B. Cui "Light-mediated kinetic control reveals the temporal effect of the Raf/Mek/ERK pathway in PC12 cell neurite outgrowth", ***PLOS ONE***, 2014, 9, e92917. [Link]
48. **K. Zhang**, R. F. B. Kenan, Y. Osakada, W. Xu, R. S. Sinit, L. Chen, X. Zhao, J-Y. Chen, B. Cui, and C. Wu "Defective Axonal Transport of Rab7 GTPase Results in Dysregulated Trophic Signaling", ***J. Neuroscience*** 2013, 33, 7451-7462. [Link]
49. W. J. Xie, **K. Zhang**, B. Cui "Functional characterization and axonal transport of quantum dot labeled BDNF", ***Integrative Biology***, 2012, 4, 953-960. [Link]
50. **K. Zhang**, Y. Osakada, W. J. Xie, and B. Cui "Automated image analysis for tracking cargo transport in axons", ***Microscopy Research and Technique*** 2011, 74, 605-613. [Link]
51. K. A. Vossel, **K. Zhang**, X. Wang, G. Q. Yu, K. Ho, B. Cui, and L. Mucke "Tau reduction ameliorates Aβ-induced impairments in axonal transport", ***Science*** 2010, 330 198. [Link]
52. **K. Zhang**, H. V. Mudrakola, L. Chen, M. Vrljic, and B. Cui "Single molecule imaging of NGF axonal transport in a microfluidic device ", ***Lab on a Chip*** 2010, 10, 2566-2573. [Link]
53. H. V. Mudrakola*, **K. Zhang***, and B. Cui "Optically resolving individual microtubules in live axons using dynamic object tracking", ***Structure*** 2009, 17, 1433-1441. [Link]
54. **K. Zhang**, W. K. Zhang, C. Y. Yang, and H. Yang "Bipolar Cellular Morphology of Malignant Melanoma in Unstained Human Melanoma Skin Tissue", ***J. Biomedical Optics*** 2009, 14, 024042. [Link]
55. S. Li, **K. Zhang**, J. M. Yang, L. W. Lin, and H. Yang "Single Quantum Dots as Local Temperature Markers", ***Nano Lett.*** 2007, 7, 3102-3105. [Link]
56. N. Ji, **K. Zhang**, H. Yang, and Y. R. Shen "Three-Dimensional Chiral Imaging by Sum Frequency Generation", ***J. Am. Chem. Soc***. 2006, 128, 3482-3483. [Link]
57. **K. Zhang**, H. Chang, A. H. Fu, A. P. Alivisatos, and H. Yang "Continuous Distribution of Emission States from Single CdSe/ZnS quantum dots", ***Nano Lett***.2006, 6, 843-847. [Link]
58. **K. Zhang** and H. Yang "Photon-by-Photon Determination of Emission Burst from Diffusion Single Chromophores", ***J. Phys. Chem. B.*** 2005, 109, 21930-21937. [Link]

59. **K. Zhang**, Z. J. Liu, and K. Y. Wang "Formation and Applications of Laser-Excited Surface Plasma Waves", ***Chinese J. Nature*** 2002, 24, 44-47.

Contributed book chapter – prior to UIUC

60. **K. Zhang**, P.D. Chowdary, and B. Cui "Visualizing directional Rab7 and TrkA cotrafficking in axons by pTIRF microscopy" ***Methods Mol Biol.***, 2015, 1298:319-29. [Link]
61. H. V. Mudrakola, C. Wu, **K. Zhang**, and B. Cui, "Single Molecule Imaging of Axonal Transport in Live Neurons", in Laser Science XXV, OSA Technical Digest (CD) (Optical Society of America, 2009), LSThB3. [Link]
62. S. Li, **K. Zhang**, J-M Yang, L.W. Lin, and H. Yang "MEMS Temperature Characterization by CdSe Quantum Dots", *The 14th International Conference on Solid-State Sensors, Actuators and Microsystems*, 2007, 1369-1372. [Link]
63. **K. Zhang**, N. Ji, Y. R. Shen, and H. Yang "Optically Active Sum Frequency Generation Microscopy for Cellular Imaging", *Ultrafast Phenomena XV* Eds. P. Corkum, D. Jonas, D. Miller, A. M. Weiner, (Springer-Verlag, Berlin Heidelberg, 2007) 825. [Link]

INVITED TALKS AND PLATFORM IN CONFERENCE

1. "Fine tune receptor tyrosine kinase activity by light", UWM Optical Microspectroscopy Symposium, Milwaukee, Wisconsin, August 2022.
2. "Single-Molecule Measurement of Orientation Distributions in Lipid Nanodiscs", UWM Optical Microspectroscopy Symposium, Milwaukee, Wisconsin, August 2022.
3. "Light up signal transduction – control cell fate with opsin-free optogenetics in health and disease", Chinese Biophysics Congress June 2022 (Virtual)
4. "Optogenetic control of body axis patterning during embryonic development", 2nd Optogenetic Technologies and Applications Conference, December 2021 (Virtual).
5. "Optogenetic control of neural differentiation and repair", Photopharmacology III, November 2021 (Virtual).
6. "Optogenetic control of neural differentiation, repair, and embryonic development", Chinese Bioscience Association, California, October 2021 (Virtual).
7. "Optogenetic activation of ERK and AKT signaling promotes axon regeneration in Drosophila", Biophysical Society 65th annual meeting, February 2021 (Virtual).
8. "Repurposing Protein Degradation for Optogenetic Modulation of Protein Activities" Society of Photo-Optical Instrumentation Engineers, San-Francisco, California, February 2020.
9. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Optogenetic Technologies and Applications, Boston, Massachussets, December 2019. (**Session Chair**)
10. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Xenopus Resources and Emerging Technologies Meeting, Woods Hole, Massachussets, October 2019.

11. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", International Conference on Biomechanics and Medical Engineering (ICBME), San Diego, California, September 2019.
12. "Reversible optogenetic control of growth factor signaling during cell differentiation and Vertebrate Embryonic Development", OSA Biophotonics Congress, Tucson, Arizona, April 2019.
13. "Optogenetic activation and inactivation of the neurotrophin pathway in live cells" Experimental Biology, Orlando, Florida, April 2019.
14. "Temporal control of growth factor-mediated signaling pathways during cell differentiation and *Xenopus* embryonic development", American Society for Biochemistry and Molecular Biology Society Meeting, San Diego, California, April, 2018. (**Travel Award**)
15. "Using light to control the timing of kinase activity during cell differentiation and *Xenopus* embryonic development" Xenopus Resource and Emerging Technologies Meeting, Woods Hole Institute, Marine Biology Lab, Massachusetts, August 2017.
16. "Reversible optogenetic activation of neurotrophin-mediated signal transduction", Houston Methodist Research Institute, Houston, Texas, March 2017.
17. "Reversible modulation of kinase activity during embryonic development", Midwest Society of Developmental Biology Regional Meeting, Ann Arbor, Michigan, October 2016.
18. "Steering growth factor-mediated signal transduction by light", East Lake Young Scholar Symposium, Huazhong University of Science and Technology, Wuhan, China, December 2014.
19. "Defective Axonal Transport of Rab7 GTPase Results in Dysregulated Trophic Signaling", Bay Area Trafficking Symposium, UC Berkeley, California, September 2013.
20. "Impact of Charcot-Marie-Tooth type 2B disease-associated Rab7 mutations on signaling and axonal trafficking of NGF/TrkA", 56th Biophysical Society Annual Meeting, San Diego, California, February 2012. [Link]

INVITED TALKS IN UNIVERSITY AND RESEARCH INSTITUTION

21. "Optical modulation of molecular activity during neural differentiation, regeneration, and embryonic development", Department of biology, Penn State University, February 2021.
22. "Single-molecule detection, Super-resolution imaging, and optogenetics", Biological Physics for Engineers invited lecture, University of Florida, February 2021.
23. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Chemistry, University of Alberta, September 2020.
24. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Physiology, Michigan State University, September 2020.

25. "Optical modulation of molecular activity during neural differentiation, regeneration, and embryonic development", Department of Biochemistry, University of Illinois at Urbana-Champaign, IL, September 2020.
26. "Optical inhibition of growth factor signaling in living cells", Cancer Center at Illinois, University of Illinois at Urbana-Champaign, IL, April 2020.
27. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Chemistry, University of Chicago, IL, March 2020.
28. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Chemistry, Princeton University, NJ, December 2019.
29. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Chemistry, University of Pennsylvania, PA, November 2019.
30. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Chemistry, Stanford University, CA, November 2019.
31. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Cancer Biology, University of Cincinnati, OH, October 2019.
32. "Bidirectional optogenetic control of receptor tyrosine kinase signaling during cell differentiation and embryonic development", Department of Bioengineering, University of California, San Diego, September 2019.
33. "Bidirectional optogenetic control of growth factor signaling during cell differentiation and embryonic development" Center for Physics of Living Cells, University of Illinoi at Urbana-Champaign, IL, September 2019.
34. "Delineating receptor tyrosine kinase signaling pathways during cell differentiation and embryonic development" University of Southern California, Los Angeles, CA, December 2018.
35. "Developing an optogenetic toolbox for cell signaling control in mammalian cells and multicellular organisms" Center for Physics of Living Cells (CPLC), University of Illinois at Urbana-Champaign, Urbana, Illinois, July 2017.
36. "Dissection of growth factor signal transduction during cell differentiation and Xenopus embryonic development" Harvard Medical School, Boston, Massachusetts, June 2017.
37. "Dissection of growth factor signal transduction during cell differentiation and Xenopus embryonic development" Brown University, Providence, Rhode Island, June 2017.
38. "Delineating growth factor-regulated signaling pathways by light", Department of Pathobiology of the College of Veterinary Medicine, University of Illinois at Urbana-Champaign, March 2017.

39. "Control the timing of the mitogen-activated protein kinase pathway during cell differentiation and *Xenopus* embryonic development", School of Molecular Sciences, Arizona State University, Tempe, March 2017.
40. "Light-controlled growth factor signal transduction during cell differentiation and Xenopus embryonic development", Department of Physiological and Molecular Plant Biology, University of Illinois at Urbana-Champaign, Urbana, Illinois, January 2017.
41. "Developing an optogenetic toolbox for cell signaling control" Center for Physics of Living Cells, University of Illinois at Urbana Champaign. July 2016.
42. "Study signal transduction in live cells by light", School of Molecular and Cellular Biology, University of Illinois at Urbana-Champaign, Urbana, Illinois, August 2015.
43. "Control cell fate determination by light", Center for Biophysics and Computational Biology, University of Illinois at Urbana-Champaign, Urbana, Illinois, August 2015.
44. "Control PC12 cell differentiation by light", Neuroscience program, University of Illinois at Urbana-Champaign, Urbana, Illinois February 2015.
45. "Steering growth factor-mediated signal transduction by light", Fudan University, Shanghai, China, December 2014.
46. "Steering growth factor-mediated signal transduction by light", Huazhong University of Science and Technology, Wuhan, China, December 2014.
47. "Light-controlled activation of the mitogen-activated protein kinase pathway", Center for Biophysics and Computational Biology, University of Illinois at Urbana-Champaign, Urbana, Illinois, July 2014
48. "Observation and modulation of signal transduction in live cells using light", California Institute of Technology, California, January 2013.
49. "Dysregulated axonal transport of NGF/TrkA in Charcot-Marie-Tooth type 2B disease" Biophysics Talks, Stanford University, Stanford, California, January 2012.
50. "Observing quantum dot one at a time: optical characterization and applications in live cell imaging", Peking University, P. R. China, November 2011.
51. "Single Chromophore Experiments and Quantitative Analysis", November 23, 2006, Zhengzhou University, Zhengzhou, Henan, P. R. China.

POSTER PRESENTATIONS AT CONFERENCE

52. Kangqiang Qiu,Weiwei Zou, Hongbao Fang, Minggang Hao, Kritika Mehta, Zhiqi Tian, Jun-Lin Guan, Taosheng Huang,Jiajie Diao, **Kai Zhang**, "Optical modulation of mitochondrial morphology and functions"67th Biophysical Society Meeting, San Diego, California, February 2023.
53. S. R. Sharum, P. Mondal, V. V. Krishnamurthy, K. Mehta, H. Fan, J. Yang, **K. Zhang** "Optical modulation of receptor tyrosine kinase signaling during cell differentiation and embryonic development", 64th Biophysical Society Meeting, San Diego, California, February 2020.
54. Z. Wang, H. Fan, X. Hu, J. Khamo, J. Diao, **K. Zhang**, T. Pogorelov, "Coaction of electrostatic and hydrophobic interactions in signaling: dynamic constraints on disordered TrkA

juxtamembrane domains", 64th Biophysical Society Meeting, San Diego, California, February 2020.

55. P. Mondal, V. V. Krishnamurthy, S. R. Sharum, N. Haack, J. Yang, **K. Zhang** "Repurposing protein degradation for optogenetic modulation of protein activities", SPIE Photonic West Bio, San Diego, California, February 2020.
56. N. Haack, P. Mondal, V. V. Krishnamurthy, S. R. Sharum, **K. Zhang** "Repurposing protein degradation for optogenetic modulation of protein activities", Society for Neuroscience, Chicago, Illinois, December 2019.
57. V. V. Krishnamurthy, J. Khamo, P. Mondal, S. R. Sharum, **K. Zhang** "Bidirectional control of receptor tyrosine signaling during cell differentiation with light", Society for Developmental biology annual meeting, Boston, Massachusetts, July 2019.
58. V. V. Krishnamurthy, J. Khamo, P. Mondal, S. R. Sharum, **K. Zhang** "Bidirectional optogenetic control of growth factor signaling during cell differentiation and vertebrate embryonic development", Gordon Research Conference, Salve Regina University, Newport, Rhode Island, June 2019.
59. S. R. Sharum, P. Mondal, K. Cho, **K. Zhang** "Temporal inhibition of ERK Activity by Optogenetic Control of MAPK Phosphatase 3" Experimental biology, Orlando, Florida, April 2019.
60. J. Khamo, **K. Zhang** "Optogenetic delineation of receptor tyrosine kinase subcircuits in pc12 cell differentiation", 63th Biophysical Society Meeting, Baltimore, Maryland, March 2019.
61. P. Mondal, V. V. Krishnamurthy, J. Khamo, J. Yang, **K. Zhang** "Temporal control of growth factor-mediated signaling pathways during cell differentiation and *Xenopus* embryonic development", American Society for Biochemistry and Molecular Biology Society Meeting, San Diego, California, April 2018. (**Travel Award**)
62. **K. Zhang** "Control neurotrophin signaling using light during PC12 cell differentiation and Xenopus embryonic development", Biophysical Society Meeting, San Francisco, California, February 2018. [Link]
63. **K. Zhang** "Dissection of growth factor-regulated signaling pathways by light", Society for Developmental biology annual meeting, Minneapolis, Minnesota, July 2017.
64. **K. Zhang** "Control neurotrophin signaling using light during cell differentiation and Xenopus embryonic development", Gordon Research Conference, Salve Regina University, Newport, Rhode Island, June 2017.
65. **K. Zhang** "Developing an optogenetic toolbox for cell signaling control", Center for Physics of Living Cells, University of Illinois at Urbana-Champaign, Urbana, Illinois, July 2016
66. **K. Zhang** "Resolving intracellular mechanisms of neurotrophin-mediated signal transduction via optogenetics" 16th International symposium on neural regeneration (ISNR), Pacific Grove, California, December 2015.
67. Q. Ong, A. McGuire, S. Guo, F Santoro, **K. Zhang**, and B. Cui "Optogenetic spatial control of TrkA-mediated pathways reveals a potential role for Raf/ERK pathway in inducing polarity

in PC12 cell differentiation model" American Society for Cell Biology ASCB, San Diego, California, December 2015.

68. **K. Zhang** "Light-controlled growth factor-mediated signal transduction", 59th Biophysical Society Annual Meeting, Baltimore, Maryland, February 2015.
69. Q. Ong, **K. Zhang**, S. Guo, L. Duan, and B. Cui "Optogenetic modulation of the Raf/ERK pathway in PC12 cells", ASCB local meeting, Quantitative Imaging in Cell Biology, Santa Clara University, California, May 2014 ***(Best poster award).***
70. **K. Zhang**, L. Duan, Q. Ong, Z. Lin, P. Varman, K. Sung, and B. Cui "Light-controlled MAPK signaling pathway reveals a memory effect in PC12 cell neurite outgrowth", Single Cell Analysis Symposium, Stanford University, California, September 2013.
71. **K. Zhang**, L. Duan, Z. Lin, K. Sung, Y. Osakada, and B. Cui "Control the mitogen-activated protein kinase signaling pathway by light", Synthetic Biology Gordon Research Conference, Mount Snow Resort, Vermont, June 2013.
72. **K. Zhang**, L. Duan, Z. Lin, K. Sung, Y. Osakada, and B. Cui "Light-controlled mitogen - activated protein kinase (MAPK) signaling pathway in live cells", 57th Biophysical Society Annual Meeting, Philadelphia, Philadelphia, February 2013.
73. W. Zhao, **K. Zhang,** W. Xie, L. Hanson, Z. Lin, Y. Cui, and B. Cui "Accelerating the development of hippocampal neurons using nanopillar structures", 57th Biophysical Society Annual Meeting, Philadelphia, February 2013.
74. **K. Zhang**, L. Duan, Z. Lin, K. Sung, Y. Osakada, and B. Cui "Precise control of signal transduction in living cells by light", 2012 American Society for Cell Biology Annual Meeting, San Francisco, California, December, 2012.
75. **K. Zhang**, Y. Osakada, M. Vrljic, L. Chen, H. Mudrakola, and B. Cui "Single-molecule imaging of nerve growth factor axonal transport in microfluidic devices", 55th Biophysical Society Annual Meeting, Baltimore, Maryland, March 2011. [Link]
76. **K. Zhang**, C. Wu, H. Mudrakola, Y. Osakada, and B. Cui "Real time visualization of axonal transport of GTPase Rab7 in rat embryonic dorsal root ganglia", 54th Biophysical Society Annual Meeting, San Francisco, California, February 2010. [Link]
77. Y. Osakada, H. Mudrakola, **K. Zhang** and B. Cui "Effects of actin filaments on NGF retrograde transport", 54th Biophysical Society Annual Meeting, San Francisco, California, February 2010. [Link]
78. **K. Zhang**, W. K. Zhang, C. Y. Yang, and H. Yang "Nonlinear optical imaging of melanocytes in collagen matrix", 234th American Chemical Society National Meeting & Exposition, Boston, Massachusetts, August 2007.
79. H. Yang, **K. Zhang,** A. Fu, P. Alivisatos, C. Hayden "Studying Photoluminescence Dynamics of Single Quantum Dots Photon by Photon", American Physical Society Meeting, Baltimore, Maryland, March 2006.
80. **K. Zhang** and H. Yang "Photon-by-photon determination of emission bursts from diffusing single chromophores", American Physical Society Meeting, Baltimore, Maryland, March 2006.

81. **K. Zhang** and H. Yang "Photon-by-photon determination of emission bursts from diffusing single chromophores", 231st American Chemical Society Meeting & Exposition, Atlanta, Georgia, March 2006.
82. N. Ji, **K. Zhang**, H. Yang, and Y. R. Shen "Sum frequency generation microscopy for imaging chirality", 50th Biophysical Society Annual Meeting, Salt Lake City, Utah, February 2006.
83. **K. Zhang** and H. Yang "Field and fluorescence modification by colloidal gold nanoparticles", Materials Research Society Spring Meeting, San Francisco, California, March 2005.
84. **K. Zhang**, H. Chang, A. H. Fu, L. P. Watkins, A. P. Alivisatos, and H. Yang "Photon by photon analysis of single quantum dot emission dynamics", Materials Research Society Spring Meeting, San Francisco, California, March 2005.

TEACHING EXPERIENCE

Instructor

University of Illinois at Urbana-Champaign

Physical Biochemistry (MCB/BIOC 446, CHEM 472)	2016-present
Neuroscience Program (NEUR598, Organizer: Justin Rhodes)	2016-present
Center for Physics of Living Cells, Summer Workshop	2016-present
Tutorial (BIOP 586)	2015-present

Students: Siqi Liao (Lu), Congjian Ni (Lu) Yongjae Lee (Selvin), Chang-Ting Lin (Ha), Kai Wen Teng (Selvin), Zhiyu Zhao (Tajkhorshid), Chaoyi Jin (Selvin)

Part-time Lecturer

Biomedical, Chemical and Materials Engineering Department
San Jose State University

Graduate-division Chemical Engineering Thermodynamics	2012

Teaching Assistant

Department of Chemistry, UC Berkeley

Graduate-division Chemical Kinetics	2005
Undergraduate General Chemistry	2004
Undergraduate General Chemistry	2003

PROFESSIONAL ACTIVITIES

Grant Reviewer

Paul G. Allen Frontiers Group (2021,2022)
Arizona Alzheimer's Disease Core Center Grant (2017)
Research Board, OVCR in UIUC (2017, 2018, 2019, 2020)

Ad Hoc reviewer – *Science, Nature Cell Biology, Nature Methods, Nature Communications, Nature Protocols, Cell Chemical Biology, Journal of American Chemical Society, ACS Synthetic Biology, Development, ACS Chemical Neuroscience, ACS Chemical biology, Advanced Healthcare Material, Current Opinion in Biotechnology, Expert Opinion on Drug Discovery, Advanced Materials, Journal of Physical Chemistry B, Journal of Physical Chemistry Letter, Journal of Integrative Neurosciences, Chemical Sciences, Scientific Reports, Methods, Journal of Biomedical Optics, Frontiers in Molecular Neuroscience, Journal of Visualized Experiments, Dyes and Pigments, Experimental Neurology, Journal of Micro/nanolithography, MEMS, and MOEMS (J3M), SLAS Technology, Small*

2009-present

Mentoring

Supervisor of undergraduate students in the laboratory and current position

Cara Schornak Graduate student in Vanderbilt University. 2014-2015
Ellen Cho Biochemistry high distinction, work at Loyola University Chicago 2014-2016
Humza Ashraf Biochemistry high distinction, Summer Research Award, Graduate student at the University of Colorado, Boulder. 2015-2017
Dil Patel 2015-2017
Noah Risner 2015-2017
Adam Barm 2015-2015
Neeka Haack 2015-2019
Jennifer Cheng Biochemistry highest distinction, Outstanding Student, Outstanding Thesis Award, Graduate student in Northwestern University 2017-2018
Kelly Cho MCB Summer Undergraduate Research Fellowship, Medical School student at University of Illinois Chicago 2017-2019
Rachel Benedeck 2018-2018
Huiwen Zhou Graduate student at Northwestern University 2018-2019
Max Spiro 2019-2020
Dhananjay Shahdadpuri 2019-present
Tina Han (SURF fellowship) 2020-present
Irina Cheng (Northwestern University Summer Undergraduate Research Fellow) 2020-present
Collin Barnes (BEST Fellow of MCB) 2021-present
Uma Agarwal 2021-present
Nicholas Worley 2021-present
Aruniti Manawa 2021-present
Ami Patel 2021-present
Tristan Worley 2021-present
Nathan Gron 2021-present
Nafay Abdul 2021-present
Ahnaf Monyem 2021-2022
Jungbin Lee 2022-present
Zayn Beg 2022-present
Kurt Leano 2022-present
Danyi Wang 2022-present
Yushan Li 2022-present

Advisor for first-year rotation graduate student in MCB

2014 John Khamo, Erik Andersen
2015 Payel Mondal, Eric Shinn, Yeoan Youn
2016 Madhura Duttagupta, Nandan Haloi, Savanna Sharum
2018 Huaxun Fan, Micca Hecht, Kritika Mehta, Laura Suttenfield
2020 Jessica Palalay, Anna Mankovich, Kaylee Kuzelka, Jorge Calderin
2021 Ran Yang, Anuradha Sharma, Andrew Huang (Biophysics), AnuTanner, Terry Gao, Xiangning Song, Dean (Biophysics) Tanner, Rebecca Tang, Shweta Shree
2022 Sepehr Alaeen (Biophysics), Suhail Chhakara, Katrine Dailey

Faculty advisor of other Biochemistry undergraduate students

Junyao Zhu, Zhouyang Zhu, Haoyuan Yan, Luis Tadeo, Tyanporn Tangpradabdul 2017-2018

Supervisor of high school students in the laboratory and current position

Ana Rosu	Johns Hopkins University	2018-2020
Sana Nabi	Herricks High School (New York) Virtual	2021

Outside Ph.D. dissertation committee

Arizona State University (Faculty: Prof. Jia Guo)	2017
University of Alberta (Student: Ms. Xiaocen Lu, Faculty: Prof. Robert E. Campbell)	2020
Nanyang Technological University, Singapore (Student: Huanwen Mu, Faculty: Prof. Wenting Zhao)	2022

Memberships

Society of Developmental Biology	2016-present
Biophysical Society	2005-present
American Society for Cell Biology	2012
Optical Society of America	2009
American Chemical Society	2003 - 2006
Material Research Society	2003 - 2006
American Physical Society	2003 - 2006

Outreach

Instructor

Center for Physics of Living Cells (NSF funded) Summer workshop, *UIUC*	2016- present
Next generation Science Technology Engineering Art Math (STEAM) studio science demonstration (Nano Class 3-5 grade)	2017
Ecole Bilingue de Berkeley primary school Second grade, Berkeley, California	2017

Judge MCB Undergraduate Research Symposium, *UIUC* 2021

	Undergraduate research conference	
	East Central Illinois American Chemical Society, *UIUC*	2016
	Synopsys Championship	
	Santa Clara Valley Science and Engineering Fair Association	2009
Co-founder	Undergraduate Student Travel Award	
	University of Science and Technology of China	2008 - 2011

Yan Zhang, Ph.D.

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Department of Biochemistry
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Phone: (281) 250-2894
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EDUCATION

Baylor College of Medicine, Houston, TX — July 2014
Ph.D., Biochemistry and Molecular Biology
Dissertation: Genome-wide trafficking of replication and transcription machineries: coordination of central dogma processes upon nutrient stress

Tsinghua University, Beijing, China — July 2008
B.S., Mathematics and Physics (Fundamental Science Program)

APPOINTMENTS

University of Illinois Urbana-Champaign — 2023-present
Assistant Professor, Department of Biochemistry

University of California, San Francisco — 2014-2023
Postdoctoral Researcher, Department of Microbiology and Immunology

Baylor College of Medicine — 2008-2014
Graduate student, Department of Biochemistry and Molecular Biology

University of Wisconsin-Madison — 2012-2014
Visiting graduate student, Department of Bacteriology

RESEARCH EXPERIENCE

Postdoctoral Researcher — 2014-present
Advisor: Carol A. Gross, Ph.D.
Department of Microbiology and Immunology, University of California, San Francisco

- Developed a broadly applicable toolbox combining multiple omics approaches to systematically characterize bacterial gene regulation on the transcriptional and post-transcriptional levels
- Characterized the genome-wide mRNA structural organization of polycistronic transcripts in *Escherichia coli* and its role in determining translation efficiency
- Identified an RNA surveillance system that regulates global translation recovery via monitoring and remodeling mRNA structure during cold shock response of *Escherichia coli*
- Characterized the mRNA context specificity of a ribosome-targeting antibiotic, kasugamycin

Graduate student — 2008-2014
Advisor: Jue (Jade) D. Wang, Ph.D.
Department of Bacteriology, University of Wisconsin-Madison
Department of Biochemistry and Molecular Biology, Baylor College of Medicine

- Characterized the function of the transcription factor DksA in coordinating the network of replication, transcription and translation in *E. coli* upon amino acid starvation

- Developed a novel and broadly applicable algorithm to evaluate genome-wide RNA polymerase (RNAP) progression from ChIP-chip/ChIP-seq data
- Combined genomic and imaging approaches to study the fate of replisome components following various types of replication arrest in *Bacillus subtilis*

Undergraduate Researcher 2006-2008

Advisor: Dr. Zihe Rao, Ph.D.

Tsinghua-Nankai-IBP Joint Research Group for Structural Biology, Tsinghua University, China

- Constructed a library of chemical extracts from Chinese herbal medicine and developed a preliminary screening for a structure-based drug discovery of inhibitors targeting the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) main protease
- Crystallized *Gibberella zeae* extracellular lipase and human Ca^{2+}-loaded calbindin-D28k

PUBLICATIONS

1. Zhang Y*, Aleksashin NA*, Klepacki D, Anderson C, Vázquez-Laslop N, Gross CA, Mankin AS. The context of the ribosome binding site in mRNAs defines specificity of action of kasugamycin, an inhibitor of translation initiation. *Proc Natl Acad Sci U S A.* **2022** Jan 25;119(4):e2118553119. *equal contribution

2. Zhang Y, Gross CA. Cold shock response in bacteria. *Annu Rev Genet*. **2021** Nov 23;55:377-400.

3. Zhang Y*, Burkhardt DH*, Rouskin S*, Li GW, Weissman JS, Gross CA. A Stress Response that Monitors and Regulates mRNA Structure Is Central to Cold Shock Adaptation. *Mol Cell*. **2018** Apr 19;70(2):274-286.e7. *equal contribution

4. Baggett NE, **Zhang Y**, Gross CA. Global analysis of translation termination in *E. coli*. *PLoS Genet*. **2017** Mar 16;13(3):e1006676.

5. Burkhardt DH*, Rouskin S*, **Zhang Y***, Li GW, Weissman JS, Gross CA. Operon mRNAs are organized into ORF-centric structures that predict translation efficiency. *Elife.* **2017** Jan 31;6. pii: e22037. *equal contribution

6. Li W, Bouveret E, **Zhang Y**, Liu K, Wang JD, Weisshaar JC. Effects of amino acid starvation on RelA diffusive behavior in live *Escherichia coli*. *Mol Microbiol.* **2016** Feb;99(3):571-85.

7. Zhang Y, Mooney RA, Grass JA, Sivaramakrishnan P, Herman C, Landick R, Wang JD. DksA guards elongating RNA polymerase against ribosome-stalling-induced arrest. *Mol Cell.* **2014** Mar 6;53(5):766-78.

8. Merrikh H, **Zhang Y**, Grossman AD, Wang JD. Replication-transcription conflicts in bacteria. *Nat Rev Microbiol.* **2012** Jun 6;10(7):449-58.

9. Tehranchi AK, Blankschien MD, **Zhang Y**, Halliday JA, Srivatsan A, Peng J, Herman C, Wang JD. The transcription factor DksA prevents conflicts between DNA replication and transcription machinery. *Cell*. **2010** May 14;141(4):595-605.

10. Sun Y, Li M, **Zhang Y**, Liu L, Liu Y, Liu Z, Li X, Lou Z. Crystallization and preliminary crystallographic analysis of Gibberella zeae extracellular lipase. *Acta Crystallogr Sect F Struct Biol Cryst Commun.* **2008** Sep 1;64(Pt 9):813-5.

11. Zhang C, Sun Y, Wang W, **Zhang Y**, Ma M, Lou Z. Crystallization and preliminary crystallographic analysis of human Ca 2+-loaded calbindin-D28k. *Acta Crystallogr Sect F Struct Biol Cryst Commun*. **2008** Feb 1;64(Pt 2):133-6.

PATENT

A novel method to screen inhibitors of SARS-CoV main protease as potential drugs. (2007)

Zihe Rao, Zhiyong Lou, Yuna Sun, Ming Ma, **Yan Zhang**, Yu Guo, Chang Zhang, Fei Xue. CN 200710195754 7, China

AWARDS

2019	Poster Finalist, Molecular Genetics of Bacteria & Phages Meeting
2013	Poster Presentation Award, Departments of Biochemistry and Pharmacology Research Conference, Baylor College of Medicine
2012	Oral Presentation Award, 26th Society of Chinese Bioscientists in America, Texas Chapter Annual Symposium
2010	Research Training Fellowship, Cancer Prevention and Research Institute of Texas (CPRIT)
2009	Verna and Marrs Mclean Academic Achievement Award, Baylor College of Medicine
2009	Professor John J. Trentin Scholarship Award, Baylor College of Medicine

PRESENTATIONS

2022	Molecular Genetics of Bacteria & Phages Meeting	Podium presentation
2019	Molecular Genetics of Bacteria & Phages Meeting	Poster presentation
2018	University of California, San Francisco, Microbial Pathogenesis and Host Defense Program (MPHD) seminar series	Podium presentation
2018	University of Illinois at Urbana-Champaign, Postdoc seminar series	Podium presentation
2018	Molecular Genetics of Bacteria & Phages Meeting	Poster presentation
2017	Molecular Genetics of Bacteria & Phages Meeting	Podium presentation
2017	Stanford University, Bug Club seminar series	Podium presentation
2016	West Coast Bacterial Physiologists Annual Asilomar Conference	Podium presentation
2016	Microbial Stress Response Gordon Research Conference	Poster presentation
2013	Molecular Genetics of Bacteria & Phages Meeting	Poster presentation
2013	Departments of Biochemistry and Pharmacology Research Conference, Baylor College of Medicine	Poster presentation
2012	Molecular Genetics of Bacteria & Phages Meeting	Podium presentation
2012	Departments of Biochemistry and Pharmacology Research Conference, Baylor College of Medicine	Podium presentation
2012	26th Society of Chinese Bioscientists in America (SCBA), Texas Chapter Annual Symposium	Podium presentation
2011	Dan L. Duncan Cancer Center Symposium, Baylor College of Medicine	Poster presentation

TEACHING AND MENTORING

CURRENT STUDENTS

2023-present **Andrew Briercheck**, Graduate student, Department of Biochemistry, UIUC
Project: Function of alarmones in *E. coli* and *Bacillus subtilis* during cold shock adaptation

2023-present **Hao Fan**, Graduate student, Department of Biochemistry, UIUC
Project: Roles of non-essential ribosome-associated proteins in translational regulation upon cold shock

2023-present **Diana Xie**, undergraduate student, Department of Biochemistry, UIUC
Project: A cross-species comparison of bacterial growth after cold shock to diverse temperatures

STUDENTS MENTORED

2019-2020 **Patrick da Silva**, Visiting graduate student, São Paulo State University, Brazil
Project: Function of the transcription factor YgiV in *Salmonella enterica* serovar Typhimurium
Currently a postdoctoral researcher at Harvard University

2019 **Kamora Beard**, CURE Internship program, Antioch High School
Project: Comparison of bacteria growth rates at different temperatures
Currently starting college majoring in biology

2018 **Judith Edwards**, SF University High School
Project: Growth change during cold shock response in different bacterial species
Currently an undergraduate student at UC Berkeley

OTHER TEACHING AND MENTORING EXPERIENCE

2021 University of California, San Francisco
Co-mentor, *SRTP Genomics Workshop*
Facilitated discussion sessions and office hours for R coding, presented research projects to the undergraduate students

2010-2013 Baylor College of Medicine
Mentored three first-year graduate students, Department of Biochemistry

2011 Baylor College of Medicine
Teaching Assistant, *Cell Division*, Graduate School of Biomedical Sciences
Led biweekly recitation sections, created student handouts and review materials, and graded problem sets and exams

CURRICULUM VITAE

Sayeepriyadarshini Anakk
453 Medical Sciences Building, 506 South Mathews,
Department of Molecular & Integrative Physiology,
Division of Nutritional Sciences,
Affiliate Beckman Institute,
Member, Cancer Center@Illinois
Member, Personalized Nutrition Initiative, IGB
University of Illinois at Urbana-Champaign,
Urbana, IL- 61801
anakk@illinois.edu

EDUCATION

1993 –1999: **Bachelors in Pharmacy**
Masters in Science (Biological Sciences),
Masters in Engineering (Biotechnology),
BITS Pilani, India.

2000-2005: **Ph.D. Biochemistry & Molecular Biology**
GSBS, University of Texas Health Science Center- Houston

2006-2012: **Postdoctoral Fellow**
Baylor College of Medicine, Houston, Texas

2013 -2019: **Assistant Professor**,
Molecular and Integrative Physiology
Affiliate, Beckman Institute
Assistant Professor, Division of Nutritional Sciences
Member, Cancer Center at Illinois
University of Illinois at Urbana-Champaign

2019-present: **Associate Professor (with Tenure)**
Molecular and Integrative Physiology
Affiliate, Beckman Institute
Associate Professor, Division of Nutritional Sciences
Member, Cancer Center at Illinois
Member, Personalized Nutrition Initiative
University of Illinois at Urbana-Champaign

HONORS

Session Chair, Transcriptional responses: more than meets the eye ENDO (June 10, 2022)
Organizer, 4th Big Ten Lipid Meeting (Feb 11, 2022)
CCIL/MSI Cancer and Microbes Workshop Chair (Anakk/Sirk, Sept 17, 2021)
Session Chair: FASEB Steroid Hormones and Receptors in Health and Disease (May 2021)
Review Editor, Frontiers in Endocrinology (2021-)

Editorial Board Member, American Journal of Physiology-GI tract (2021-)
Editorial Board Member, Journal of Lipid Research (2021-)
Review Editor, Frontiers in Physiology, Lipids and Fatty Acid research (2021-)
Editorial Board Member, Hepatology (2019-)
Meet the Professor: Liver regeneration and hepatocellular carcinoma AASLD Meeting, Boston, MA (Nov, 2019)
Vision 20/20 Grant USDA (2019)
Research Scholar Grant, American Cancer Society (2019)
Oral Session Moderator, Bile Transporters and Lipids, American Association for the Study of Liver Diseases (AASLD), The Liver Meeting, San Francisco, CA (Nov 2018)
Moderator, Presidential Poster Oral Session Endocrine Society meeting, Boston, MA (Mar 2018)
Presidential Poster Judge, Endocrine Society meeting, Boston, MA (Mar 2018)
David L Williams Runner up Award Kern Lipid Conference, Vail, Colorado (Aug 2017)
Travel Award, 19th International Symposium on the Cells of the Hepatic Sinusoid, Galway, Ireland (Jun 2017)
Presidential Poster Judge, Endocrine Society meeting, Boston, MA (Apr 2017)
Presidential Poster Judge, Endocrine Society Meeting, Boston, MA (April 2016)
Travel Award, South East Lipid Research Conference, Atlanta, GA (Sept, 2015)
Oral Session Chair, Nuclear Receptors and Kinases: Intertwined in Cancer, Obesity and Brain Disorders at the Annual Endocrine Society meeting, San Diego, CA (Mar 2015).

INVITED TALKS

Invited Speaker, Doctoral college, Metabolic and Cardiovascular Disease, Medical University of Graz, Vienna, Austria (Dec, 2021).
Invited Speaker, Digestive Disease Research Core Center, Wash U, St. Louis (Nov, 2021)
Invited Speaker, international seminars within the ciberEHD, Spanish National Center for Hepatic and Digestive Diseases, Barcelona, Spain (Nov, 2021).
Invited Speaker, Biomedicine Discovery Institute, Metabolism, Diabetes and Obesity Discovery Program, Monash University, Melbourne, Australia (Oct, 2021).
Invited Speaker, Department of Physiology and Pharmacology Molecular Medicine, Univ of Toledo, Ohio (Oct, 2021)
Invited Speaker, IMS Departmental Seminar, NEOMED (May 2021)
Invited Speaker, UCSF Liver Center, San Francisco (May, 2021)
Invited Speaker, CCIL@Illinois (May 2021)
Invited Speaker, Annual Endocrine Society meeting, San Francisco, CA (Mar 2021)
Invited Speaker, Nuclear Receptor IMPACT -Interdisciplinary Meeting for Progress and Collaboration Together (Oct 2020)
Invited Speaker, Purdue Interdepartmental Nutrition Program (Sep, 2020)
Invited Speaker, Department of Physiology & Cell Biology, Ohio State University, (Mar, 2020)
Invited Speaker, Big Ten Alliance Lipid Conference, University of Minnesota, Minneapolis (Oct, 2019)
Invited Speaker, Department of Biochemistry, Southern Illinois University, Carbondale (Oct, 2019)

Invited Speaker, Department of Pharmacology, University of Virginia, Charlottee (Apr, 2019)
Invited Speaker, SEBM, Experimental Biology Meeting, Orlando, FL (Mar, 2019)
Oral Presentation, Moderated Poster Session, Endocrine meeting, Chicago, IL (Mar, 2018)
Invited Speaker, Department of Pharmacology, Toxicology and Therapeutics, KUMC, University of Kansas, KS (Nov, 2017)
Invited Speaker, David Moore Symposium, Houston, TX (Aug, 2017)
Invited Speaker, 19th International Symposium on the Cells of the Hepatic Sinusoid Galway, Ireland (Jun, 2017)
Invited Speaker, Department of Pharmaceutical Sciences, University of Toronto, Canada (May, 2017)
Invited Speaker, Short talk, Keystone Bile Acid meeting, Monterey, CA (Mar 2016).
Invited Speaker, Department of Pathology, University of Pittsburgh, Pennsylvania (Feb 2016).
Invited Speaker, Cancer Biology Program, UIC, Chicago (Jan 2016).
Invited Speaker, Annual Endocrine Society meeting, San Diego, CA (Mar 2015).

MENTORING AND TEACHING AWARDS

Career Development Workshop, ENDO (June 10, 2022)
Mentor, MRC-SOT program (2021-present)
Mentor, Sure-TOX program (2020- present)
Mentor, SROP program (2013- present)
Panelist NIH Grant Writing Series: Responding to Reviews (Oct 2020)
Mentor, Indo-US Khorana Bose Science Program (Jun 2015- present)
List of Excellent Teachers Frontiers in Physiology (Spring 2020)
Career Development Workshop: Endocrine Society's 101st Annual Meeting & Expo (ENDO), San Francisco, CA, (March 2022- postponed from 2020).
Panelist NIH Grant Writing Series: Responding to Reviews (Oct 2019)
Career Development Workshop: Endocrine Society's 101st Annual Meeting & Expo (ENDO), New Orleans, Louisiana, (March 2019).
Career Development Session: Career paths in Biomedical Sciences, FASEB Liver Meeting, Phoenix, Arizona (Jun, 2018)
Mentor and poster judge, Committee on Diversity and Inclusion Endocrine Society meeting, Boston, MA (Mar 2018)
List of Excellent Teachers M2 Pharmacology (Spring 2016, Spring 2017)
Outstanding Adviser Award, Medical Scholars Program, UIUC, IL (Spring 2016)
Mentor, Summer Predoctoral Institute Outreach Program (Jun 2018)
Mentor, Summer Research Outreach Program (Jun 2017)
Mentor, Summer Research Outreach Program (Jun 2016)
Panelist for Developing a Research Plan, Thesis Office & Postdoctoral Affairs (May 2015)
Mentor, McNair Scholar, Office of Minority and Student Affairs (Apr 2014-15)
Mentor, Indo-US Khorana Bose Science Program (Jun 2015- present)

PUBLICATIONS

1. Patton ME, Kelekar S, Taylor LJ, Thakare RN, Lee SH, Alnouti Y, Madak-Erdogan Z, Lee

JS, Finegold MJ, and ***Anakk S***. Circulating bile acid levels direct sex-differences in liver cancer development.
bioRxiv 2020.06.25.172635; doi: https://doi.org/10.1101/2020.06.25.172635

2. Sen A, Goforth M, Cooper K and Anakk S. Deletion of constitutive androstane receptor led to intestinal alterations and increased imidacloprid in murine liver. ***(Under Revision)***

3. Sen A*, Youssef S*, Wendt K, and ***Anakk S***. Scaffolding protein IQ motif containing GTPase activating protein 2 (IQGAP2) regulates glycogen metabolism.
bioRxiv 2020.05.28.121632; doi: https://doi.org/10.1101/2020.05.28.121632 *denotes equal contribution. ***(Under Revision)***

4. Zhou W*, Bandara S*, Leal C#, and ***Anakk S#.*** Lipid droplet structural remodeling in adipose tissue upon caloric excess.
bioRxiv 2021.08.23.457409; doi: https://doi.org/10.1101/2021.08.23.457409
*** equal first authorship, #Co-corresponding author *(Under Revision)***

5. Zhou W*, VanDuyne P*, Zhang C, Riessen R, Barragan M, Rowitz BM, Teran-Garcia M, Boppart SA, **Anakk S** Bile acid excess impairs thermogenic function in brown adipose tissue. bioRxiv 2020.11.24.396895; doi: https://doi.org/10.1101/2020.11.24.396895 ***(Under Revision)***

6. Shaw RH, Kolyvas P, Dang N, Hyon A, and ***Anakk S.*** Liver-specific Deletion Of Small Heterodimer Partner Alters Enterohepatic Bile Acid Levels And Promotes Bile Acid-Mediated Proliferation In Male Mice. **Endocrinology**. 2022 Apr 22:bqac052. doi: 10.1210/endocr/bqac052. Epub ahead of print. PMID: 35451003.

7. Zhou W, **Anakk S.** Enterohepatic and non-canonical roles of farnesoid X receptor in controlling lipid and glucose metabolism. **Mol Cell Endocrinol.** 2022 Jun 1;549:111616. doi: 10.1016/j.mce.2022.111616. Epub 2022 Mar 15. PMID: 35304191.

8. Zhou W, **Anakk S.** Melancholé: The Dark Side of Bile Acids and Its Cellular Consequences. **Cell Mol Gastroenterol Hepatol.** 2022;13(5):1474-1476. doi: 10.1016/j.jcmgh.2022.02.003. Epub 2022 Feb 14. PMID: 35176510; PMCID: PMC9043294.

9. Zhou W, **Anakk S.** Rebuttal to: The Benevolent Bile: Bile Acids as Stimulants of Liver Regeneration. **Cell Mol Gastroenterol Hepatol.** 2022;13(5):1481-1482. doi: 10.1016/j.jcmgh.2022.02.002. Epub 2022 Feb 7. PMID: 35144029; PMCID: PMC9043299.

10. Sen A and **Anakk S.** Jekyll and Hyde- Nuclear receptors ignite and extinguish the antioxidant mechanisms in the liver. **Trends Endocrinol Metab**. 2021 Oct;32(10):790-802. doi: 10.1016/j.tem.2021.07.009. Epub 2021 Sep 1. PMID: 34481730; PMCID: PMC8464172.

11. Mathur B, Shajahan A, Arif W, Chen Q, Hand NJ, Abramowitz LK, Schoonjans K, Rader DJ, Kalsotra A, Hanover JA, Azadi P, **Anakk S.** Nuclear receptors FXR and SHP regulate protein N-glycan modifications in the liver. **Sci Adv. 2021 Apr 21;7(17)**:eabf4865. doi: 10.1126/sciadv.abf4865. Print 2021 Apr.PMID: 33883138

Highlighted Article with Rotator Image

12. Dean AE*, Reichardt F*, Anakk S. Sex differences feed into nuclear receptor signaling along the digestive tract. Biochim Biophys Acta Mol Basis Dis. 2021 Nov 1;1867(11):166211. doi: 10.1016/j.bbadis.2021.166211. Epub 2021 Jul 14. PMID: 34273530; PMCID: PMC8415130. *denotes equal contribution.

13. Nguyen JT*, Riessen R*, Zhang T, Kieffer C, and ***Anakk S.*** Deletion of intestinal SHP impairs short-term response to cholic acid challenge. **Endocrinology.** 2021 Mar 26: bqab063. doi: 10.1210/endocr/bqab063. Online ahead of print. PMID: 33769482 *denotes equal contribution.

14. Delgado ER*, Erickson HL*, Tao J, Monga SP, Duncan AW#, **Anakk S#.** Scaffolding Protein IQGAP1 Is Dispensable, but Its Overexpression Promotes Hepatocellular Carcinoma via YAP1 Signaling. **Mol Cell Biol.** 2021 Mar 24;41(4): e00596-20. doi: 10.1128/MCB.00596-20. Print 2021 Mar 24. PMID: 33526450
*** equal first authorship, #Co-corresponding author**
Spotlight Article
Cover Article

15. **Anakk S,** and Dean AE. Fxr-alpha Skips Alternatively in Liver Metabolism. **Gastroenterology. 2020** Nov;159(5):1655-1657. doi: 10.1053/j.gastro.2020.09.008. Epub 2020 Sep 11. PMID: 32926939 No abstract available.

16. Mathur B, Arif W, Patton M, Faiyaz R, Liu J, Yeh J, Harpavat S, SchoonjansK, Kalsotra A, Wheatley AM, and ***Anakk S.*** Transcriptomic analysis across liver diseases reveals disease-modulating activation of constitutive androstane receptor in cholestasis. **JHEP Reports (2020)**, doi:https://doi.org/10.1016/j.jhepr.2020.100140. ***Highlighted in the editorial.***

17. Farr S, Stankovic B, Hoffman S, Masoudpoor H, Baker C, Taher J, Dean AE, ***Anakk S***, Adeli K. Bile Acid Treatment and FXR Agonism Lower Postprandial Lipemia in Mice. ***Am J Physiol Gastrointest Liver Physiol.*** 2020 Apr 1;318(4):G682-G693. doi: 10.1152/ajpgi.00386.

18. Shahoei SH, Kim YC, Cler SJ, Ma L, ***Anakk S***, Kemper JK, Nelson ER. Small Heterodimer Partner Regulates Dichotomous T Cell Expansion by Macrophages. ***Endocrinology.*** 2019 Jul 1;160(7):1573-1589. PMID: 31050726.

19. Pepe-Mooney BJ, Dill MT, Alemany A, Ordovas-Montanes J, Matsushita Y, Rao A, Sen A, Miyazaki M, ***Anakk S,*** et al., Single-Cell Analysis of the Liver Epithelium Reveals Dynamic Heterogeneity and an Essential Role for YAP in Homeostasis and Regeneration. ***Cell Stem Cell.*** 2019 Jul 3;25(1):23-38. e8. Epub 2019 May 9. PMID: 31080134.

Manuscripts Below are Before Tenure

20. Kim KH, Choi JM, Li F, Dong B, Wooton-Kee CR, Arizpe A, ***Anakk S***, Jung SY, Hartig SM, Moore DD. Constitutive Androstane Receptor Differentially Regulates Bile Acid Homeostasis in

Mouse Models of Intrahepatic Cholestasis. ***Hepatol Commun.*** 2018 Dec 4;3(1):147-159. doi: 10.1002/hep4.1274. PMID: 30620001

21. Erickson HL, and ***Anakk S.*** Identification of IQ motif-containing GTPase-activating protein 1 as a regulator of long-term ketosis. ***JCI Insight.*** 2018 Nov 2;3(21). pii: 99866.

22. Bangru S, Arif W, Seimetz J, Bhate A, Chen J, Rashan EH, Carstens RP, ***Anakk S***, Kalsotra A. Alternative splicing rewires Hippo signaling pathway in hepatocytes to promote liver regeneration. ***Nat Struct Mol Biol.*** 2018 Oct;25(10):928-939.

23. *Kim KH, Choi JM, Li F, Arizpe A, Wooton-Kee CR, ***Anakk S***, Jung SY, Finegold MJ, Moore DD. Xenobiotic Nuclear Receptor Signaling Determines Molecular Pathogenesis of Progressive Familial Intrahepatic Cholestasis. ***Endocrinology.*** 2018 Jun; 159 (6): 2435-2446.

24. Akinrotimi O*, Riessen R*, VanDuyne P, Park JE, Lee YK, Wong LJ, Zavacki AM, Schoonjans K and **Anakk S**. *Shp* deletion prevents hepatic steatosis and when combined with Fxr loss protects against type 2 diabetes. **Hepatology** 2017 Jun 6. doi: 10.1002/hep.29305 *denotes equal contribution. Highlighted with an ***Editorial*** "Beyond Farnesoid X receptor to target new therapies for NAFLD**"** 2017 **Hepatology** Dec;66(6):1724-1726.

25. Kim KH, Choi S, Zhou Y, Kim EY, Lee JM, Saha PK, **Anakk S**, Moore DD. *Hepatic FXR/SHP Axis Modulates Systemic Glucose and Fatty Acid Homeostasis in Aged Mice.* **Hepatology.** 2017 Apr 5. doi: 10.1002/hep.29199.

26. Desai M*, Mathur B*, Shabier Z, Vasquez H, Taegtmeyer H, Karpen SJ, Penny DJ, Moore DD and ***Anakk S***. Excess bile acid induces functional and metabolic dysfunctions in the heart. **Hepatology.** 2017 Jan; 65(1):189-201. doi: 10.1002/hep.28890.
Nature Review Gastroenterology and Hepatology Editors Pick: "Cholecardia" - new research exploring excess bile acid & cardiac dysfunction in mouse model £http://ow.ly/lAiK305NgeQ #GastroEdPick

27. Bhate A Parker DJ, Bebee TW, Ahn J, Arif W, Rashan EH, Chorghade S, Chau A, Lee JH ***Anakk S,*** Carstens RP, Xiao X, Kalsotra A. ***Nat Commun***. 2015 Nov 4;6:8768. doi:10.1038/ncomms 9768. PMID: 26531099

28. Chow EC, Magomedova L, Quach HP, Patel R, Durk MR, Maeng HJ, Irondi K, ***Anakk S***, Moore DD, Cummins CL and Pang S. Vitamin D Receptor Activation Downregulates the Small Heterodimer Partner and Increases CYP7A1 to Lower Cholesterol. **Gasteroenterology,** 2013 Dec 20 pii: S0016-5085(13)01840-4. PMID: 24365583

29. ***Anakk S****, Bhosale M, Schmidt V, Johnson RL, Finegold MJ and Moore DD*. Bile acids activate Yes Associated Protein (YAP) to promote liver carcinogenesis. 2013 **Cell Reports,** Nov 27;5(4):1060-9. *Co-corresponding authors. PMID: 24268772. *Highlighted with a Video Abstract and press released* at https://www.chron.com/life/health/article/Excess-bile-acids-can-signal-the- beginning-of-9520140.php

30. Jiang Y, Iakova P, Jin J, Sullivan E, Sharin V, Hong IH, ***Anakk S***, Mayor A, Darlington

G, Finegold M, Moore D, Timchenko NA. Farnesoid X receptor inhibits gankyrin in mouse livers and prevents development of liver cancer. ***Hepatology.*** 2013 Mar;57(3):1098-106. PMID:23172628 PMCID: 3649861

31. Kerr TA, Matsumoto Y, Matsumoto H, Xie Y, Hirschberger LL, Stipanuk MH, ***Anakk S***, Moore DD, Watanabe M, Kennedy S, Davidson NO. Cysteine Sulfinic Acid Decarboxylase Regulation: A Role for FXR and SHP in Murine Hepatic Taurine Metabolism. **Hepatol Res**. 2013 Aug 23. doi: 10.1111/hepr.12230. PMID: 24033844

32. Park YJ, Kim SC, Kim J, ***Anakk S***, Lee JM, Tseng HT, Yechoor V, Park J, Choi JS, Jang HC, Lee KU, Novak CM, Moore DD, Lee YK. Dissociation of diabetes and obesity in mice lacking orphan nuclear receptor small heterodimer partner. ***J Lipid Res***. 2011 Sep 27. PMID: 21949050 PMCID: 3220290

33. Dwivedi SK, Singh N, Kumari R, Mishra JS, Tripathi S, Banerjee P, Shah P, Kukshal V, Tyagi AM, Gaikwad AN, Chaturvedi RK, Mishra DP, Trivedi AK, Sanyal S, Chattopadhyay N, Ramachandra R, Siddiqi MI, Bandyopadhyay A, Arora A, Lundåsen T, ***Anakk S***, Moore DD, Sanyal S. Bile acid receptor agonist GW4064 regulates PPARγ coactivator-1α expression through estrogen receptor related receptor α. ***Mol Endocrinol***. 2011 Jun;25(6):922-32. PMID: 21493670

34. ***Anakk S***, Watanabe M, Ochsner SA, McKenna NJ, Finegold MJ and Moore DD. Combined deletion of FXR and SHP results in juvenile onset cholestasis and induction of Cyp17A1. ***J Clin Invest***. 2011 Jan 4;121(1):86-95. PMID: 21123943 PMCID: 3007143

35. Kalsotra A, Zhao J, **Anakk S**, Dash PK, Strobel HW. Brain trauma leads to enhanced lung inflammation and injury: evidence for role of P4504Fs in resolution. ***J Cereb Blood Flow Metab.*** 2007 May;27(5):963-74. doi: 10.1038/sj.jcbfm.9600396. Epub 2006 Sep 20.PMID: 16985506

36. Kalsotra A, ***Anakk S,*** Brommer CL, Kikuta Y, Morgan ET, Strobel HW. Catalytic Characterization and Cytokine Mediated Regulation of Cytochrome P450 4Fs in Rat Hepatocytes. ***Arch Biochem Biophys.*** 2007 May 1;461(1):104-12. doi: 10.1016/j.abb.2007.02.027.PMID: 17418803

37. ***Anakk S***, Huang W, Staudinger JL, Tan K, Cole TJ, Moore DD and Strobel HW. Gender dictates the nuclear receptor-mediated regulation of CYP3A44. ***Drug Metab Disp*** 2007 Jan;35(1):36-42. PMID: 17020958

38. ***Anakk S***, Kalsotra A, Kikuta Y, Huang W, Zhang J, Staudinger JL, Moore DD, and Strobel HW. CAR/PXR provide directives for Cyp3a41 gene regulation differently from Cyp3a11. ***Pharmacogenomics J***. 2004 ;4(2):91-101. PMID: 14770174

39. ***Anakk S,*** Kalsotra A, Shen Q, Vu MT, Staudinger JL, Davies PJ and Strobel HW. Genomic characterization and regulation of CYP3a13: role of xenobiotics and nuclear receptors. ***FASEB J***. 2003 Sep;17(12):1736-8. PMID: 12958193

40. ***Anakk S***, Ku C, Davies PJ and Strobel HW. Insights into gender bias: Role of CYP3A9.

J Pharmacol Exp Ther. 2003 May. 305(2):703-9. PMID: 12606633

41. Kalsotra A, ***Anakk S,*** Boehme CL and Strobel HW. Sexual Dimorphism And Tissue Specificity in the Expression Of CYP4F Forms in Sprague Dawley rats. Drug Metab Disp.2002 Sep; 30, 1022-28.

42. Das A, Kapoor K, ***Sayeepriyadarshini AT****, Dikshit M, Palit G and Nath C. Immobilization stress-induced changes in brain acetylcholinesterase activity and cognitive function in mice. Pharmacol Res. 2000 Sep;42(3):213-7.

43. Rajagopal L, Dharmapuri S, ***Sayeepriyadarshini AT**** and Sonti RV A genomic library Xanthomonas oryzae pv oryzae in the broad host range mobilizing E.coli strain S17-1.IRRN24.3/199

BOOK CHAPTERS

1.***Anakk S (2008)***. HIV case #5 in Casefiles: Biochemistry. E Toy, W Seifert Jr., HW Strobel and K Harms (eds), LANGE SERIES 2nd edition by Mcgraw-Hill UK, 41-49.

2.***Anakk S (2008)***. Beta Thalassaemia case #12 in Casefiles: Biochemistry. E Toy, W Seifert Jr., HW Strobel and K Harms (eds), LANGE SERIES 2nd edition by Mcgraw-Hill UK,103-110.

PROFESSIONAL MEMBERSHIPS AND ADMINISTRATIVE POSITIONS

2008-present	The Endocrine Society
2010-present	American Society for Biochemistry and Molecular Biology
2016-present	American Association for the Study of Liver Disease
2012-2016	American Gastroenterological Association
2002-2006	Student Member, American Society of Pharmacology &Therapeutics (ASPET)
2004-2005	Member, University of Texas, Student Inter Council
2003-2004	President, Department of Biochemistry Student Council, UTHHSC
2002-2005	Member, University of Texas, Student Outreach program

GRANTS ACTIVE

1. PI: Sayeepriyadarshini Anakk

NIH- NIDDK (R01 DK113080) 07/10/17 – 06/30/22 $1,790,158

Title: “Understanding the mechanism(s) that regulate liver growth and function”

The liver is constantly subjected to damage while metabolizing and detoxifying foreign compounds. This project is designed to understand the mechanism by which CAR, a xenobiotic sensor, coordinates hepatocyte proliferation with metabolic function, which may allow us to develop novel therapeutic targets to protect against liver diseases affecting millions of individuals.

NIDDK (R01 DK113080- Minority Supplement) 06/01/2019-05/31/2022 $149,177

2.PI: Sayeepriyadarshini Anakk

American Cancer Society- Research Scholar Grant
ACS RSG TBE 132315 02/01/19 – 01/30/23 $792,000
Title: "Elucidating Mechanisms Underlying Gender-Biased Incidence of Liver Cancer" The two major goals of this study is (I) to determine if sex difference in BA homeostasis contributes towards the protection of female livers from developing hepatocellular carcinoma and (II) to define the role for estrogen in controlling metabolic alternations in liver cancer.

3. PI: Sayeepriyadarshini Anakk and Cecilia Leal
NIH-NIDDK 09/01/21 – 08/31/24
Title: "Biophysical and genetic cues regulating lipid droplet packaging and alterations in obesity"
Fat is packed and stored in the adipose tissues as lipid droplets (LDs). The two major goals of this study are- (I) to characterize the biophysical and structural properties of the LDs and (II) to define the role for bile acids and genetic control of LD expansion during obesity.

GRANTS FOR MENTEES

P.I: Hanna L Erickson 05/16/18 – 05/15/22
F30 CA206495 NRSA Pre-doctoral Award from NCI
Title: Bile Acid-Mediated IQGAP1 Regulation Drives Hepatic Tumorigenesis
This project is focused on addressing whether BA-induced IQGAP1 expression is sufficient to promote hepatic tumorigenesis by examining: (i) How do BAs regulate IQGAP1 gene expression? and (2) Is IQGAP1 required for promoting hepatic tumorigenesis?

Mr. Ryan Shaw 06/01/2019-05/31/2022
NIH R01 Minority Supplement Award
This project is focused on examining the role for a nuclear receptor CAR in regulating liver proliferation. Further, this proposal will investigate the cross talk between another nuclear receptor SHP with CAR and examine the consequence of this interaction on controlling liver growth.

Ms. Anushna Sen 08/16/2020-07/15/2022
NIEHS T32 TOX Scholar
This project is focused on examining if imidacloprid, a widely used insecticide cause liver injury by overwhelming the protective mechanisms mediated by the nuclear receptor CAR.

GRANTS PENDING

1. PI: Sayeepriyadarshini Anakk
NIH- NIDDK
Title: "Mechanisms governing bile acid signaling in liver proliferation and function"
The liver typically initiates an injury-induced compensatory proliferative program to maintain function but fails during chronic liver diseases. In this proposal, we will determine the relevance of the BA-IQGAP1-YAP axis in promoting hepatocyte proliferation. This research will generate new information that will not only increase our understanding but also serve to identify targets to modulate compensatory proliferation or block uncontrolled proliferation as deemed necessary.

GRANTS COMPLETED

PI: Sayeepriyadarshini Anakk
National Institute of Health- NICHD (R03 HD080011) 07/10/15 – 06/30/17
Title: "Nuclear Receptor Regulation of Bile Acid Metabolism"
The major goal of this project is to identify the liver and intestine specific roles for FXR and SHP in maintaining biliary homeostasis.

PI: Sayeepriyadarshini Anakk
Campus Research Board RB19062 01/09/2019-05/30/2020 $27,669
Title: "Studying the role for IQGAP1 scaffold protein in the liver" The major goal of this proposal is to examine domain specific function of IQGAP1.

PI: Sayeepriyadarshini Anakk
DNS Vision Grant ILLU-971-377 USDA HATCH 09/20/2019-08/31/2021 $20,000
Title: "Understanding the sex-differences in microbiome mediated gut - liver communications" The major goal of this proposal is to examine sex specific microbiota that are involves in BA signaling.

COURSES TAUGHT

2021- present	Human Metabolic Diseases, Undergrad/Graduate Curriculum, UIUC
2020- present	Frontiers in Physiology, Graduate Curriculum, UIUC (Both semesters)
2014- 2019	Medical School Physiology, M1 Curriculum, UIUC
2015- 2019	Medical School Pharmacology, M2 Curriculum, UIUC
2014 and 2015	Systems Integrative Physiology, MCB 402 UIUC
2016- present	Human Medical Genetics, MCB 493, UIUC
2018 -2019	Designing Undergraduate Physiology Lab Course with Dr. Erik Nelson
2003- 2004	Metabolic Biochemistry GSBS, UTHHSC 2003.
2002	Ethical dimensions of biomedical sciences. GSBS, UTHHSC 2002.
1997-98	Molecular biology and Immunology. BITS Pilani, India.

SCIENTISTS, RESEARCH FELLOW, GRADUATE AND UNDERGRADUTE STUDENTS MENTORED

Research Scientist and Staff

1. Dr. Jian Liu, Summer 2019-present
2. Dr. Francois Reichardt, May 2021- present.

Postdoctoral Research Fellow

1. Dr. Weinan Zhou, Summer 2018-present
2. Dr. Manoj Bhosale, 2013-2014, Currently in a Biotech Company in India.

PhD Students

1.Bhoomika Mathur	12/2013- 05/2019
2.Hanna Erickson	08/2014- 06/2019
3.Jannette Rodriguez	2015-2016 (Medical leave of absence)
4.James Nguyen	2017- present
5.Anushna Sen	2017- present
6.Ryan Shaw	2018- present
7.Angela Dean	2019- present
8.Anjana Asokakumar	2019- present
9. Steven Hobbs Jr	2020- present
10.Yushan Liu	2021-present

MS/PhD Thesis Committee Member

1. Ting Fu	(MIP, Kim-Kemper Laboratory)	2013-2014
2. Lily Mahapatra	(Biochemistry, Shapiro Laboratory)	2014-2015
3. Daniel Ryerson	(MIP, Kim-Kemper Laboratory)	2013-2017
4. Janelle Mapes	(MIP, Bagchi Laboratory)	2014-2017
5. Sayyeed H Shahoei	(MIP, Nelson Laboratory)	2016-present
6. Rosa Zhu	(MIP, Tsai Laboratory)	2017- present
7. Pradeep Kumar	(CDB, Belmont Laboratory)	2018- 2019
8. Tian Ye	(Comparative Biosciences, Wang Laboratory)	2019- present
9. Qiuyan Ma	(MIP, Bagchi Laboratory)	2020- present
10. Hanchu Dai	(DNS, Gaskins Laboratory)	2020-present
11. Qianying Zuo	(FSHN, Madak-Erdogan Laboratory)	2020-present
12. Kaylie Johnson	(DNS, Wang Laboratory)	2021-present
13. Nicole Godellas	(MIP, Grosman Laboratory)	2022-present

Undergraduate Students@UIUC

1. Phil Vanduyne	2013- 2015
2. Sherwin Kelekar	2013- 2015
3. Karthik Seetharaman	2014- 2015
4. Megan Patton	2013- 2016
5. Demilade Akinrotimi	2014- 2016
6. Kevin Tom	2014- 2015
7. Shawn D'Souza	2015- 2016
8. Ivan Chau	2015- 2016
9. Haley Hullfish	2015- 2016
10. Selina Cudia	2016- 2017
11. Angela Hyon	2016- 2018
12. Lindsey Dzierozynski	2016- 2018
13. Harvey Jackson	2017- 2018
14. Lauren Taylor	2017- 2019
15. Peter Kolyvas	2017- 2020
16. Sara Youssef	2017- 2020
17. Neha Tiwary	2019- 2020

18. Anish Patchipala	2019- 2020
19. Neal Dadlani	2019- 2021
20. Grace Burleson	2019-2020
21. Nathan Dang	2020-2021
22. Joe Capozzi	2021-2022
23.Quinn Bujewski	2021-2022
24. Rumeysa Aydogdu	2021-2022
25. Maiwen, Amegadjie	2022-present
26. Danyi, Wang	2022-present
27. Bridget, Mongovan	2022-present

HONORS AND AWARDS FOR MENTEES

1. Phil Vanduyne	2015 Ladd C Prosser Outstanding Thesis Award
2. Phil Vanduyne	2015 Graduated with High Distinction
3. Sherwin Kelekar	2015 Graduated with Highest Distinction
4. Sherwin Kelekar	2015 Travel Award South East Lipid Research Meeting
5. Megan E Patton	2015 Travel Award South East Lipid Research Meeting
6. Megan E Patton	2016 Graduated with Highest Distinction
7. Megan E Patton	2018 Invited Talk, Mid-West Liver Meeting
8. Megan E Patton	2018 1st Place: Basic science poster at COM Research Symposium
9. Oludemilade Akinrotimi	2015 NIDDK Diversity Summer Research Training Program
10. Oludemilade Akinrotimi	2015 Graduated with Highest Distinction
11. Oludemilade Akinrotimi	2015 1st Place: Basic science poster at COM Research Symposium
12. Oludemilade Akinrotimi	2015 Undergrad poster winner, Annual Retreat, Department of MIP, UIUC
13. Hanna L Erickson	2016 Outstanding Contribution to MIP Award
14. Hanna L Erickson	2016 Hazel Craig Fellowship, University of Illinois College of Medicine
15. Hanna L Erickson	2016 Invited Talk, The Liver Meeting, Boston
16. Hanna L Erickson	2017 Young Achiever, Internal Medicine, American College of Physicians
17. Hanna L Erickson	2017 2nd Place Oral Presentation, Departmental MIP Annual Retreat
18. Hanna L Erickson	2017 Joint Meeting AAP/ASCI/APSA Travel Award
19. Hanna L Erickson	2018 Invited Talk, Mid-West Liver Meeting
20. Hanna L Erickson	2019 Young Investigator, Invited Talk, Kern Lipid Meeting
21. Bhoomika Mathur	2015 Travel Award, Cold Spring Harbor Laboratory Meeting
22. Bhoomika Mathur	2016 1st Place Oral Presentation, Departmental MIP Annual Retreat
23. Bhoomika Mathur	2015 2nd Place: Basic science poster at COM Research Symposium
24. Bhoomika Mathur	2017 Presidential Poster Award, The Liver Meeting, Washington DC

25. Bhoomika Mathur	2017 University Nominee, Pre- to Post-doctoral transition award from NCI
26. Bhoomika Mathur	2019 Graduate School Travel Award, CSHL Metabolic Meeting
27. Lauren Taylor	2018 Study Abroad in Sweden
28. Lauren Taylor	2019 High Distinction Undergraduate Thesis
29. James Nguyen	2018 2nd Place Poster Award, Departmental MIP Annual Retreat
30. James Nguyen	2020 Novartis Internship postponed to 2021
31. Anushna Sen	2019 Best Poster, Departmental MIP Annual Retreat
32. Anushna Sen	2020 T32 TOX Scholar
33. Anushna Sen	2021 ENDOCRINE society Outstanding Abstract Award
34. Anushna Sen	2021 DNS Symposium poster Award
34. Ryan Shaw	2019 Honorable mention NSF GRSF
35. Ryan Shaw	2019 Minority Supplement NIDDK
36. Angela Dean	2019 DNS Fellowship
37. Angela Dean	2019 2nd Place Poster Award, Cancer Advocacy Meeting, Illinois
38. Angela Dean	2020 DNS Margin of excellence Award
39. Angela Dean	2020 DNS Conference Travel Award
40. Angela Dean	2021 ENDOCRINE society Outstanding Abstract Award
41. Angela Dean	2021 ENDOCRINE society Rising Star Power Talks
42. Weinan Zhou	2020 Young Investigator Award from Society of Experimental Biology and Medicine
43. Peter Kolyvas	2019 Summer Undergraduate Research Fellowship
44. Peter Kolyvas	2020 Ladd C Prosser Outstanding Thesis Award
45. Peter Kolyvas	2020 High Distinction Undergraduate Thesis
46. Sara Youssef	2019 Summer Undergraduate Research Fellowship
47. Sara Youssef	2020 High Distinction Undergraduate Thesis
48. Neal Dadlani	2020 Jenner Family Summer Fellow
49. Nathan Dang	2020 Berkowitz Summer Fellow
50. Neal Dadlani	2021 Summer Research Fellow
51. Nathan Dang	2021 Highest Distinction
52. Nathan Dang	2021 Howard S. Ducoff Award for Outstanding Senior Thesis
53. Steven Hobbs	2021 Research Experience for Graduate and Medical Students (REGMS) award at the National level from the ENDOCRINE society

*These students highlighted in cyan are URM, LGBTQ and first-generation college students. My laboratory is vested in promoting diversity and providing opportunity for minority candidates.

LEADERSHIP ROLES AND SERVICE TO COMMITTEES @UIUC

2013-2021	Qualifying Exam Committee, Dept. of MIP
2013-present	Procter and Gamble Award
2013-present	Member Committee on Committees, COM-UIUC
2013-present	Member Faculty Appeals and Grievances Committee, COM-UIUC
2013-present	Annual Research Day Symposium Judge, COM-
2013-2014	MIP Faculty Search and Recruitment Committee, UIUC
2013-2015	Medical Scholars Program – Interview Panel, COM-UIUC
2014-2021	New student Welcome, Departmental Representative at School of MCB

2014-present	ASPIRE Minority candidate Recruitment – Interviewer, Graduate College UIUC
2014-present	Faculty Advisor for the M1 students, COM-UIUC
2014-present	Faculty Advisor for the Undergraduate students, MCB
2015-present	Cancer Community@Illinois, Faculty Member
2015-present	Advisor MIP Retreat Planning Committee
2015-present	Graduate Student Advisory Committee
2015-present	Program in Endocrinology, Embryology and Reproduction, Faculty Member
2016-present	Admissions and Recruitment, Division of Nutritional Sciences, Faculty Member
2017-present	Poster Judge, Division of Nutritional Sciences Annual Symposium
2018-present	Reviewer for the DNS Margin of Excellence program
2018-present	Reviewer for the Campus Research Board program
2018-present	MIP Newsletter and Development Aspect

2016- 2017	Ad-hoc Dance Lesson, Dance 100 class, UIUC School of Dance
2019- present	Preceptor, NIEHS T32 Toxicology Program
2020- 2021	Member, Institutional Biosafety Committee

SERVICE FOR NATIONAL SOCIETIES

2020-	Ad-hoc member, Molecular Cellular Endocrinology Study Section NIDDK
2020- present	Member, GAST Scientific Review Group, Department of Veterans Affairs Intramural Gastroenterology Research
2019-present	Member, R13 Grant panel NIDDK
2018-present	Grant Reviewer, RAC AASLD Bridge funding, transition awards Fellows and Postdoc grants
2017-present	Abstract reviewer for Annual Digestive Disease Week
2016-present	Abstract reviewer for Annual AASLD The Liver Meeting
2015-present	Abstract reviewer for Annual ENDO Meeting

SERVICE AT INTERNATIONAL

2020-present	Welcome Trust Reviewer
2017	Indo-US Research Symposium
2017-present	Ad-hoc reviewer for Indo-US Science and Technology Forum (IUSSTF)
2015-present	Indo-US Khorana Bose Scholar Program

OUTREACH AT BECKMAN AND BEYOND THE CAMPUS

Invited Speaker, ASBMB student chapter UIUC (Nov, 2019)
Invited Speaker, Relay for life of Coles County survivor Dinner (Aug, 2019)
Interactive Research Demonstration Beckman Open House- Learn about the Liver (Mar 2019)
BioCafe, MCBee presentation Champaign Public Library, (May 2018)
Host OLLI Senior Scientist program (Spring 2018)

Interactive Research Demonstration Beckman Open House- Learn about the Liver (Mar, 2017)

Interactive Research Demonstration Beckman Open House- Learn about the Liver (Mar 2016)

Elementary and High Schools

Volunteer Uni High School Book Bar (May 2019)

Volunteer Barkstall Elementary School (May 2018)

Volunteer Uni High School Book Bar (May 2018)

Teacher, Agora Days, Being a Biologist Class (Feb 2018)

Host, High School Students in the Laboratory (Summer 2018)

Teacher, Agora Days, Being a Biologist Class (Feb 2017)

Volunteer Barkstall Elementary School-Science Night (Mar 2017)

Volunteer Barkstall Elementary School-Science Night – (Spring, 2016)

AD HOC JOURNAL REVIEWER

Gastroenterology, Cellular and Molecular Gastroenterology, American Journal of Physiology, Molecular Metabolism, Thernoutics, Journal of Lipid Research, BBA-Molecular Basis of Disease, BMC Cancer, Cancers, Biomed Medical, British Journal of Pharmacology, PLOS one, Scientific Reports, Hepatology

Qualifying Exam Committee Member

1. Hua-Chia Tai (MIP, Sweedler Laboratory) 2014
2. Matthew Biehl (MIP, Raetzman Laboratory) 2014
3. Kirsten Eckstrum (MIP, Raetzman Laboratory) 2014
4. Bingtao Tang (MIP, Roy Laboratory) 2015
5. Monika Makurath (MIP, Sweedler Laboratory) 2015
6. Whitney Edwards (MIP, Raetzman Laboratory) 2015
7. Shayan Tabebordbar (MIP, Anastasio Laboratory) 2015
8. Sisi He (MIP, Nelson Laboratory) 2016
9. Sayyeed Shahoei (MIP, Nelson Laboratory) 2016
10. Jiuhe Zhu (MIP, Tsai Laboratory) 2016
11. Xavier Mangual (MIP, Wildman Laboratory) 2016
12. Ramonasadat Haji (MIP, Wildman Laboratory) 2016
13. Tauseef Shah (MIP, Gillette Laboratory) 2017
14. Ramonasadat Haji (MIP, Wildman Laboratory) 2017
15. Liqian Ma (MIP, Nelson Laboratory) 2018
16. Jessica Saw (MIP, Wildman Laboratory) 2018
17. Jiaren Zhang (MIP, Chung Laboratory) 2018
18. Qiuyan Ma (MIP, Bagchi Laboratory) 2018
19. Valeria Guillen Sanabria (MIP, Katzenellenbogen Laboratory) 2018
20. Pradeep Kumar (CDB, Belmont Laboratory) 2018
21. Hao Sun (MIP, Kemper Laboratory) 2018

22. Harvey Anderson (MIP, Sweedler Laboratory) 2019
23. Xiyu Ge (MIP, Raetzman Laboratory) 2019
24. Amanda Weiss (MIP, Gillette Laboratory) 2019
25. Daphne Eagleman (MIP, Tsai Laboratory) 2019
26. Pradeep Kumar (CDB, Belmont Laboratory) 2019
27. Greg Tracy (MIP, Chung Laboratory) 2019
28. Tian Ye (CB, Wang Laboratory) 2020
29. Nicole Godellas (MIP, Grosman Laboratory) 2021
30. Simon Lizarazo (MIP, Tsai Laboratory) 2021
31. Anasuya Dasgupta (MIP, Nelson Laboratory) 2021
32. Hashni Vidana-Gamage (MIP, Nelson Laboratory) 2021
33. Gang Xiao (MIP, Llano Laboratory) 2021

Benjamin D. Auerbach, Ph.D.

Department of Molecular & Integrative Physiology
Beckman Institute for Advanced Science & Technology
University of Illinois Urbana-Champaign
405 N. Matthews Ave., Urbana, IL 61801

email: bda5@illinois.edu
phone: (217) 256-5704
website: auerbachlab.org
twitter: @AuerbachLab

PROFESSIONAL EXPERIENCE & TRAINING

2020 – present	**Assistant Professor**, University of Illinois at Urbana-Champaign *Department of Molecular & Integrative Physiology* *Beckman Institute for Advanced Science & Technology* *Neuroscience Program*
2019 – 2020	**Research Assistant Professor**, State University of New York at Buffalo *Department of Communicative Disorders & Sciences*
2013 – 2019	**Postdoctoral Research Associate**, State University of New York at Buffalo *Advisor: Richard Salvi, Ph.D.* *Center for Hearing and Deafness, Communicative Disorders & Sciences*

EDUCATION

2006 – 2013	**Massachusetts Institute of Technology**, Cambridge MA, USA Ph.D. in Brain & Cognitive Sciences *Advisor: Mark Bear, Ph.D.* *Thesis: Contribution of metabotropic glutamate receptors to the pathophysiology of autism*
2003 – 2006	**Cornell University**, Ithaca NY, USA B.A., Biological Sciences *Concentration in Neurobiology and Behavior*
2017	**Cold Spring Harbor Laboratory,** Cold Spring Harbor, NY Neural Data Science Summer Course

HONORS & AWARDS

2023	Teacher Ranked as Excellent by Their Students, University of Illinois
2022	Teacher Ranked as Excellent by Their Students, University of Illinois
2019	Association for Research in Otolaryngology Midwinter Meeting Travel Award
2017	Bishops Neuroscience Travel Award for SFN, University at Buffalo
2016	Blavatnik Regional Award for Young Scientists Nominee, University at Buffalo
2015	Bishops Neuroscience Travel Award for SFN, University at Buffalo
2015	Society for Neuroscience Trainee Professional Development Award
2011	Travel Award, International Tuberous Sclerosis Research Conference
2009	Pre-Doctoral Fellowship in Developmental Cognitive Neuroscience, NIMH
2007	Pre-Doctoral Fellowship in Neurobiology of Learning & Memory, NIMH
2004	Undergraduate Research Program Scholarship , Howard Hughes Medical Institute

RESEARCH SUPPORT

Current

NIH R01 HD111753 *October 2023-September 2028*
National Institute of Child Health & Human Development, NIH
"Identifying convergent circuit disruptions across genetically-distinct models of autism"
Total costs: $2,622,482 ($1,689,391 direct costs)
Role: PI

Autism Research Program Career Development Award *April 2023-March 2026*
Department of Defense Congressionally Directed Medical Research Programs
"Defining the developmental time-course and therapeutic window for sensory circuit impairments in a rat model of Fragile X Syndrome"
Total direct: $872,300 ($550,000 direct costs)
Role: PI

Tuberous Sclerosis Research Program *October 2023-September 2025*
Department of Defense Congressionally Directed Medical Research Programs
"Using sensory processing to identify neural circuit deficits and novel treatment strategies in a rat model of TSC"
Total costs: $237,899 ($150,000 direct costs)
Role: PI

NIH K01 DC018310 *April 2021-March 2025*
National Institute of Deafness and Other Communicative Disorders, NIH
"Mechanisms of sound hypersensitivity in a rat model of autism"
Total costs: $686,625 ($648,997 direct costs)
Role: PI

Completed

NARSAD Young Investigator Award *July 2019-June 2022*
Brain and Behavior Research Foundation
"Auditory hypersensitivity and circuit disruptions in a rat model of autism"
$70,000 total direct costs
Role: PI

NIH F32 DC015160 *April 2016-March 2019*
National Institute of Deafness and Other Communicative Disorders, NIH
"The role of central gain control in hyperacusis of diverse origin"
$183,037 total direct costs
Role: PI

NIH R21 DC017813 *April 2020 – March 2022*
National Institute of Deafness and Other Communicative Disorders, NIH
"Mechanisms of loudness intolerance in a rat model of autism"
$275,000 total direct costs
Role: Co-I (PI: Richard Salvi)

SFARI Pilot Award *April 2019-March 2020*
Simons Foundation Autism Research Initiative
"Auditory hypersensitivity and circuit disruptions in a rat model of fragile x syndrome"
$150,000 total direct costs
Role: Co-I (PI: Richard Salvi)

PUBLICATIONS

Peer-Reviewed Publications:

1. **Auerbach BD**†, Gritton HJ (2022). Hearing in Complex Environments: Auditory Gain Control, Attention, and Hearing Loss. *Front Neurosci.* 16:799787
2. Liu X, Kumar V, Tsai N-P, **Auerbach BD**† (2022). Hyperexcitability and Homeostasis in Fragile X Syndrome. *Front Mol Neurosci*, Jan 6; 14:805929
3. **Auerbach BD**†, Manohar S, Radziwon R, Salvi R (2021). Auditory Hypersensitivity and Processing Deficits in a Rat Model of Fragile X Syndrome. *Neurbiol Dis*, Oct 29;161:105541.
4. Salvi R, Radziwon K, Manohar S, **Auerbach B**, Ding D, Liu X, Lau C, Chen YC, Chen GD (2021). Neural mechanisms of tinnitus and hyperacusis in acute drug-induced ototoxicity. *Am J Audiol.* Jan 19;1-15.
5. Werner CT*, Mitra S*, **Auerbach BD***, Wang ZJ, Martin JA, Stewart AF, Gobira PH, Iida M, An C, Cobb MM, Caccamise A, Salvi RJ, Neve RL, Gancarz AM, Dietz DM (2020). Neuroadaptations in the dorsal hippocampus underlie cocaine seeking during prolonged abstinence. *PNAS*, 117(42), 26460-26469.
6. McCullagh EA, Rotschafer, SE, **Auerbach BD**, Klug A, Kaczmarek L, Cramer K, Razak K, Lovelace J, Lu Y, Koch U, Wang Y (2020). Mechanisms underlying auditory hypersensitivity in Fragile X Syndrome. *FASEB J*., 34(3), 3501-3518.
7. Wong E, Radziwon R, Chen GD, Liu XP, Manno FAM, **Auerbach BD**, Wu EX, Salvi R, Lau C (2020). Functional magnetic resonance imaging of enhanced central gain and electrophysiological correlates of hyperacusis. *Hearing Res*. April; Vol 389, 107908
8. Radziwon K, **Auerbach BD**, Ding D, Liu X, Chen GD, Salvi R (2019). Noise-induced loudness recruitment and hyperacusis: Insufficient central gain in auditory cortex and amygdala. *Neuroscience*. Dec 1; 422:212-227.
9. Rodrigues PV, **Auerbach BD**, Salvi RJ (2019). Aberrant thalamocortical coherence in a rodent model of tinnitus. *J Neurophysiol*. Mar 1; 121(3):893-907
10. **Auerbach BD**†, Radziwon K, Salvi RJ (2018). Testing the central gain model: Loudness growth correlates with central auditory gain enhancement in a rodent model of hyperacusis. *Neuroscience*. May 21; 407:93-107.
11. Zhang C, Xu Y, Chowdhary A, Fox D 3rd, Gurney ME, Zhang HT, **Auerbach BD**, Salvi RJ, Yang M, Li G, O'Donnell JM (2018). Memory enhancing effects of BPN147700, an allosteric inhibitor of phosphodiesterase-4D, in wild-type and humanized mice. *Neuropsychopharmacology*, Oct;43(11):2299-2309.
12. Manohar S, Spoth J, Radziwon K, **Auerbach BD**, Salvi R (2017). Noise-induced hearing loss induces loudness intolerance in a rat Active Sound Avoidance Paradigm (ASAP). *Hear Res.* Jul 8. pii: S0378-5955(17)30222-8.
13. Stoppel LJ*, **Auerbach BD***, Senter RK, Preza AR, Lefkowitz RJ, Bear MF (2017). β-arrestin2 couples metabotropic glutamate receptor 5 to neuronal protein synthesis and is a potential target to treat Fragile X. *Cell Rep*. Mar 21; 18(12):2807-2814.
14. Chen YC, Chen GD, **Auerbach** BD, Manohar S, Radziwon R, Salvi R (2017). Tinnitus and hyperacusis: Contributions of paraflocculus, reticular formation and stress. *Hear Res*. Mar 7.

15. Salvi R, Sun W, Ding D, Chen GD, Lobarinas E, Wang J, Radziwon K, **Auerbach BD** (2017). Inner hair cell loss disrupts hearing and cochlear function leading to sensory deprivation and enhanced central auditory gain. *Front Neurosci*. Jan 18;10:621
16. **Auerbach BD***, Rodrigues PV*, Salvi RJ (2014). Central gain control in tinnitus and hyperacusis. *Front Neurol*. Oct 24;5:206.
17. Sidorov MS, **Auerbach BD**, Bear MF (2013). Fragile X mental retardation protein and synaptic plasticity. *Mol Brain*. Apr 8;6:15.
18. **Auerbach BD**, Osterweil EK, Bear MF (2011). Mutations causing syndromic autism define an axis of synaptic pathophysiology. *Nature*. Nov 23;480(7375):63-8.
19. **Auerbach BD**, Bear MF (2010). Loss of fragile x mental retardation protein decouples metabotropic glutamate receptor dependent priming of long-term potentiation from protein synthesis. *J Neurophysiol*. Aug;104(2):1047-51.
20. Dölen G, Osterweil E, Rao BS, Smith GB, **Auerbach BD**, Chattarji S, Bear MF (2007). Correction of fragile X syndrome in mice. *Neuron*. Dec 20;56(6):955

*Authors contributed equally
†Corresponding author

Book Chapters & Non-Peer-Reviewed Articles:

1. Salvi R, **Auerbach BD**, Lau C, Chen YC, Manohar S, Liu X, Ding D, Chen GD (2020). Functional Neuroanatomy of Salicylate- and Noise-Induced Tinnitus and Hyperacusis. *Curr Top Behav Neurosci*. July 12.
2. Radziwon KE, Manohar S, **Auerbach B**, Liu X, Chen GD, Salvi R (2020). Preclinical animal behavioral models of hyperacusis and loudness recruitment. *New Therapies to Prevent or Cure Auditory Disorders*. Springer International Publishing
3. **Auerbach BD** (2019)**.** Physiological mechanisms of hyperacusis: an update. *ENT & Audiology News*. Volume 27, Issue 6, January/February 2019.

PATENTS

Auerbach BD, Bear MF, Stoppel LJ, Lefkowitz RJ (2020). Methods of treating fragile x syndrome and related disorders. 6/16/2020, US patent # 10682397

Bear MF, **Auerbach BD** (2012). Methods of treating elevations in mtor signaling. 10/18/2012. US patent # 13455679

INVITED SEMINARS

2023	○ Maurice Wohl Clinical Neuroscience Institute, King's College London, London UK ○ Neuroscience Program, University at Buffalo, Buffalo NY
2022	○ Picower Institute for Learning & Memory, Massachusetts Institute of Technology, Cambridge MA
2021	○ Department of Pharmacology & Neuroscience, Southern Illinois University School of Medicine, Springfield IL ○ Institute for Biomedical Sciences, George Washington University, Washington DC ○ Neuroscience Program, University of Illinois at Urbana-Champaign, Urbana IL
2020	○ Brain Imaging and Tinnitus Conference, Beckman Institute, University of Illinois at Urbana-Champaign, Urbana IL

2020	○	Department of Speech, Language, & Hearing, University of Texas at Dallas, Dallas TX
	○	Department of Neuroscience, Medical University of South Carolina, Charleston SC
2019	○	Eaton-Peabody Labs, Massachusetts Eye and Ear Infirmary, Boston MA
	○	Department of Otolaryngology, The Ohio State University, Columbus OH
	○	School of Molecular & Cell Biology, University of Illinois at Urbana-Champaign, Urbana IL
	○	International Hearing Loss Conference, Niagara-on-the-Lake, Ontario CA
2018	○	Department of Psychology, University of California at Riverside, Riverside, CA
	○	Department of Cell Biology and Physiology, University of North Carolina, School of Medicine, Chapel Hill, NC
2018	○	Department of Neurobiology and Anatomy, Northeastern Ohio Medical University, Rootstown, OH
2017	○	Picower Institute for Learning & Memory, Massachusetts Institute of Technology, Cambridge MA
	○	Department of Psychology, University at Buffalo, Buffalo NY
2016	○	Department of Communicative Disorders and Sciences Research Colloquium, University at Buffalo, Buffalo, NY, 2016
2012	○	Department of Physiology and Biophysics, University at Buffalo, Buffalo NY
2011	○	Center for Human Genetic Research, Massachusetts General Hospital, Boston MA

PODIUM PRESENTATIONS

2023	○	Association for Research in Otolaryngology 46th Annual Meeting, Orlando, FL
2019	○	Neuroscience Research Day, University at Buffalo, Buffalo NY
	○	Association for Research in Otolaryngology 42nd Annual Meeting, Baltimore MD
2018	○	Gordon Research Seminar, Fragile X and Autism-Related Disorders, Lucca IT
	○	Association for Research in Otolaryngology 41th Annual Meeting, San Diego, CA
2015	○	Neuroscience Research Day, University at Buffalo, Buffalo NY
	○	Works in Progress (WIPs) seminar series, Department of Pharmacology and Toxicology, University at Buffalo, Buffalo NY
2013	○	Thesis Defense, Brain and Cognitive Sciences Department, Massachusetts Institute of Technology, Cambridge MA
2012	○	Developmental Cognitive Neuroscience Symposium, Brain and Cognitive Sciences Department, Massachusetts Institute of Technology, Cambridge MA
2011	○	International TSC Research Conference: Summit for Drug Discovery in TSC and Related Disorders, Washington DC
	○	Plastic Lunch Series, Picower Institute for Learning and Memory, Massachusetts Institute of Technology, Cambridge MA
	○	Brain Lunch Series, Brain and Cognitive Sciences Department, Massachusetts Institute of Technology, Cambridge MA

SELECTED ABSTRACTS

2022 **Auerbach BD**, Liu XP, Radziwon R, Salvi R. Auditory Hypersensitivity and Perceptual Disruptions in a Rat Model of Fragile X Syndrome. Association for Research in Otolaryngology 45rd Annual Midwinter Meeting, San Jose CA

2021 **Auerbach BD**, Liu XP, Radziwon R, Salvi R. Auditory Hypersensitivity and Perceptual Disruptions in a Rat Model of Fragile X Syndrome. Advances and Perspectives in Auditory Neuroscience (APAN), Virtual

Auerbach BD, Liu XP, Radziwon R, Salvi R. Auditory Hypersensitivity and Perceptual Disruptions in a Rat Model of Fragile X Syndrome. Society for Neuroscience Annual Conference, Chicago IL

2020 **Auerbach BD**, Radziwon R, Kozody O, Salvi R. Auditory Hypersensitivity and Circuit Disruptions in a Rat Model of Fragile X Syndrome. Association for Research in Otolaryngology 43rd Annual Midwinter Meeting, San Jose CA

2019 **Auerbach BD**, Radziwon R, Chen GD, Kozody O, Salvi R. Maladaptive Plasticity Along the Central Auditory Pathway Leads to Aberrant Loudness Perception Following Acoustic Trauma. Society for Neuroscience Annual Conference, Chicago IL

Auerbach BD, Radziwon R, Salvi R. Testing the Central Gain Theory: Loudness Growth Correlates with Central Auditory Gain Enhancement in Two Rodent Models of Hyperacusis. Association for Research in Otolaryngology 42rd Annual Midwinter Meeting, San Jose CA

2018 **Auerbach BD**, Radziwon R, Chen GD, Manohar S, Salvi R. Sound hypersensitivity and auditory circuit disruption in a rat model of Fragile X – Gordon Research Conference, Fragile X and Autism-Related Disorders, Lucca IT

Radziwon R, **Auerbach BD**, Kolisetti R, Beadle M, Salvi R. Auditory hypersensitivity and temporal integration deficits in Fragile X rats. Association for Research in Otolaryngology 41th Annual Meeting, San Diego, CA,

2017 **Auerbach BD**, Gobadi M, Chen GD, Radziwon R, Esfahani E, Salvi R. Maladaptive central auditory gain enhancement and disrupted loudness perception following acoustic trauma. Neuroscience Research Day, University at Buffalo, Buffalo NY,

Auerbach BD, Maladaptive gain control along the ascending auditory pathway following acoustic trauma. Association for Research in Otolaryngology 40th Annual Meeting, Baltimore, MD,

Chen GD, Radziwon R, **Auerbach BD**, Salvi R. Noise-induced Hyperacusis/Recruitment in Rats and the Underlying Hyperactivity in the Central Auditory Areas. Association for Research in Otolaryngology 40th Annual Meeting, Baltimore MD

Manohar S, Spoth J, Radziwon R, **Auerbach BD**, Salvi R. Behavioral Model of Loudness Intolerance. Association for Research in Otolaryngology 40th Annual Meeting, Baltimore MD

2016 **Auerbach BD**, Gobadi M, Chen GD, Radziwon R, Esfahani E, Salvi R. Maladaptive neuronal gain enhancement along the ascending auditory pathway following acoustic trauma. Neural Circuits meeting, Cold Spring Harbor Laboratories, Cold Spring Harbor NY

2015 **Auerbach BD**, Radziwon K, Rodrigues PV, Chen GD, Salvi R. Mechanisms of central auditory gain enhancement following acute noise exposure. Society for Neuroscience Annual Conference, Chicago IL

Rodrigues PV, **Auerbach BD**, Manohar S, Chen GD, Hayes S, Sheppard A, Salvi R. Tinnitus profoundly modifies the dynamics of neuronal rhythms of the thalamo-cortical circuitry of a rodent experimental model of this brain disorder. Society for Neuroscience Annual Conference, Chicago IL

2011 **Auerbach BD**, Osterweil E, Bear MF. Mirror symmetric alterations in synaptic plasticity in the mouse models of fragile X syndrome and Tuberous Sclerosis. Howard Hughes Medical Institute Investigator's Meeting, Washington DC

Auerbach BD, Osterweil E, Bear MF. Mirror symmetric alterations in synaptic plasticity in the mouse models of fragile X syndrome and Tuberous Sclerosis. 7th International metabotropic glutamate receptor conference, Catania IT

2011 **Auerbach BD**, Osterweil E, Bear MF. Correction of synaptic and memory impairments in a mouse model of Tuberous Sclerosis. Synapses - From Molecules to Circuits & Behavior, Cold Spring Harbor NY

2010 **Auerbach BD**, Osterweil E, Bear MF. Correction of synaptic impairments in a mouse model of Tuberous Sclerosis. Society for Neuroscience Annual Conference, San Diego CA

2009 **Auerbach BD**, Bear MF. Metabotropic glutamate receptor dependent facilitation of LTP in *Fmr1* KO mice. Society for Neuroscience Annual Conference, Chicago IL

PROFESSIONAL ACTIVITIES

2020 - present	Scientific Advisory Board, Hyperacusis Alliance
2018 - present	Review Editor in Auditory Cognitive Neuroscience for *Frontiers in Neuroscience*
2016 - present	Member of Hyperacusis Alliance
2016 - present	Association for Research in Otolaryngology member
2009 - present	Society for Neuroscience Member
2023	Grant Reviewer, DoD Congressionally Directed Medical Research Program
2019	Grant Reviewer, Milken Institute Misophonia Grant Program
2018	Co-organizer and host "Central gain control in auditory processing and hearing loss"- Symposium at Association for Research in Otolaryngology 41th Annual Meeting, San Diego CA
2018	Discussion leader "Cellular and Synaptic Mechanisms of FXS and Neurodevelopmental Disorders" - Gordon Research Seminar, Fragile X and Autism-Related Disorders, Lucca IT
Ad hoc reviewer	Journals: *Cell Reports, eNeuro, Molecular Brain, Journal of Neurophysiology, Hearing Research*
	Grant programs: *Action on Hearing Loss, Medical Research Council*

TEACHING

2022- ***MCB 493 NOS: Neurobiology of the Senses***
Upper-level undergraduate/graduate course covering the major functions of the sensory systems and the mechanisms of sensation and perception at the molecular, cellular, and systems levels.

Instructor of Record, University of Illinois at Urbana-Champaign

2018-2020 ***NRS 520: Neuroscience 1***

Biomedical Sciences graduate course that provides a comprehensive overview of the principles that control the properties of neurons and their function in the nervous system.

Instructor of Record, University at Buffalo

2018 ***NRS 301: The Brain***
Undergraduate core course for newly offered Neuroscience major that covers the major functions of the nervous system, perception and motor control at the molecular, cellular, and systems levels.

Instructor of record, University at Buffalo

2017 ***CDS 387: Psychoacoustic Science***
Advanced undergraduate/graduate course for audiology and speech pathology majors that examines the neuroanatomy and neurophysiology underlying communicative and sensory disorders

CDS 542: Advanced Hearing Science
Department of Communicative Disorders and Sciences graduate course on the mechanisms of hearing and auditory perception for audiology doctoral students.

Guest Lecture, "Loudness perception"

2015 ***CDS 502: Research Methods and Design***
Department of Communicative Disorders and Sciences course for advanced audiology doctoral students on the application of research methodologies to solve clinically relevant problems in the field of communicative disorders.

Guest Lecture, "Social communication deficits in animal models of autism"

MENTORING

Post-doctoral Associates: Xiaopeng Liu (2021 – present), Noelle James (2022-present)

Ph.D. Students: David Walker Gauthier (2022-present), Manasi Inamdar (2023-present)

Au.D. Students: Olivia Kozody (2018-2020)

Undergraduate Students:

University of Illinois: Haichao Wang‡†* (2022-2023), Laurel Hart† (2022-present), Elizabeth Soellner†* (2022-present), Alexander Cue (2022-present), Sarika Kumar†* (2021-present), Zaria George†* (2021-2023), Gabe Predescu (2022-2023), Amritha Kumar (2022), Omer Khan (2021-2023), Joseph Salerno (2021-2022), Vrushhabh Patel (2021)

University at Buffalo: Jay Kammerman (2018-2019)*, Amy Yeung (2017-2018)†*, Kathleen Lucy (2016-2018), Olivia Kozody (2016-2018)‡*, Rachel Treiber (2016-2018)*, Sonya Singh (2015-2017)†*, Su Wen Gao (2014-2015), Richard Kim (2014-2015)

‡ Undergraduate Research Award
† Undergraduate Research Fellowship
* Poster Presentation

Thesis Committee:

Current:

Gang Xiao (Ph.D., University of Illinois, MCB committee member)
Alex Armstrong (Ph.D., University of Illinois, NSP committee member)

Former: Alexander Asilador (Ph.D. 2023, University of Illinois, NSP committee member), Arit Banerjee (Ph.D., University of Illinois, NSP committee member), Ariel Edward Hight (Ph.D. 2019, Harvard Medical School, external examiner), Olivia Kozody (Au.D. 2018, University at Buffalo, committee member)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Bagchi, Milan K

eRA COMMONS USER NAME (credential, e.g., agency login): MILAN_BAGCHI

POSITION TITLE: Deborah Paul Endowed Professor of Molecular and Cellular Biology and Director, School of Molecular and Cellular Biology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Presidency College, Calcutta, India	B.S.	09/1972	09/1976	Chemistry (Honors)
Calcutta University, India	M.S.	09/1976	09/1979	Biochemistry
University of Nebraska, Lincoln, NE	Ph.D.	08/1980	12/1984	Biochemistry
Baylor College of Medicine, Houston, TX	Postdoctoral	04/1985	12/1989	Molecular Endocrinology

A. Personal Statement

My laboratory has worked to characterize, at molecular and cellular levels, the pathways regulated by the steroid hormones, estrogen and progesterone during development and differentiation of the female reproductive tract. A major goal of my research program, which enjoyed continuous funding support from the NIH since the inception of my independent research career, is to explore the hormonal signaling mechanisms that regulate maternal-fetal interactions during implantation and placentation to identify factors that underlie early pregnancy failure and infertility. Genome level analyses in our laboratory uncovered novel pathways regulated by the steroid receptors (ERα, PR-A, and PR-B), transcription factors (C/EBPβ, HAND2, MSX1/2, STAT3, and HIF2α), cytokines (LIF), morphogens (BMP2 and WNT4), growth factors (EGF family), gap junction protein (Connexin 43), Rac1 GTPase, etc., in the uterine tissue, providing important insights into various cellular mechanisms by which implantation and placentation are controlled. Combination of this new knowledge with functional analysis employing conditional gene knockout mouse models has provided a blueprint of the molecular networks that mediate the hormonal regulation of these processes. A clear understanding of the gene pathways underlying the biological actions of the steroid hormones, cytokines, morphogens, and growth factors in uterine tissue compartments will provide important insights that enable rational approaches toward clinical intervention when inappropriate endocrine actions occur in female reproductive tract dysfunctions leading to infertility.

I have extensive experience in leading transdisciplinary collaborations. From 2008 to 2014, I served as the Director of Specialized Center for Research in Reproduction supported by the NIH, leading a multidisciplinary research team composed of basic and clinical researchers from the UIUC, Emory University School of Medicine, and Baylor College of Medicine. As the Director of the School of Molecular and Cellular Biology (SMCB) since 2017, I oversee the largest and most successful federally supported biomedical enterprise on the UIUC campus.

I have published 109 peer-reviewed articles in front ranking journals, including *Nature*, *Science*, *Proceedings of National Academy of Sciences, PLoS Genetics, Endocrinology, J. Biol. Chem, etc.* (Citations: 8240, h-index 52). I have mentored over 50 trainees including graduate students and post-doctoral fellows in my laboratory. Many of them are currently professionally engaged as faculty in academia and medicine, and as leaders of pharmaceutical industry.

Positions, Scientific Appointments, and Honors

Positions

1980-1984 Graduate Student, Department of Chemistry
University of Nebraska, Lincoln
1985-1989 Postdoctoral Fellow (Mentor: Dr. Bert W. O'Malley), Department of Cell Biology,
Baylor College of Medicine, Houston, Texas
1990-1991 Instructor, Department of Cell Biology, Baylor College of Medicine, Houston, Texas
1992-1996 Staff Scientist (Assistant Professor rank), Population Council,
Center for Biomedical Research at The Rockefeller University, New York, NY
1997-2000 Scientist (Associate Professor rank), Population Council,
Center for Biomedical Research at The Rockefeller University, New York, NY
2001-2005 Associate Professor (Tenured), Department of Molecular and Integrative Physiology
School of Molecular and Cellular Biology, University of Illinois, Urbana, IL
2005-Present Professor, Department of Molecular and Integrative Physiology
School of Molecular and Cellular Biology, University of Illinois, Urbana, IL
2008-2014 Director, NICHD SCCPIR Center for Research in Reproduction and Infertility at the
University of Illinois, Urbana, IL
2012-2016 Department Head, Medical Physiology
University of Illinois Chicago College of Medicine at Urbana-Champaign
2012-2017 Department Head, Molecular and Integrative Physiology
University of Illinois, Urbana, IL
2017-Present Director, School of Molecular and Cellular Biology
University of Illinois, Urbana, IL
2021-Present Professor of Biomedical and Translational Sciences, Carle Illinois College of Medicine

Scientific Appointments

1998-2002 Female Reproduction (Endometrial Biology) Focus Group, NICHD, NIH
1998-2002 Permanent Member, Endocrinology Study Section, NIDDK, NIH
2001-2006 Preceptor, NIH Reproductive Biology Research Training Grant T32 at UIUC
2006-2018 Preceptor, NIH Endocrine, Developmental and Reproductive Toxicology Training Grant T32 at UIUC
2008-2014 Steering Committee of Specialized Cooperative Centers Program in Reproduction and Infertility Research (SCCPIR), NICHD, NIH
2010-2016 Editorial Board, Molecular Endocrinology
2011 Advisory panel of the National Institute of Child Health and Human Development (NICHD) to formulate the scientific vision for research in reproduction and identify the most promising scientific opportunities of the next decade across the breadth of the Institute's mission.
2012-2017 Founding Member, Illinois Interdisciplinary Health Sciences Initiative Steering Committee
2013-2018 Editorial Board, Endocrinology
2020-Present Faculty and Member, Environmental Impact on Reproductive Health (EIRH) Theme, Carl R. Woese Institute for Genomic Biology
2019-Present Advisory Council for the Cancer Center at Illinois

Honors

1990 Griff T. Ross Award for Reproductive Endocrinology by The Endocrine Society.
1998 Empire Award, Breast Cancer Research Competition, N. Y. State Dept. of Health

1999 Gustavus and Louise Pfeiffer Research Foundation Award
2009 University Scholar, University of Illinois
2011 Richard and Margaret Romano Professorial Scholar
2016 Deborah Paul Endowed Professor of Molecular and Cellular Biology

C. Contributions to Science (Published 109 peer-reviewed articles and 10 invited book chapters)

My research has made important contributions to the field of steroid hormone biology by providing fundamental insights into the molecular mechanisms by which the estrogen and progesterone receptors regulate cellular functions and control cell-to-cell signaling in hormone responsive tissues such as the uterus, the ovary, and the mammary gland. The most significant contributions of my work are listed below:

1. *Understanding of steroid-receptor mediated gene regulation*:

During my postdoctoral studies with Bert O'Malley, I pioneered a steroid hormone-dependent cell-free transcription system to analyze the mechanisms of receptor-mediated gene expression. Using this unique system, I made several seminal observations. I first established that a hormone-dependent activation step in addition to the release of the receptor-associated heat-shock proteins is necessary for the binding of the progesterone receptor to its DNA response element and subsequently showed that hormone-and DNA-dependent phosphorylation of the receptor accompanies its transition from an inactive to an active transcriptional regulator. These were important discoveries in steroid receptor biology, which set the stage for further work showing that hormone-induced conformation changes in the receptor allow the docking of the coregulatory complexes that mediate transcriptional activation. Later, my own laboratory was one of the first laboratories to provide evidence for the existence of a corepressor complex that mediates transcriptional silencing by nuclear thyroid hormone receptors. We also published a very important study to demonstrate that the corepressors interact with steroid receptors bound to hormone antagonists to modulate their transcriptional properties. Collectively, these biochemical studies advanced our understanding of the mechanisms via which pharmaceutical agents, such as SERMs, control the transcriptional properties of steroid receptors by influencing their interactions with the coregulatory complexes.

a. **Bagchi MK**, Tsai SY, Tsai MJ, O'Malley BW (1990) Progesterone-dependent cell free transcription: Identification of a functional intermediate in receptor activation. **Nature** 345: 547-550.

b. **Bagchi MK**, Tsai SY, Tsai MJ, O'Malley BW (1992) Ligand and DNA-dependent phosphorylation of human progesterone receptor. **Proc Natl Acad Sci USA** 89: 2664-2668.

c. Tong GX, Jeyakumar M, Tanen MR, **Bagchi MK** (1996) Transcriptional silencing by unliganded thyroid hormone receptor beta requires a soluble corepressor that interacts with the ligand binding domain of the receptor. **Mol Cell Biol.** 16, 1909-1920.

d. Zhang X, Jeyakumar M, Petukhov S, **Bagchi MK** (1998) A nuclear receptor corepressor modulates transcriptional activity of antagonist-occupied steroid hormone receptor. **Mol Endocrinol.** 12, 513-524.

2. *Identification of progesterone receptor-regulated genes controlling uterine receptivity:*

My laboratory, in collaboration with Indrani Bagchi's laboratory, made significant contributions to the understanding of the mechanisms via which progesterone receptor signaling controls uterine functions during pregnancy. We characterized calcitonin as one of the first progesterone-dependent markers of uterine receptivity. We were the first to publish a comprehensive description of the progesterone-dependent gene network that operates in the uterus during implantation. We recently published the first comprehensive description of the cistrome and transcriptome of human progesterone receptor A and B isoforms in primary endometrial stromal cells during decidualization.

a. Zhu LJ, Bove KC, Polihronis M, **Bagchi MK**, Bagchi IC (1998) Calcitonin is a progesterone-regulated marker which forecasts the receptive state of endometrium during implantation. **Endocrinology,** 139, 3923-3934.

b. Cheon YP, Li Q, Xu X, Demayo FJ, Bagchi IC, **Bagchi MK** (2002) A genomic approach to identify novel progesterone receptor-regulated pathways in the uterus during implantation. **Mol Endocrinol.** 16, 2853-2871.

c. Ramathal CY, Bagchi IC, Taylor RN, **Bagchi MK** (2010) Endometrial decidualization: of mice and men. **Semin Reprod Med.** 28:17-26.

d. Kaya HS, Hantak AM, Stubbs LJ, Taylor RN, Bagchi IC, **Bagchi MK** (2015) Roles of progesterone receptor A and B isoforms during human endometrial decidualization. **Mol Endocrinol**. 29:882-95. PMCID: PMC4447642.

3. ***Uncovering the epithelial-stromal crosstalk controlling implantation:***

My laboratory, in collaboration with Indrani Bagchi's laboratory, discovered novel paracrine mechanisms that mediate the epithelial-stromal communication, which centrally regulates uterine receptivity during implantation. One of our pioneering findings is the critical role played by the progesterone-regulated transcription factor HAND2 in female fertility. HAND2, expressed in the uterine stroma, suppresses estrogen-mediated epithelial proliferation by inhibiting the production of fibroblast growth factors. Ablation of *Hand2* gene in the uterus leads to uncontrolled epithelial proliferation and implantation failure. This ground breaking paper provided insights into the mechanisms via which uterine stromal and epithelial compartments communicate via steroid hormone signaling to regulate implantation. In more recent studies, we established the roles of the transcription factors ERα, MSX1/MSX2 and STAT3 in regulating uterine stromal-epithelial dialogue.

a. Li Q, Kannan A, DeMayo FJ, Lydon JP, Cooke PS, Yamagishi H, Srivastava D, **Bagchi MK**, Bagchi IC (2011) The antiproliferative action of progesterone in uterine epithelium Is mediated by Hand2. **Science** 331:912-916. PMCID: PMC3320855.

b. Nallasamy S, Li Q, **Bagchi MK**, and Bagchi IC (2012) Msx homeobox genes critically regulate embryo implantation by controlling paracrine signaling between uterine stroma and epithelium. **PLoS Genetics** 8: e1002500. PMCID: PMC3285581.

c. Pawar S, Starosvetsky E, *Orvis GD,* Behringer RR, Bagchi IC, **Bagchi MK** (2013) STAT3 regulates uterine epithelial remodeling and epithelial-stromal crosstalk during implantation. **Mol Endocrinol.** 27:1996-2012. PMCID:PMC3857199.

d. Pawar S, Hantak AM, Bagchi IC, **Bagchi MK** (2014) Minireview: Steroid-regulated paracrine mechanisms controlling implantation. **Mol Endocrinol.** 28(9):1408-22. PMCID: PMC4154240.

4. ***Identification and characterization of steroid-regulated pathways that control uterine decidualization and angiogenesis:***

Decidualization, which involves stromal differentiation and uterine neoangiogenesis, is an essential event for successful pregnancy establishment. Using genetically engineered mouse models and other innovative strategies, our laboratories provided definitive evidence for the roles of C/EBPβ, Connexin 43, ERα and local (uterine) estrogen biosynthesis in the control of cell growth, differentiation, and angiogenesis during implantation.

a. Mantena SR, Kannan A, Cheon YP, Li Q, Johnson PF, Bagchi IC, **Bagchi MK** (2006) C/EBPbeta is a critical mediator of steroid hormone-regulated cell proliferation and differentiation in the uterine epithelium and stroma. **Proc Natl Acad Sci USA.** 103:1870-5.

b. Laws MJ, Taylor RN, Sidell N, DeMayo FJ, Lydon JP, Gutstein DE, **Bagchi MK**, Bagchi IC (2008) Gap junction communication between uterine stromal cells is critical for pregnancy-associated neovascularization and embryo survival. **Development** 135:2659-68. PMCID:PMC3945209.

c. Das A, Mantena SR, Kannan A, Evans DB, **Bagchi MK**, and Bagchi IC (2009) *De Novo* synthesis of estrogen in pregnant uterus is critical for stromal decidualization and angiogenesis. **Proc Natl Acad Sci USA.** 106: 12542-12547. PMCID: PMC2718343.

d. Bhurke A, Kannan A, Neff A, Ma Q, Laws MJ, Taylor RN, **Bagchi MK**, Bagchi IC (2020) A hypoxia-induced Rab pathway regulates embryo implantation by controlled trafficking of secretory granules. **Proc Natl Acad Sci USA.** 117(25):14532-14542. PMC7321991.

5. ***Mouse to human translation: studies of clinical relevance to human fertility***

Our work has established that several factors, such as ERα, BMP2 and WNT4, identified to be critical for implantation in the mouse, are also important for proliferation and differentiation of human endometrial cells.

Our laboratory reported that RAC1, a Rho family GTPase, plays a central and conserved role in controlling endometrial stromal secretory function during decidualization in mice and humans. Collectively, these studies revealed that humans and rodents, which form a similar hemochorial-type placenta, exhibit remarkable similarities in terms of hormone-responsive gene expression in the uterus. These findings support the concept that mechanistic information gleaned from the mouse models, when carefully interpreted, is relevant to humans and can be extended to the clinical realm to inform the molecular basis of human infertility associated with endometrial dysfunction.

Recent research in my laboratory discovered that extracellular vesicles (EVs) generated by mouse and human endometrial stromal cells carry a variety of molecular cargo proteins that augment decidualization, stimulate angiogenesis, and modulate trophoblast differentiation. To our knowledge, this is the first demonstration of the pleiotropic functions of EVs in supporting communications between various cell types within the uterus that is vital in promoting implantation and placentation.

a. Li Q, Kannan A, Wang W, DeMayo FJ, Taylor RN, **Bagchi MK**, Bagchi IC (2007) Bone morphogenetic protein 2 functions via a conserved signaling pathway involving WNT4 to regulate uterine decidualization in the mouse and the human **J. Biol. Chem.** 282, 31725-31732.

b. Davila J, Laws MJ, Kannan A, Li Q, Taylor RN, **Bagchi MK**, Bagchi IC (2015) Rac1 Regulates Endometrial Secretory Function to Control Placental Development. **PLoS Genet.**11:e1005458. PMCID: PMC 4549291.

c. Kaya Okur HS, Das A, Taylor RN, Bagchi IC, **Bagchi MK** (2016) Roles of Estrogen Receptor-α and the Coactivator MED1 During Human Endometrial Decidualization. **Mol Endocrinol.** 30:302-13. PMCID: PMC 4771698.

d. Ma Q, Beal JR, Bhurke A, Kannan A, Yu J, Taylor RN, Bagchi IC, Bagchi MK 2022 Extracellular vesicles secreted by human uterine stromal cells regulate decidualization, angiogenesis, and trophoblast differentiation. **Proc Natl Acad Sci USA.** 20;119(38): e2200252119 doi: 10.1073/pnas.2200252119.

Curriculum Vitae May 3, 2023

ERIC BOLTON

University of Illinois at Urbana-Champaign
Department of Molecular and Integrative Physiology
407 South Goodwin Avenue, 524 Burrill Hall, MC-114
Urbana, IL 61801
Phone: 217-244-0535 (office), 415-425-5611 (cell)
E-mail: boltonec@illinois.edu

PERSONAL AND PROFESSIONAL HISTORY

EDUCATION

1995 B.S. Biochemistry and Molecular Biology – *Magna Cum Laude*, University of Wisconsin, Eau Claire, WI

2003 Ph.D. Molecular Biology and Genetics, Johns Hopkins University School of Medicine, Baltimore, MD
Thesis Advisor: Jef D. Boeke, Ph.D.
Research: Replication of the Ty1 retrotransposon in *Saccharomyces cerevisiae*

POSTDOCTORAL TRAINING AND PROFESSIONAL EMPLOYMENT

2002-2007 Postdoctoral Scholar, Department of Cellular and Molecular Pharmacology, University of California, San Francisco, CA
Advisor: Keith R. Yamamoto, Ph.D.
Research: Molecular mechanisms of nuclear receptor-mediated transcriptional regulation

2007-2009 Assistant Researcher, Department of Cellular and Molecular Pharmacology, University of California, San Francisco, CA
Mentor: Keith R. Yamamoto, Ph.D.
Research: Molecular and integrative mechanisms of nuclear receptor-mediated signaling

2010-2017 Assistant Professor, Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign (UIUC), Urbana, IL

2016-2017 Interim Reproduction Course Director, Carle Illinois College of Medicine, University of Illinois at Urbana-Champaign (UIUC), Urbana, IL

2017-present Associate Professor, Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign (UIUC), Urbana, IL

HONORS AND AWARDS

1993-1995 Dean's List (academic excellence), University of Wisconsin, Eau Claire, WI

1994	Howard Hughes Medical Institute (HHMI) Summer Research Training Fellowship, Wayne State University, Detroit, MI
1995	David Estervig Memorial Scholarship, University of Wisconsin, Eau Claire, WI
2003-2006	Ruth L. Kirschstein National Research Service Award (NRSA) Postdoctoral Fellowship
2014	Arnold O. Beckman Research Award, University of Illinois at Urbana-Champaign, Urbana, IL
2016	Arnold O. Beckman Research Award, University of Illinois at Urbana-Champaign, Urbana, IL
2016	James E. Heath Award for Excellence in Teaching in Physiology, University of Illinois at Urbana-Champaign, Urbana, IL
2022	Fall 2022 List of Teachers Ranked as Excellent by Their Students, University of Illinois at Urbana-Champaign, Urbana, IL

PROFESSIONAL ACTIVITIES AND SERVICE

2003	Ad hoc reviewer for Developmental Biology
2007	Ad hoc reviewer for PLoS Genetics
2007	Ad hoc reviewer for Cancer Research
2008	Ad hoc reviewer for Cell
2009	Ad hoc reviewer for PLoS Genetics
2011	Presentation Judge, 3rd Annual Illinois Symposium on Reproductive Sciences (ISRS), University of Illinois at Urbana-Champaign, Urbana, IL.
2012-present	Member, The Endocrine Society
2012	Presentation Judge, 4th Annual Illinois Symposium on Reproductive Sciences (ISRS), Northwestern University, Chicago, IL.
2012	Session Chair – Nuclear Receptors: Mechanisms of Action, 5th Great Lakes Nuclear Receptor Conference (GLNRC), Northwestern University, Chicago, IL.
2013	Presentation Judge, 5th Annual Illinois Symposium on Reproductive Sciences (ISRS), Southern Illinois University, Carbondale, IL.
2014	Presentation Judge, 6th Annual Illinois Symposium on Reproductive Sciences (ISRS), University of Illinois at Chicago, IL.
2015	Ad hoc reviewer for PLoS One
2016	Ad hoc reviewer for ACS Chemical Biology, PLoS One, Developmental Biology
2018	Presentation Judge, 8th Illinois Symposium on Reproductive Sciences (ISRS), Southern Illinois University, Carbondale, IL.
2018	Ad hoc reviewer for Differentiation, Acta Histochemica, ACS Omega
2019	Ad hoc reviewer for Journal of Physiology and Pharmacology
2020	Ad hoc reviewer for Journal of Nutritional Biochemistry
2021	Ad hoc reviewer for PLoS One

RESEARCH AWARDS AND GRANTS

<u>Active</u>

School of MCB ICR Startup and Equipment Fund (Bolton, PI) 01/01/2010 – present

University of Illinois at Urbana-Champaign
Molecular and Integrative Physiology

Completed

R56 DK109149-01A1 (Bolton, PI) 20% effort 09/15/2016 – 09/14/2017
NIH/NIDDK $75,000 total direct costs
AR and GDNF Signaling Tune Growth and Differentiation in the Developing Prostate
The major goal of this project is to identify mediators of GDNF signaling in the urogenital sinus that regulate cell proliferation. Understanding the mediators of cell proliferation will provide crucial clues to central processes and signaling pathways of prostate development.

RB16156 Arnold O. Beckman Research Award (Bolton, PI) 04/01/2016 – 09/30/2018
University of Illinois at Urbana-Champaign, Campus Research Board $22,000 total direct costs
GFRα1-Mediated Glial Cell Line-Derived Neurotrophic Factor Signaling in Prostate Development
The goal of this project is to assess the function of GFRα1-mediated GDNF signaling in prostate development. Understanding the central pathways responsible for prostate development will provide crucial clues to glandular epithelial morphogenesis and growth.

RB14084 Arnold O. Beckman Research Award (Bolton, PI) 01/01/2014 – 06/30/2015
University of Illinois at Urbana-Champaign, Campus Research Board $15,000 total direct costs
The Role of Gdnf Signaling in Prostate Development
The goal of this project is to examine the role of glial cell line-derived neurotrophic factor signaling in the urogenital sinus and appendicular patterning of the prostate in mice. Defining points of crosstalk between signaling pathways responsible for urogenital development is crucial to understanding the etiology of urogenital disorders, which significantly impact public health.

USDA DNS Vision 20/20 (Erdman, PI; Bolton and O'Brien, co-PIs) 11/01/2012 – 09/30/2014
USDA/Division of Nutritional Sciences at UIUC, Hatch Formula $20,000 total direct costs
Tomato Powder and Prevention of Castration-Resistant Prostate Cancer
Identifying safe, effective, and inexpensive dietary interventions to reduce the risk of developing the highly lethal castration-resistant prostate cancer could significantly reduce morbidity and mortality rates. Feeding castrated mice should be an appropriate model to test whether tomato power reduces castration-resistant prostate cancer following reduction of circulating androgens.

F32 DK065402-01 (Bolton, PI) 09/01/2003 – 08/31/2006
NIH/NIDDK
Regulatory Crosstalk between Androgen and Wnt Signaling
The goal of this project is to understand the principles that govern the interactions of the androgen receptor with response elements and a putative coregulator beta-catenin, using a combination of molecular, cellular, and biochemical approaches to define crosstalk between two essential mammalian signaling systems, steroid hormones and Wnt.

BIBLIOGRAPHY

PEER-REVIEWED PUBLICATIONS

1. Fu D, Sarker RI, Abe K, **Bolton E**, and Maloney PC. Structure/Function relationships in OxlT, the oxalate-formate transporter of *Oxalobacter formigenes*. ***J Biol Chem.*** 2001; 276(12):8753-8760. PMID: 11113128.

2. **Bolton EC**, Mildvan AS, and Boeke JD. Inhibition of reverse transcription *in vivo* by elevated manganese ion concentration. ***Mol Cell.*** 2002 Apr;9(4):879-889. PMID: 11983178.

3. **Bolton EC** and Boeke JD. Transcriptional interactions between yeast tRNA genes, flanking genes and Ty elements: a genomic point of view. ***Genome Res.*** 2003 Feb;13(2):254-263. PMID: 12566403. PMCID: PMC420376.

4. **Bolton EC**, Coombes C, Eby Y, Cardell M, and Boeke JD. Identification and characterization of critical cis-acting sequences within the yeast Ty1 retrotransposon. ***RNA.*** 2005 Mar;11(3):308-322. PMID: 15661848. PMCID: PMC1370720.

5. Yarrington RM, Chen J, **Bolton EC**, and Boeke JD. Mn2+ suppressor mutations and biochemical communication between Ty1 reverse transcriptase and RNase H domains. ***J Virol.*** 2007 Sep;81(17):9004-9012. PMID: 17537863. PMCID: PMC1951463.

6. So AY, Chaivorapol C, **Bolton EC**, Li H, and Yamamoto KR. Determinants of cell- and gene-specific transcriptional regulation by the glucocorticoid receptor. ***PLoS Genet.*** 2007 Jun;3(6):e94. PMID: 17559307. PMCID: PMC1904358.

7. **Bolton EC**, So AY, Chaivorapol C, Haqq CM, Li H, and Yamamoto KR. Cell- and gene-specific regulation of primary target genes by the androgen receptor. ***Genes and Dev.*** 2007 Aug 15;21(16):2005-2017. PMID: 17699749. PMCID: PMC1948856.

8. Jones JO, **Bolton EC**, Huang Y, Feau C, Guy RK, Yamamoto KR, Hann B, and Diamond MI. Non-competitive androgen receptor inhibition in vitro and in vivo. ***Proc Natl Acad Sci USA.*** 2009 Apr 28;106(17):7233-7238. PMID: 19363158. PMCID: PMC2678452.

9. Mukherjee S, Cruz-Rodriguez O, **Bolton E**, and Iñiguez-Lluhí JA. The *in vivo* role of androgen receptor SUMOylation as revealed by androgen insensitivity syndrome and prostate cancer mutations targeting the proline/glycine residues of synergy control motifs. ***J Biol Chem.*** 2012; 287(37):31195-206. PMID: 22829593. PMCID: PMC3438951.

10. Zhou Y, **Bolton EC**, and Jones JO. Androgens and androgen receptor signaling in prostate tumorigenesis. ***J Mol Endocrinol.*** 2015 Feb;54(1):R15-R29. PMID: 25351819. PMCID in progress.

11. Park HJ and **Bolton EC***. Glial cell line-derived neurotrophic factor induces cell proliferation in the mouse urogenital sinus. ***Mol Endocrinol.*** 2015 Feb;29(2):289-306. PMID: 25549043. PMCID: PMC5414761.

12. Lee KW, Royston SE, Vest MO, Ley DJ, Lee S, **Bolton EC**, and Chung HJ. N-methyl-d-aspartate receptors mediate activity-dependent down-regulation of potassium channel genes during the expression of homeostatic intrinsic plasticity. ***Mol Brain.*** 2015 Jan 20;8(1):4. PMID: 25599691. PMCID: PMC4333247.

13. Kim YC, Chen C, and **Bolton EC***. Androgen receptor-mediated growth suppression of HPr-1AR and PC3-Lenti-AR prostate epithelial cells. ***PLoS One***. 2015 Sep 15;10(9):e0138286. PMID: 26372468. PMCID: PMC4570807.

14. Chen C, Dienhart JA, and **Bolton EC***. Androgen-sensitized apoptosis of HPr-1AR human prostate epithelial cells. ***PLoS One***. 2016 May 20;11(5):e0156145. PMID: 27203692. PMCID: PMC4874596.

15. Smith JW, Ford NA, Thomas-Ahner JM, Moran NE, **Bolton EC**, Wallig MA, Clinton SK, and Erdman JW. Mice lacking β-carotene-15,15'-dioxygenase (BCO1) exhibit reduced serum testosterone, prostatic androgen receptor signaling, & prostatic cellular proliferation. ***Am J Physiol Regul Integr Comp Physiol***. 2016 Dec 1;311(6):R1135-R1148. PMID: 27629887. PMCID: PMC5256971.

16. Park HJ and **Bolton EC***. RET-mediated glial cell line derived neurotrophic factor signaling inhibits mouse prostate development. ***Development***. 2017 Jun 15;144(12):2282-2293. PMID: 28506996. PMCID: PMC5482989.

17. Copeland BT, Pal SK, **Bolton EC**, and Jones JO. The androgen receptor malignancy shift in prostate cancer. ***Prostate.*** 2018 May;78(7):521-531. PMID: 29473182. PMCID in progress.

18. Chen C, Dienhart JA, and **Bolton EC***. Correction: Androgen-sensitized apoptosis of HPr-1AR human prostate epithelial cells. ***PLoS One***. 2019 Mar 13; 14(3):e0213800. PMID: 30865707. PMCID: PMC6415800.

19. Zhang J, Kim EC, Chen C, Procko E, Pant S, Lam K, Patel J, Choi R, Hong M, Joshi D, **Bolton E**, Tajkhorshid E, and Chung HJ. Identifying mutation hotspots reveals pathogenetic mechanisms of KCNQ2 epileptic encephalopathy. ***Sci Rep.*** 2020 Mar 16;10(1):4756. PMID: 32179837. PMCID: PMC7075958.

20. Kim EC, Zhang J, Tang AY, **Bolton EC**, Rhodes JS, Christian-Hinman CA, and Chung HJ. Spontaneous seizure and memory loss in mice expressing an epileptic encephalopathy variant in the calmodulin-binding domain of Kv7.2. ***Proc Natl Acad Sci USA.*** 2021 Dec 21;118(51):e2021265118. PMID: 34911751. PMCID: PMC8713762.

***** Corresponding author is ECB

Complete List of Published Work in My Bibliography:
https://www.ncbi.nlm.nih.gov/myncbi/eric.bolton.1/bibliography/public/

MANUSCRIPTS IN PEER REVIEW OR PREPARATION

Bolton EC*. Transcriptome analysis of mouse urogenital sinus identifies genes downstream of the RET-mediated glial cell line derived neurotrophic factor signaling pathway that modulate prostate development. In preparation for submission to ***BMC Genomics***.

Park HJ, Kim YC, Chen C, and **Bolton EC***. Transcriptome analysis of mouse prostate stromal and epithelial cells identifies cell-specific regulation of androgen-responsive genes and signaling pathways that modulate prostate development. In preparation for submission to ***BMC Genomics***.

DOCTORAL DISSERTATION

Bolton EC. Replication of the Ty1 retrotransposon in *Saccharomyces cerevisiae*. Ph.D. Thesis, Johns Hopkins University 2002.

OTHER SCIENTIFIC PUBLICATIONS

1. **Bolton E** (2010). Androgen receptor activity in health and disease. ***The Molecular and Integrative Physiology Newsletter*** December 2010: 3. http://mcb.illinois.edu/departments/mip/newsletter/

2. Goldberg JB (2011). Unraveling complexities of endocrine-dependent cancers. ***The Molecular and Integrative Physiology Newsletter*** December 2011: 2. http://mcb.illinois.edu/departments/mip/newsletter/

PATENTS

2009 US Patent 7601489 – Manganese ion regulation of reverse transcriptase activity and methods of modulating same.

PRESENTATIONS

INVITED LECTURES AND CONFERENCE PRESENTATIONS

2000 Keystone Symposia on Transposition and Other Genome Rearrangements, Santa Fe, NM.
2000 Yeast Genetics and Molecular Biology Meeting, Seattle, WA.
2001 Talk at the Mid-Atlantic Transposition Meeting, Baltimore, MD.
2002 Seminar at the Johns Hopkins University School of Medicine, Molecular Biology and Genetics Thesis Seminar, Baltimore, MD.
2005 Cold Spring Harbor Laboratory Meeting on Mechanisms of Eukaryotic Transcription, Cold Spring Harbor, NY.
2006 Cold Spring Harbor Laboratory Meeting on Nuclear Receptors: Bench to Bedside, Cold Spring Harbor, NY.
2008 UCSF Prostate Cancer Research Retreat, San Francisco, CA.
2008 Seminar at the University of Maryland Biotechnology Institute, College Park, MD.
2008 Talk at the Cold Spring Harbor Laboratory Meeting on Nuclear Receptors: Bench to Bedside, Cold Spring Harbor, NY.
2009 Seminar at the Cincinnati Children's Hospital Medical Center, Cincinnati, OH.
2009 Seminar at the Pennsylvania State University, State College, PA.
2009 Seminar at the Pennsylvania State University College of Medicine, Hershey, PA.
2009 Seminar at the University of Illinois at Urbana-Champaign, Urbana, IL.
2009 Seminar at the Uniformed Services University of the Health Sciences, Bethesda, MD.

2009 Talk at the Cincinnati Cancer Symposium: Jensen Symposium on Nuclear Receptors (invited talk), Cincinnati, OH.

INVITED LECTURES AND CONFERENCE PRESENTATIONS BASED ON RESEARCH AT THE UNIVERSITY OF ILLINOIS

2010 Seminar at the Molecular and Integrative Physiology Retreat, University of Illinois at Urbana-Champaign, Urbana, IL. April

2010 Molecular and Cellular Biology Faculty Research Seminar for incoming graduate students, University of Illinois at Urbana-Champaign, Urbana, IL. August.

2010 Reproductive Biology Group Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. December

2011 Seminar at the Institute for Genomic Biology, University of Illinois at Urbana-Champaign, Urbana, IL. March.

2011 Molecular and Cellular Biology Faculty Research Seminar for incoming graduate students, University of Illinois at Urbana-Champaign, Urbana, IL. August.

2012 Reproductive Biology Group Seminar and Panel Discussion on Frontiers in Reproduction: Male Reproduction and Fertility, Urbana. January.

2012 Seminar at the Molecular and Integrative Physiology Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL. September.

2012 Talk at the 5th Great Lakes Nuclear Receptor Conference (GLNRC), Northwestern University, Chicago, IL. October.

2012 Cold Spring Harbor Laboratory Meeting: Nuclear Receptors & Disease, Cold Spring Harbor, NY. October.

2013 95th Endocrine Society Meeting, San Francisco, CA. June.

2014 96th Endocrine Society Meeting, Chicago, IL. June.

2014 Molecular and Integrative Physiology Pre-Tenure Research Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. November.

2014 Vertebrate Developmental Biology Group Seminar at University of Wisconsin, Madison, WI. November.

2015 Molecular and Integrative Physiology Pre-Tenure Research Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. November.

2016 Seminar at the Molecular and Integrative Physiology Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL. September.

2016 7th Great Lakes Nuclear Receptor Conference (GLNRC), Case Western Reserve University, Cleveland, OH. October.

2016 NIH Urology Program Directors Conference, Asilomar Conference Grounds, Pacific Grove, CA. December.

2018 8th Great Lakes Nuclear Receptor Conference (GLNRC), University of Minnesota, Minneapolis, MN. October.

PUBLISHED ABSTRACTS FOR PRESENTATIONS

1. **Bolton EC** and Boeke JD (2000). Interactions between yeast tRNA genes, flanking genes and Ty elements. Keystone Symposia on Transposition and Other Genome Rearrangements. Santa Fe, NM.
2. **Bolton EC** and Boeke JD (2000). Interactions between yeast tRNA genes, flanking genes and Ty elements. Yeast Genetics and Molecular Biology Meeting. Seattle, WA.
3. **Bolton EC** and Boeke JD (2001). Replication of the Ty1 retrotransposon in *Saccharomyces cerevisiae*. Mid-Atlantic Transposition Meeting. Baltimore, MD. (invited talk)
4. **Bolton EC** (2002). Replication of the Ty1 retrotransposon in *Saccharomyces cerevisiae*. Johns Hopkins University School of Medicine, Molecular Biology and Genetics Thesis Seminar and Defense. Baltimore, MD. (seminar)
5. **Bolton EC**, Haqq CM, and Yamamoto KR (2005). Androgen-responsive genes in prostate epithelium. Mechanisms of Eukaryotic Transcription Meeting. Cold Spring Harbor Laboratory, NY.
6. **Bolton EC**, So AY, Chaivorapol C, Haqq CM, Li H, and Yamamoto KR (2006). Androgen regulated genes in prostate epithelium. Nuclear Receptors: Bench to Bedside Meeting. Cold Spring Harbor Laboratory, NY.
7. **Bolton EC**, So AY, Chaivorapol C, Haqq CM, Li H, and Yamamoto KR (2008). Gene- and cell-specific regulation of primary target genes by the androgen receptor. UCSF Prostate Cancer Research Retreat. San Francisco, CA.
8. **Bolton EC**, So AY, Chaivorapol C, Haqq CM, Li H, and Yamamoto KR (2008). Gene- and cell-specific regulation of androgen receptor target genes in prostate. Nuclear Receptors: Bench to Bedside Meeting. Cold Spring Harbor Laboratory, NY. (invited talk)
9. **Bolton EC**, Jones JO, Huang Y, Hann B, Renslo A, Diamond MI, and Yamamoto KR (2009). Non-competitive androgen receptor inhibition in vitro and in vivo. Cincinnati Cancer Symposium: Jensen Symposium on Nuclear Receptors. Cincinnati, OH. (invited talk)

PUBLISHED ABSTRACTS FOR PRESENTATIONS BASED ON RESEARCH AT THE UNIVERSITY OF ILLINOIS

1. Kim YC and **Bolton EC** (2011). Androgen receptor-mediated inhibition of cell proliferation in HPr-1AR human prostate epithelial cells. 3rd Annual Illinois Symposium on Reproductive Sciences (ISRS). Urbana, IL.
2. Chen C and **Bolton EC** (2011). Regulation of IGF-binding protein-3 by androgens and retinoic acids. 3rd Annual Illinois Symposium on Reproductive Sciences (ISRS). Urbana, IL.
3. Patel N and **Bolton EC** (2012). A mutagenic screen to identify substitution mutations in the androgen receptor ligand binding domain that alter transcriptional activation. Molecular and Integrative Physiology Retreat. Urbana, IL.
4. Park HJ, Kim YC, and **Bolton EC** (2012). Regulation of estrogen receptor α in prostate by androgen receptor action. 4th Annual Illinois Symposium on Reproductive Sciences (ISRS). Chicago, IL.
5. Kim YC, Chen C, and **Bolton EC** (2012). Androgen receptor-mediated inhibition of cell proliferation in HPr-1AR human prostate epithelial cells. 4th Annual Illinois Symposium on Reproductive Sciences (ISRS). Chicago, IL.

6. Chen C, Kim YC, and **Bolton EC** (2012). Retinoic acid-regulated prostate cell proliferation. 5th Great Lakes Nuclear Receptor Conference (GLNRC). Chicago, IL.
7. Kim YC, Chen C, and **Bolton EC** (2012). Androgen receptor-mediated inhibition of cell proliferation in HPr-1AR human prostate epithelial cells. 5th Great Lakes Nuclear Receptor Conference (GLNRC). Chicago, IL.
8. Park HJ, Kim YC, and **Bolton EC** (2012). Regulation of estrogen receptor α in prostate by androgen receptor action. 5th Great Lakes Nuclear Receptor Conference (GLNRC). Chicago, IL.
9. **Bolton EC**, Kim YC, and Chen C (2012). Regulation of cell proliferation by androgen receptor signaling. 5th Great Lakes Nuclear Receptor Conference (GLNRC). Chicago, IL. (invited talk)
10. Kim YC, Chen C, and **Bolton EC** (2012). Regulation of cell proliferation by androgen receptor signaling. Nuclear Receptors & Disease Meeting. Cold Spring Harbor Laboratory, NY.
11. **Bolton EC** (2013). Androgen receptor-mediated inhibition of cell proliferation. 95th Endocrine Society Meeting. San Francisco, CA.
12. Chen C, Kim YC, Dienhart J, and **Bolton EC** (2013). Androgen sensitizes human prostate epithelial cells to apoptotic cell death. Molecular and Integrative Physiology Retreat. Urbana, IL.
13. Park HJ and **Bolton EC** (2013). The role of GDNF signaling in prostate development. Molecular and Integrative Physiology Retreat. Urbana, IL.
14. Chen C, Kim YC, Dienhart J, and **Bolton EC** (2013). Androgen sensitizes human prostate epithelial cells to apoptotic cell death. 5th Annual Illinois Symposium on Reproductive Sciences (ISRS). Carbondale, IL.
15. Park HJ and **Bolton EC** (2013). The role of GDNF signaling in prostate development. 5th Annual Illinois Symposium on Reproductive Sciences (ISRS). Carbondale, IL.
16. Chen C, Dienhart J, and **Bolton EC** (2014). Androgen sensitizes human prostate epithelial cells to apoptotic cell death. 96th Endocrine Society Meeting. Chicago, IL.
17. Park HJ and **Bolton EC** (2014). GDNF signaling stimulates cell division and hyperplasia in the developing prostate. 96th Endocrine Society Meeting. Chicago, IL.
18. Chen C, Dienhart J, and **Bolton EC** (2014). Androgen sensitizes human prostate epithelial cells to apoptotic cell death. Molecular and Integrative Physiology Retreat. Urbana, IL.
19. Park HJ and **Bolton EC** (2014). GDNF signaling stimulates cell division and hyperplasia in the developing prostate. 6th Annual Illinois Symposium on Reproductive Sciences (ISRS). Chicago, IL.
20. Chen C, Dienhart J, and **Bolton EC** (2014). Androgen sensitizes human prostate epithelial cells to apoptotic cell death. 6th Great Lakes Nuclear Receptor Conference (GLNRC). Madison, WI.
21. Chen C, Dienhart J, and **Bolton EC** (2015). Androgen-sensitized apoptosis in human prostate epithelial cells. 7th Annual Illinois Symposium on Reproductive Sciences (ISRS). Urbana, IL. (invited talk)
22. Smith JW, Ford NA, Thomas-Ahner JM, Moran NE, **Bolton EC**, Clinton SK, and Erdman JW. (2016). Ablation of the carotenoid cleavage enzyme β-carotene-15,15'-dioxygenase (BCO1) reduces serum testosterone and prostatic androgen receptor signaling in mice. Experimental Biology. San Diego, CA.

23. **Bolton EC** and Park HJ (2016). Crosstalk between androgen receptor and glial cell line-derived neurotrophic factor signaling in prostate development. 7th Great Lakes Nuclear Receptor Conference (GLNRC). Case Western Reserve University, Cleveland, OH.
24. **Bolton EC** and Park HJ (2016). Crosstalk between androgen receptor and glial cell line-derived neurotrophic factor signaling in prostate development. 2016 NIH Urology Program Directors Conference, Asilomar Conference Grounds, Pacific Grove, CA.
25. Park HJ and **Bolton EC** (2018). Crosstalk between androgen receptor and glial cell line-derived neurotrophic factor signaling in prostate development. 8th Great Lakes Nuclear Receptor Conference (GLNRC). University of Minnesota, Minneapolis, MN.

TEACHING HISTORY

ACADEMIC INSTRUCTION

Undergraduate Instruction at the University of Wisconsin, Eau Claire

1994-1995	Tutor, Academic Skills Center Courses: Principles in Biology, General Physics I, Organic Chemistry I and II

Undergraduate Instruction at the University of Illinois at Urbana-Champaign

2010-2014	Instructor, MCB 290 (Undergraduate Research).
2011-present	Instructor, MCB 413 (Endocrinology), 4-6 contact hours per year (present 3-4 lectures, lead review and quiz sessions, and co-proctor exams), approximately 100 students per class.
2012-2013	Course Coordinator and Instructor, MCB 493 MHD (Mechanisms of Human Disease), 37 contact hours per year (37 lectures), approximately 85 students per class.
2014-present	Course Coordinator and Instructor, MCB 320 (Mechanisms of Human Disease), which was initially offered as MCB 493 MHD (Mechanisms of Human Disease), 43 contact hours per year (43 lectures), approximately 100 students per class. Award: 2016 James E. Heath Award for Excellence in Teaching in Physiology
2014	Instructor, MCB 492 (Senior Thesis).
2023-present	Course Coordinator and Instructor, MCB 493 CPP (Cancer Pathophysiology), 43 contact hours per year (43 lectures), 38 undergraduate and 4 graduate students enrolled in the course and 27 undergraduate and 3 graduate students remained in this new course.

Graduate Instruction at the University of Illinois at Urbana-Champaign

2010-2011	Instructor, MCB 581, 582, 583 (Laboratory Rotations). Instructor Role: Designed and supervised short independent research project that were completed by 6 graduate students during fall terms.
2011-2012	Instructor, MIP 590 (Individual Topics). Student: Congcong Chen Instructor Role: Thesis Advisor – Designed and mentored research projects that defined and dissected androgen receptor- and retinoic acid receptor-mediated transcriptional regulation of genes responsible for cell proliferation and autophagy.

2012-2016 Instructor, MIP 599 (Thesis Research). Student: Congcong Chen

Instructor Role: Thesis Advisor – Designed and mentored research projects that defined and dissected androgen receptor-mediated transcriptional regulation of genes responsible for 1) growth suppression, 2) autophagy, and 3) androgen-sensitized apoptosis of human prostate epithelial cells.

2012-2022 Course Coordinator and Instructor, MIP 595 (Seminars in Physiology), 15 contact hours per year (co-coordinated 25-30 research seminars per year), approximately 20 students per year.

Award: Fall 2022 List of Teachers Ranked as Excellent by Their Students

2020-2021 Deferred Course Instructor, MCB 502 (Advanced Molecular Genetics), 40 contact hours per year (13 lectures and 12 discussion sessions, 90 minutes each), approximately 60 students per class. I agreed and prepared to teach the course for another professor who intended to take sabbatical and then cancelled his sabbatical leave two years in a row.

2023-present Course Coordinator and Instructor, MCB 493 CPP (Cancer Pathophysiology), 43 contact hours per year (43 lectures), 38 undergraduate and 4 graduate students enrolled in the course and 27 undergraduate and 3 graduate students remained in this new course.

TRAINING AND MENTORING ACTIVITIES

Undergraduate Students at the Johns Hopkins University School of Medicine

2001 Angeli Hung – Biology major (Undergraduate Research)

Instructor Role: Designed and supervised summer research project that identified critical *cis*-acting sequences within the yeast Ty1 retrotransposon

Undergraduate Students at the University of Illinois at Urbana-Champaign

2010 Daniel Ley – MCB major (Summer research volunteer)

Mentor Role: Designed and supervised daily tasks for laboratory setup and organization.

2010-2012 Neal Patel – MCB major (MCB 290)

Instructor Role: Designed and supervised a research project that developed a screen to identify gain- and loss-of-function mutations in the androgen receptor that influence androgen receptor-mediated transcriptional activation.

2010-2011 Katelyn Brennan – MCB major (MCB 290)

Instructor Role: Designed and supervised a research project that examined androgen receptor-mediated transcriptional repression in human prostate epithelial cells.

2012 Louis Pellegrino – MCB major (MCB 290)

Instructor Role: Designed and supervised a research project that developed a screen to identify mutations that alter androgen receptor activity.

2013-2014 Jason Dienhart – MCB major (MCB 290 and MCB 492)

Instructor Role: Designed and supervised a research project that identified androgen receptor-mediated transcriptional regulation of genes implicated in autophagy and apoptosis.

Award: 2014 Jenner Family Summer Research Internship

Senior Thesis: "Androgen Sensitizes HPr-1AR Human Prostate Epithelial Cells to Intrinsic Apoptotic Cell Death".

2013-2014 Reiana Mahan – MCB major (MCB 290)

Instructor Role: Designed and supervised a research project that examined the functional role of GDNF signaling in prostate morphogenesis and growth.

Graduate Students at the Johns Hopkins University School of Medicine

2001-2002 Jichao Chen – Biochemistry Cellular and Molecular Biology Program

Robert Yarrington – Biochemistry Cellular and Molecular Biology Program

Instructor Role: Designed and supervised two sequential 10-week research projects that identified Mn^{2+} suppressor mutations and biochemical communication between Ty1 reverse transcriptase and RNase H domains.

Graduate Students at the University of Illinois at Urbana-Champaign

2010-2017 Congcong Chen – Molecular and Integrative Physiology, Ph.D.

Current Positions: Data Scientist, Wayfair LLC, Boston, MA 02116; Junior Statistician, Carl. R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign, Urbana, IL, 61801

Thesis: Androgen receptor-mediated growth suppression and apoptosis of human prostate epithelial cells

Instructor Role: Thesis Advisor. Designed and mentored research projects that defined and dissected androgen receptor-mediated transcriptional regulation of genes responsible for 1) growth suppression, 2) autophagy, and 3) androgen-sensitized apoptosis of human prostate epithelial cells.

Research Assistants

2011 Stephanie Park, B.S. – University of Illinois at Urbana-Champaign.

2012 Neal Patel, B.S. – University of Illinois at Urbana-Champaign.

2016-2017 Amanda Weiss, B.S. – University of Illinois at Urbana-Champaign.

2017 Natcha Suriyavirun, B.S. – University of Illinois at Urbana-Champaign.

2017-2018 Congcong Chen, Ph.D. – University of Illinois at Urbana-Champaign.

2017-2018 Jennifer Walters, B.S. – University of Illinois at Urbana-Champaign.

Research Fellows

2010-2013 Young-Chae Kim, Ph.D. – University of Illinois at Urbana-Champaign

Postdoctoral Advisor Role: Designed and supervised a research project that defined and dissected androgen receptor-mediated transcriptional regulation of genes implicated in the proliferation and growth suppression of human prostate epithelial cells.

2012-2015 Hyun Jung Park, Ph.D. – University of Illinois at Urbana-Champaign

Postdoctoral Advisor Role: Designed and supervised a research project that 1) investigated the functional role of GDNF signaling in prostate morphogenesis and growth and 2) examined crosstalk between the androgen and GDNF signaling pathways in prostate development.

Graduate Student Committees

2010-2011	Jiyoung Lee	Preliminary Exam, Thesis (MIP)
2011	Linda Yang	Qualifying Exam (MIP)
2011-2015	C. Chase Bolt	Advisory, Preliminary Exam, Thesis (CDB)
2011-2016	Younguk Sun	Advisory, Preliminary Exam, Thesis (CDB)
2011	Gwendolyn Humpherys	Qualifying Exam (MIP)
2011-2012	Milu Cherian	Preliminary Exam, Thesis Committee (MIP)
2011-2017	Mathew Cherian	Preliminary Exam, Thesis Committee (MIP)
2012-2014	Leah Goldberg	Advisory, Preliminary Exam, Thesis (MIP)
2012	Ting Fu	Qualifying Exam (MIP)
2012-2015	Stephanie Tsangmuichung	Preliminary Exam, Thesis Committee (CDB)
2012-2015	Neal Andruska	Advisory, Preliminary Exam, Thesis (BIOC)
2013-2016	Joshua Smith	Advisory, Preliminary Exam, Thesis (ACES – Nutritional Sciences)
2013-2014	Sandeep Pawar	Preliminary Exam, Thesis (MIP)
2013	Alison Hantak	Qualifying Exam (MIP)
2013	Daniel Ryerson	Advisory (MIP)
2013-2016	Lily Mahapatra	Advisory, Preliminary Exam, Thesis (MIP)
2015	Bhoomika Mathur	Qualifying Exam (MIP)
2014-2019	Soumya Negi	Advisory, Preliminary Exam, Thesis (CDB)
2015-2020	Joe Rowles III	Advisory, Preliminary Exam, Thesis (ACES – Nutritional Sciences)
2016-2018	Whitney Edwards	Advisory, Preliminary Exam, Thesis (MIP)
2019-2020	Gregory Tracy	Qualifying Exam (MIP)
2022	Jacob Beal	Qualifying Exam (MIP)
2022	Amber Wang	Qualifying Exam (MIP)
2022	Steven Hobbs	Qualifying Exam (MIP)
2022	Shruti Bendre	Qualifying Exam (MIP)
2023	Claire Schane	Qualifying Exam (MIP)
2023	Shravanthi Daphine Anand	Qualifying Exam (MIP)
2023	Xiangning Song	Qualifying Exam (MIP)
2023	Gargi Palashikar	Qualifying Exam (MIP)

UNIVERSITY SERVICE HISTORY

DEPARTMENT OF MOLECULAR AND INTEGRATIVE PHYSIOLOGY (MIP)

2010	Co-Author, MIP Newsletter
2010	Coordinated the purchase of 3 real-time QPCR systems for MIP laboratories
2010-present	Member, MIP graduate student committees (Qualifying, Advisory, Preliminary Examination, and Thesis Committees) for many MIP Program students
2010-2011	Interviewed MIP Graduate Program candidates during MCB recruiting weekends
2010-2017	Member, MIP Seminar Committee
2010-2015	Co-Chair, MIP Retreat Committee
2011	Contributor, MIP Newsletter
2011-2020	Ad-Hoc Member, MIP Qualifying Examination Committee
2012-2017	Co-Chair, MIP Seminar Committee Hosted speakers: Michael Stallcup, Ph.D. (USC), 2011 Jorge Iñiguez-Lluhí, Ph.D. (UM Ann Arbor), 2011 Gail Prins, Ph.D. (UIC), 2012 Michael Shen, Ph.D. (Columbia Univ.), 2013 Michael Garabedian, Ph.D. (NYU), 2015 Prabhakara Reddi, Ph.D. (UIUC), 2016
2012-2017	Co-Chair, C. Ladd Prosser Endowed Lecture Committee Hosted speakers: Richard Huganir, Ph.D. (Johns Hopkins Univ.), 2013 Owen Witte, M.D. (UCLA), 2014 Gail Mandel, Ph.D. (OHSU), 2015 Jeffrey Friedman, M.D./Ph.D. (Rockefeller Univ.), 2016
2012-2013	MCB (MIP/CDB) Faculty Search Committee: Cellular Growth Mechanisms and Cancer – Recommended faculty candidates for MCB (MIP) and LAS
2012-2013	MCB (MIP/CDB) Faculty Search Committee: Regenerative Biology and Reproduction – Recommended faculty candidates for MCB (CDB) and LAS
2016-present	Presentation Judge, Annual MIP Retreat
2021-present	Member, MIP Graduate Student Advisory Committee
2021-present	Member, MIP Qualifying Examination Committee

SCHOOL OF MOLECULAR AND CELLULAR BIOLOGY (MCB) AND COLLEGE OF LIBERAL ARTS AND SCIENCES (LAS)

2010-2014	Trained and mentored 5 MCB undergraduates in my research laboratory (Neal Patel, Katelyn Brennan, Louis Pellegrino, Jason Dienhart, Reiana Mahan)
2010-2011	Interviewed MCB Graduate Program candidates during recruiting weekends
2011-2021	Member, MCB graduate student committees (Advisory, Preliminary Examination, and Thesis Committees) for several CDB and BIOC Program students
2011-2021	Chair, MCB Seminar Committee
2012-2013	MCB (MIP/CDB) Faculty Search Committee: Cellular Growth Mechanisms and Cancer – Recommended faculty candidates for MCB (MIP) and LAS
2012-2013	MCB (MIP/CDB) Faculty Search Committee: Regenerative Biology and Reproduction – Recommended faculty candidates for MCB (CDB) and LAS
2012-present	Conducted tours of my research laboratory for perspective undergraduate students (Orange and Blue Days) and accepted undergraduates (Admitted Students Days)

2013	Participated in MCB Leaders project – video interview about MCB 320 (Mechanisms of Human Disease), which was initially offered as MCB 493 MHD
2013	Participated in MCB 150 Honors project – video interview about my research and teaching career
2017-2021	Member, MCB Courses and Curriculum Committee
2019-present	Attendee, School of MCB Retreat
2019-2021	Member, MCB Academic Integrity and Grievance Committee
2022- present	Member, MCB Courses and Curriculum Committee

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

2010-2011	Faculty Search Committee: Comparative Biosciences – Recommended and recruited faculty candidates (CheMyong Ko, Ph.D. and Jing Yang, Ph.D.) for the Department of Comparative Biosciences and College of Veterinary Medicine
2011-2021	Member, graduate student committees (Advisory, Preliminary Examination, and Thesis Committees) for several students in the Division of Nutritional Sciences and College of Agricultural, Consumer, and Environmental Sciences (ACES)
2016-2017	Interim Reproduction Course Director, Carle Illinois College of Medicine, University of Illinois at Urbana-Champaign (UIUC), Urbana, IL

PUBLIC ENGAGEMENT

2012-present	Conducted tours of my research laboratory for perspective undergraduate students (Orange and Blue Days) and accepted undergraduates (Admitted Students Days)

CURRICULUM VITAE

Catherine A. Christian-Hinman

University of Illinois Urbana-Champaign
407 S. Goodwin Ave.
523 Medical Sciences Building
Urbana, Illinois 61801

Phone: (217) 244-8230
cathchri@illinois.edu
www.christianhinmanlab.org
Twitter: @C_C_Hinman

EDUCATION

Smith College – Northampton, Massachusetts — September 1997 – May 2001
A.B. in Neuroscience and Italian Language & Literature
Awarded *cum laude* with Highest Honors in Neuroscience
Honors Research Advisor: Mary Harrington, Ph.D.
Honors Thesis: *Interactions of Photic and Non-Photic Stimuli in Resetting Circadian Rhythms*

Università Vita-Salute San Raffaele – Milan, Italy — October 2001 – July 2002
Fulbright Fellow in Psychology/Neuroscience

University of Virginia – Charlottesville, Virginia — August 2002 – November 2007
Ph.D. in Neuroscience (conferred January 2008)
Laboratory of Suzanne Moenter, Ph.D.
Dissertation Committee: Douglas Bayliss, Ph.D.; Jaideep Kapur, M.D., Ph.D.; Michael Menaker, Ph.D.; Margaret Shupnik, Ph.D.
Dissertation: *Diurnal and Estradiol-Dependent Regulation of the Neuroendocrine Signal for Ovulation*

Cold Spring Harbor Laboratory – Cold Spring Harbor, New York — June 2005
Ion Channel Physiology

POSTDOCTORAL RESEARCH TRAINING

University of Virginia – Charlottesville, Virginia — December 2007 – June 2008
Postdoctoral Research Associate in Medicine – Endocrinology and Metabolism
Laboratory of Suzanne Moenter, Ph.D.

Stanford University School of Medicine – Stanford, California — June 2008 – June 2014
Postdoctoral Fellow in Neurology and Neurological Sciences
Laboratory of John Huguenard, Ph.D.

ACADEMIC FACULTY APPOINTMENTS

University of Illinois Urbana-Champaign – Urbana, Illinois — August 2014 – present
Associate Professor with tenure in Molecular and Integrative Physiology (2021–present)

Assistant Professor in Molecular and Integrative Physiology (2014-2021)
Assistant Professor in the University of Illinois College of Medicine at Urbana (2014-2019)

Affiliations:
Beckman Institute for Advanced Science and Technology (2015-present)
Neuroscience Program (2014-present)
Program in Endocrinology, Embryology, and Reproduction (2014-present)

HONORS AND AWARDS

1998-2001	First Group Scholar (top 10% of class) and Dean's List, Smith College
1999	Howard Hughes Undergraduate Fellowship, Smith College/Univ. of Calif.,Davis
2000-2001	Arnold and Mabel Beckman Foundation Science Scholarship, Smith College
2000	Phi Beta Kappa, Junior Member, Smith College
2001	Sigma Xi, Associate Member, Smith College
2001-2002	Fulbright Fellowship to Italy, U.S. Department of State
2003, 2004	Honorable Mention, National Science Foundation Graduate Research Fellowship
2005	First Prize, Huskey Graduate Research Exhibition, University of Virginia
2006	Endocrine Society Travel Award
2006	Outstanding Neuroscience Graduate Student Award, University of Virginia
2006	Michael J. Peach Outstanding Graduate Student Award, University of Virginia
2006	Society for Neuroscience Graduate Student Travel Award
2007	Award for Excellence in Scholarship in the Sciences & Engineering, University of Virginia
2007	Women in Endocrinology Young Investigator Award
2007	Lalor Foundation Merit Award, Society for the Study of Reproduction
2008	Endocrine Scholars Award, The Endocrine Society
2009	University of Virginia nominee, CGS/UMI Distinguished Dissertation Award
2010	Katharine McCormick Travel Grant, Stanford University School of Medicine
2012	Society for Neuroscience Postdoctoral Fellow Travel Award
2013	Grass Foundation–American Epilepsy Society Young Investigator Travel Award
2016, 2021	List of Teachers Ranked as Excellent, University of Illinois Urbana-Champaign
2017	Neuroscience Program nominee, Blavatnik Award for Young Scientists, UIUC
2020-2021	Center for Advanced Study Fellow, University of Illinois Urbana-Champaign
2023	University of Virginia School of Medicine Distinguished Achievement in Biomedical Sciences Award

RESEARCH SUPPORT

Current

NIH R01 NS105825 "Neural and pituitary mechanisms linking epilepsy to co-morbid reproductive endocrine dysfunction."
April 1, 2018 – March 31, 2024
$1,093,750 direct costs
Role: PI

NIH R21 NS124980 "Differential roles of neuronal and astrocytic aromatase in status epilepticus and chronic epilepsy."
September 30, 2021 – February 28, 2024
$275,000 direct costs
Role: PI

American Epilepsy Society/Hope for Hypothalamic Hamartomas Seed Grant, "Developing a mouse model of hypothalamic hamartoma."
March 1, 2022 – February 28, 2024
$20,000 direct costs
$2,060 supplemental direct costs, Hope for Hypothalamic Hamartomas
Role: PI

NIH RF1 NS126061 BRAIN Initiative: "Miniaturized silicon neurochemical probe to monitor brain chemistry."
May 3, 2022 – April 30, 2025
$2,160,426 direct costs ($161,981 to Christian-Hinman)
Role: Co-I (PI: Yurii Vlasov)

NIH R21 AG077694 "Roles of neuroestradiol in comorbid hyperexcitability and seizure susceptibility in Alzheimer Disease."
May 15, 2022 – April 30, 2024
$275,000 direct costs
Role: PI

Primary sponsorship of **NIH F31 NS124306** Individual Predoctoral National Research Service Award, "Epilepsy-Associated Dysfunction in the Kisspeptin-GnRH Neural Circuit," for Mr. Robbie Ingram.
February 1, 2022 – January 31, 2025
$135,605 direct costs

NIH R01 NS126584 "Dynamic changes in PIP2 binding sites and their impact on axonal targeting and function of epilepsy-associated KCNQ/Kv7 channels."
June 15, 2023 – May 31, 2028
$993,981 direct costs ($77,730 to Christian-Hinman)
Role: Co-I (PI: Hee Jung Chung)

Previous
NIH T32 GM008328 Institutional NIH Predoctoral Training Grant, "Predoctoral Training in Neuroscience." Appointed September 1, 2002 – August 31, 2003

NIH F31 NS053253 Individual Predoctoral National Research Service Award, "Central Synaptic Mechanisms Regulating Ovulation." December 1, 2005 – November 30, 2007 (Role: PI)

NIH T32 NS007280 Institutional NIH Postdoctoral Training Grant, "Epilepsy Training Program."

Epilepsy Foundation of America Postdoctoral Research Fellowship, "Dynamics of Glial and Neuronal Release of Endozepines in the Thalamus." July 1, 2011 – June 30, 2012 (Role: PI)

Stanford University School of Medicine Katharine McCormick Advanced Postdoctoral Fellowship, "Optical Stimulation of Astrocytic Endozepine Release in the Thalamus." October 1, 2012 – December 31, 2013 (Role: PI)

Citizens United for Research in Epilepsy (CURE) Taking Flight Award, "Modulation of GABAergic Transmission and Absence Seizures by Optical Stimulation of Astrocytes." January 1, 2014 – July 31, 2015. $100,000 direct costs (Role: PI)

Brain and Behavior Research Foundation NARSAD Young Investigator Grant, "Endozepine/Benzodiazepine Interactions in Modulating Synaptic Inhibition and Cognition." January 15, 2016 – July 14, 2018. $70,000 direct costs (Role: PI)

Whitehall Foundation Three-Year Research Grant, "Astrocytic Modulation of Synaptic Inhibition." March 15, 2016 – March 30, 2020. $207,659 direct costs (Role: PI)

Brain Research Foundation Fay/Frank Seed Grant, "Optoglial Modulation of Inhibition and Seizure Susceptibility." June 1, 2016 – November 30, 2018. $80,000 direct costs (Role: PI)
Primary co-sponsorship of **Beckman Institute Graduate Fellowship** for Ms. Jiang Li, August 16, 2016 – July 15, 2017 (co-sponsor: Dr. Mark Nelson) $25,000 direct costs

NIH S10 OD023569 "An upright multiphoton microscope for biomedical research applications." March 1, 2017 – February 28, 2018. $770,546 direct costs (Role: Minor User; PI: Daniel Llano)

Primary co-sponsorship of **Beckman Institute Postdoctoral Fellowship** for Dr. Courtney Sobieski, (co-sponsors: Dr. Stephen Boppart, Dr. Justin Rhodes, Dr. Parijat Sengupta)
July 1, 2017 – June 30, 2020 (terminated Aug 2018 to accept new position outside UIUC)
$186,000 direct costs

NIH R03 NS103029 "Lateralized targeting of hippocampus to model interactions between epilepsy and reproductive endocrine disorders." July 15, 2018 – June 30, 2021. $100,000 direct costs (Role: PI)

NIH R01 NS105825-S1 Research Supplement to Promote Diversity in Health-Related Research, for training Mr. Robbie Ingram. April 1, 2019 – March 31, 2022. $131,469 direct costs (Role: PI/Mentor)

NIH R03 NS103029-S1 Administrative Supplement for Research on Sex/Gender Influences
July 1, 2019 – June 30, 2021. $32,354 direct costs (Role: PI)

CURE Epilepsy Epilepsy Research Continuity Fund Grant
September 1, 2020 – March 31, 2021. $15,000 direct costs (Role: PI)

PUBLICATIONS

Original Research:

1. **Christian CA,** Harrington ME 2002 Three days of novel wheel access diminishes light-induced phase delays *in vivo* with no effect on *Per1* induction by light. ***Chronobiology International*** 19:671-682.

2. **Christian CA,** Mobley JL, Moenter SM 2005 Diurnal and estradiol-dependent changes in gonadotropin-releasing hormone neuron firing activity. ***Proceedings of the National Academy of Sciences of the United States of America*** 102:15682-15687 (Track II/Direct Submission).

3. **Christian CA,** Moenter SM 2007 Estradiol induces diurnal shifts in GABA transmission to gonadotropin-releasing hormone neurons to provide a neural signal for ovulation. ***The Journal of Neuroscience*** 27:1913-1921.

4. **Christian CA,** Moenter SM 2008 Vasoactive intestinal polypeptide can excite gonadotropin-releasing hormone neurons in a manner dependent on estradiol and gated by time of day. ***Endocrinology*** 149:3130-3136.
    - Highlight review in *Endocrine News*, May 2008

5. **Christian CA*,** Glidewell-Kenney C*, Jameson JL, Moenter SM 2008 Classical estrogen receptor α signaling mediates negative and positive feedback on gonadotropin-releasing hormone neuron firing. ***Endocrinology*** 149:5328-5334. (*equal contribution)
    - News and Views Editorial highlight: Wadas and Tobet, "Unique Estrogenic Mechanisms for Unique Gonadotropin-Releasing Hormone Neurons?" *Endocrinology* 149:5325-5327

6. **Christian CA,** Moenter SM 2008 Critical roles for fast synaptic transmission in mediating estradiol negative and positive feedback in the neural control of ovulation. ***Endocrinology*** 149:5500-5508.

7. **Christian CA,** Pielecka-Fortuna J, Moenter SM 2009 Estradiol suppresses glutamatergic transmission to gonadotropin-releasing hormone neurons in a model of negative feedback in mice. ***Biology of Reproduction*** 80:1128-1135.

8. Paz JT, **Christian CA,** Parada I, Prince DA, Huguenard JR 2010 Focal cortical infarcts alter intrinsic excitability and synaptic excitation in the reticular thalamic nucleus. ***The Journal of Neuroscience*** 30:5465-5479.
    - This Week in the Journal highlight, *The Journal of Neuroscience* 30(15):i

9. **Christian CA,** Herbert AG, Holt RL, Peng K, Sherwood KD, Pangratz-Fuehrer S, Rudolph U, Huguenard JR 2013 Endogenous positive allosteric modulation of $GABA_A$ receptors by *Diazepam binding inhibitor*. ***Neuron*** 78:1063-1074. (co-corresponding author)
    - Preview Editorial highlight: Harward and McNamara, "In Search of the Ever-Elusive Positive Endozepine," *Neuron* 78:951-952
    - Editor's Choice highlight: Gough, "Two Endogenous Modulators in One," *Science Signaling*, 6:ec144
    - Lab Report highlight: Hampton, "Brain Protein May Suggest New Epilepsy Treatment Strategy," *Journal of the American Medical Association*, 310:22
    - Research Highlight: Bucci, "A positive for GABA," *Nature Chemical Biology* 9:529
    - F1000Prime Recommended Article

    Selected news media coverage:
    - TIME "Brain's Own 'Valium' Discovered" http://healthland.time.com/2013/05/31/brains-own-valium-discovered/
    - Fox News "Brain capable of making its own version of Valium, researchers find" http://www.foxnews.com/health/2013/05/30/brain-capable-making-own-version-valium-researchers-find/

10. **Christian CA,** Huguenard JR 2013 Sniffer Patch Laser Uncaging REsponse (SPLURgE): an assay of regional differences in allosteric receptor modulation and neurotransmitter clearance. ***Journal of Neurophysiology*** 110:1722-1731.

11. **Christian CA,** Huguenard JR 2013 Astrocytes potentiate GABAergic transmission in the thalamic reticular nucleus via endozepine signaling. ***Proceedings of the National Academy of Sciences of the United States of America*** 110:20278-20283. (corresponding author)
    - Outlook Highlight, Eisenstein, "Neurobiology: Unrestrained excitement," *Nature,* 511:S4-S6

12. Jewett KA, **Christian CA,** Bacos JT, Lee KY, Zhu J, Tsai NP 2016 Feedback modulation of neural network synchrony and seizure susceptibility by Mdm2-p53-Nedd4-2 signaling. ***Molecular Brain*** 9:32.

13. Li J, Kim JS, Abejuela VA, Lamano JB, Klein NJ, **Christian CA** 2017 Disrupted female estrous cyclicity in the intrahippocampal kainic acid mouse model of temporal lobe epilepsy. ***Epilepsia Open*** 2:39-47.
    - Cover image selection
    - Winner, 2018 Epilepsia Open Basic Science Prize
    - Highlight: "An interview with Jiang Li, 2018 Epilepsia Open Prize Winner for Basic Science Research." *Epilepsia Open,* doi:10.1002/epi4.12115
    - Commentary Highlight, Mazarati and Galanopoulou, *Epilepsia Open,* doi:10.1002/epi4.12116

14. Makinson CD, Tanaka BS, Sorokin JM, Wong JC, **Christian CA**, Goldin AL, Escayg A, Huguenard JR 2017 Regulation of thalamic and cortical network synchrony by *Scn8a*. ***Neuron*** 93:1165-1179.

15. Ujjainwala AL, Courtney CD, Rhoads SG, Rhodes JS, **Christian CA** 2018 Genetic loss of diazepam binding inhibitor in mice impairs social interest. ***Genes, Brain and Behavior*** 17:e12442.

16. Courtney CD, **Christian CA** 2018 Subregion-specific impacts of genetic loss of diazepam binding inhibitor on synaptic inhibition in the murine hippocampus. ***Neuroscience*** 388:128-138.

17. Li J, Robare JA, Gao L, Ghane MA, Flaws JA, Nelson ME, **Christian CA** 2018 Dynamic and sex-specific changes in gonadotropin-releasing hormone neuron activity and excitability in a mouse model of temporal lobe epilepsy. ***eNeuro*** 5:ENEURO.0273-18.2018

    Selected news media coverage:
    - AAAS EurekAlert "Effects of epilepsy on neural activity in mice fluctuate with reproductive cycle" https://www.eurekalert.org/pub_releases/2018-10/uoia-eoe101218.php
    - Citizens United for Research in Epilepsy https://www.cureepilepsy.org/news/effects-of-epilepsy-on-neural-activity-in-mice-fluctuate-with-reproductive-cycle/

18. Adams CE, DeFazio RA, **Christian CA**, Milescu LS, Schnell S, Moenter SM 2019 Changes in both neuron intrinsic properties and neurotransmission drive the increase in GnRH neuron firing rate during estradiol positive feedback. ***The Journal of Neuroscience*** 39:2091-2101
    - Cover image selection
    - This Week in the Journal highlight, *The Journal of Neuroscience* 39:1965

19. Ujjainwala AL, Courtney CD, Wojnowski NM, Rhodes JS, **Christian CA** 2019 Differential impacts on multiple forms of spatial and contextual memory in diazepam binding inhibitor knockout mice. ***Journal of Neuroscience Research*** 97:683-697

20. Pantier LK, Li J, **Christian CA** 2019 Estrous cycle monitoring in mice with rapid data visualization and analysis. ***Bio-Protocol*** 9:e3354

21. Lawande NV, Ujjainwala AL, **Christian CA** 2020 A single test to study social behavior and repetitive self-grooming in mice. ***Bio-Protocol*** 10:e3499

22. **Christian CA** 2020 Nucleus-specific modulation of phasic and tonic inhibition by endogenous neurosteroidogenesis in the murine thalamus. ***Synapse*** 74:e22144

23. Li J, Leverton LK, Naganatanahalli LM, **Christian-Hinman CA** 2020 Seizure burden fluctuates with the female reproductive cycle in a mouse model of chronic temporal lobe epilepsy. ***Experimental Neurology*** 334:113492.

24. Liu YZ, Renteria C, Courtney CD, Ibrahim B, You S, Chaney EJ, Barkalifa R, Iyer RR, Zurauskas M, Tu H, Llano DA, **Christian-Hinman CA,** Boppart SA 2020 Simultaneous two-photon activation and imaging of neural activity based on spectral-temporal modulation of supercontinuum light. ***Neurophotonics*** 7:045007.

25. Lee KY, Zhu J, Cutia CA, **Christian-Hinman CA,** Rhodes JS, Tsai NP 2021 Infantile spasms-linked Nedd4-2 mediates hippocampal plasticity and learning via cofilin signaling. ***EMBO Reports*** 22:e52645.

26. Kim EC, Zhang J, Tang AY, Bolton EC, Rhodes JS, **Christian-Hinman CA,** Chung HJ 2021 Spontaneous seizure and memory loss in mice expressing an epileptic encephalopathy variant in the calmodulin-binding domain of $K_V7.2$. ***Proceedings of the National Academy of Sciences of the United States of America*** 118:e2021265118.
    - Commentary Highlight: Bottom-Tanzer and Dulla, "Keeping up with KCNQ2: A New Model of Epileptic Encephalopathy," *Epilepsy Currents*, 22:141-143

27. Walters JM, Kim EC, Zhang J, Jeong HG, Bajaj A, Baculis B, Tracy G, Ibrahim B, **Christian-Hinman CA**, Llano DA, Huesmann GR, Chung HJ 2022 Pharmacological inhibition of STriatal-Enriched protein tyrosine Phosphatase by TC-2153 reduces hippocampal excitability and seizure propensity. ***Epilepsia*** 63:1211-1224.

28. Cutia CA, Leverton LK, Ge X, Youssef R, Raetzman LT, **Christian-Hinman CA** 2022 Phenotypic differences based on lateralization of intrahippocampal kainic acid injection in female mice. ***Experimental Neurology*** 355:114118.

29. Li J, **Christian-Hinman CA** 2022 Epilepsy-associated increase in gonadotropin-releasing hormone neuron firing in diestrous female mice is independent of chronic seizure burden severity. ***Epilepsy Research*** 184:106948.

30. Ingram RJ, Leverton LK, Daniels VC, Li J, **Christian-Hinman CA** 2022 Increased GABA transmission to GnRH neurons after intrahippocampal kainic acid injection in mice is sex-specific and associated with estrous cycle disruption. ***Neurobiology of Disease*** 172:105822.
    - Commentary Highlight: Carpenter and Lignani, "Sex on the Brain: Reproductive Comorbidities in Temporal Lobe Epilepsy," *Epilepsy Currents,* 23:58-60.

31. Cutia CA, Leverton LK, Weis KE, Raetzman LT, **Christian-Hinman CA** 2023 Female-specific pituitary gonadotrope dysregulation in mice with chronic focal epilepsy. ***Experimental Neurology*** 364:114389.

32. Cutia CA, Leverton LK, **Christian-Hinman CA** 2023 Sex and estrous cycle stage shape left-right asymmetry in chronic hippocampal seizures in mice. ***eNeuro*** 10:ENEURO.0041-23.2023.
    - eNeuro Featured Research highlight

33. Nagarajan R, Lyu J, Kambali M, Wang M, Courtney CD, **Christian-Hinman CA,** Rudolph U 2023 Genetic ablation of dentate hilar somatostatin-positive GABAergic interneurons is sufficient to induce cognitive impairment. ***Molecular Neurobiology*** in press

34. Lee KY, Wang H, Yook Y, Rhodes JS, **Christian-Hinman CA,** Tsai NP 2023 Tumor suppressor p53 modulates activity-dependent synapse strengthening, autism-like behavior and hippocampus-dependent learning. ***Molecular Psychiatry*** in press

35. Lawande NV, Conklin EA, **Christian-Hinman CA** 2023 Sex and gonadectomy modify behavioral seizure susceptibility and mortality in a repeated low-dose kainic acid systemic injection paradigm in mice. ***Epilepsia Open*** in press

36. Courtney CD, Sobieski C, Ramakrishnan C, Ingram RJ, Wojnowski NM, DeFazio RA, Deisseroth K, **Christian-Hinman CA** 2023 Optoα1AR activation in astrocytes modulates basal hippocampal synaptic excitation and inhibition in a stimulation-specific manner. ***Hippocampus*** in press

Reviews:

1. Moenter SM, Chu Z, **Christian CA** 2009 Neurobiological mechanisms underlying oestradiol negative and positive feedback regulation of gonadotrophin-releasing hormone neurones. ***Journal of Neuroendocrinology*** 21:327-333.

2. **Christian CA,** Moenter SM 2010 The neurobiology of preovulatory and estradiol-induced gonadotropin-releasing hormone surges. ***Endocrine Reviews*** 31:544-577. (corresponding author)

3. **Christian CA,** Reddy DS, Maguire J, Forcelli PA 2020 Sex Differences in the Epilepsies and Associated Comorbidities: Implications for Use and Development of Pharmacotherapies. ***Pharmacological Reviews*** 72:767-800. (corresponding author)

4. Alquier T, **Christian-Hinman CA**, Alfonso J, Færgeman NJ 2021 From benzodiazepines to fatty acids: Revisiting the role of ACBP/DBI. ***Trends in Endocrinology and Metabolism*** 32:890-903.

5. Cutia CA, **Christian-Hinman CA** 2023 Mechanisms linking neurological disorders with reproductive endocrine dysfunction: Insights from epilepsy research. ***Frontiers in Neuroendocrinology*** 71:101084.

Book Chapters:

1. **Christian CA** 2017 Neurophysiology of Gonadotropin-Releasing Hormone Neurons. Invited chapter in ***Hormones, Brain and Behavior***, 3rd edition, Donald W. Pfaff and Marian Joëls, eds. Oxford: Academic Press. Vol. 3, pp. 379-400.

2. **Christian-Hinman CA,** Harden CL 2023 Chapter 76, Hormone Changes in Epilepsy. Invited chapter in ***Epilepsy: A Comprehensive Textbook***, 3rd edition, Jerome Engel, Jr. and Solomon L. Moshé, eds. Wolters Kluwer Health.

Commentaries:

1. **Christian CA** 2016 Seizure Activity and Intervention Efficacy are Shaped by REMnants of Preceding Brain States. ***Epilepsy Currents*** 16:164-165.

2. **Christian CA** 2016 A Nose for Seizures: A Potential Role for Olfaction in the Co-Morbidity of Depression and Epilepsy? ***Epilepsy Currents*** 16:256-257.

3. **Christian CA** 2017 Mom Genes: A Role for Loss of Maternal *Ube3a* in GABAergic Neurons in Angelman Syndrome. ***Epilepsy Currents*** 17:237-238.

4. Sobieski C, **Christian CA** 2017 Developmental Inflammation Takes a Toll: Early Immune Responses Increase Seizure Susceptibility via Astrocytic TLR4 Signaling. ***Epilepsy Currents*** 17:370-371

5. **Christian CA** 2018 Persistent Protection Against Pathology and Paroxysms by P2X7R Antagonism. ***Epilepsy Currents*** 18:42-44.

6. **Christian CA** 2018 The Perils of Generalizing About GABA in Seizure Generalization. ***Epilepsy Currents*** 18:113-114.

7. Courtney CD, **Christian CA** 2019 Inhibition Gets a New KAR Smell. ***Epilepsy Currents*** 19:187-189.

8. Lozano L, **Christian CA** 2020 Show Me the Meaning of Being Lonely (and Its Effects on Seizure Burden and Comorbidities). ***Epilepsy Currents*** 20:48-50.

9. Courtney CD, **Christian-Hinman C** 2020 Assessin' the Vexin' Connexin Between Severity of Epilepsy and Hippocampal Gliosis. ***Epilepsy Currents*** 20:294-296.

10. **Christian-Hinman CA** 2021 Is On-Demand Dynorphin Destined to Be in Demand to Decrease Seizures? ***Epilepsy Currents*** 21:48-50.

OTHER RESEARCH PRODUCTS

1. **BurstAnalysis:** MATLAB code to construct interspike interval (ISI) scatter plots and histograms, identify optimal burst ISI threshold, identify which neurons are bursting neurons, and evaluate bursting neurons for detailed burst properties (2018) https://github.com/ChristianLabUIUC/BurstAnalysis

2. **EstrousCycle:** Python code for mouse estrous cycle plot visualization and analysis (2019) https://github.com/ChristianLabUIUC/EstrousCycle

3. **SeizureDetector:** Python code for a machine learning algorithm to detect spontaneous seizures in hippocampal EEG recordings from mice (2020) https://github.com/ChristianLabUIUC/SeizureDetector

LABORATORY TRAINEES

University of Illinois Urbana-Champaign

Postdoctoral Researchers

Courtney Sobieski 2017-2018
- 2017-2020 Beckman Institute Postdoctoral Fellowship (concluded August 2018)
- Current: Senior Clinical Development Manager, Philips

Remya Rajan 2020-present
- 2023 American Epilepsy Society Fellows Program

Alexander French 2022-present

Graduate Students

Jiang Li 2015-2020 Neuroscience Program
- 2016-2017 Beckman Institute Graduate Fellowship
- 2018 *Epilepsia Open* Basic Science Prize winner
- 2018 American Epilepsy Society Meeting, Investigators Workshop Outstanding Abstract selection
- 2019 C. Ladd Prosser Scientific Achievement Award, Neuroscience Program
- as of February 2020: Research Scientist

Connor Courtney 2015-2021 Neuroscience Program
- 2017 1st Place Oral Presentation Award, MIP Department Retreat
- 2019 UIUC nominee, NIH Outstanding Scholars in Neuroscience Award
- 2020 Graduate College Summer Block Grant Fellowship
- 2021 Neuroscience Program Fellowship
- June 2021: Postdoc, C. Savio Chan lab, Northwestern University Feinberg School of Medicine
    - 2021-2023 Parkinson's Foundation Postdoctoral Fellowship

Robbie Ingram 2018-present Neuroscience Program
- 2020 UIUC nominee, Howard Hughes Medical Institute Gilliam Fellowship
- 2020 American Epilepsy Society Meeting, Investigators Workshop Outstanding Abstract selection
- 2022-2025 Individual Predoctoral National Research Service Award, NIH/NINDS
- 2023 2nd Place Poster Presentation, School of MCB Graduate Research Retreat
- 2023 C. Ladd Prosser Scientific Achievement Award, Neuroscience Program

Cathryn Cutia 2019-present Neuroscience Program
- 2023 NSP nominee, UIUC Graduate College Dissertation Completion Fellowship
- 2023 Albert Feng Graduate Research Award, Neuroscience Program

Elisabeth Conklin 2021-2023 Neuroscience Program
- 2021-2022 Neuroscience Program Fellowship

Mitra Kulkarni 2023-present Neuroscience Program

Undergraduate Students

Vincent Abejuela 2014-2016 MCB/Physics '16
- 2015 MCB Summer Research Fellowship
- 2016 MCB Thesis awarded High Distinction

Prince Boadi 2018-2019 MCB '20

Shivang Chaudhary 2017-2019 MCB/Psychology '19
- 2018 Carle Neuroscience Institute Undergraduate Research Award
- 2018 MCB Summer Research Fellowship
- 2019 MCB Thesis awarded Highest Distinction
- 2019 – Medical Student, St. Louis University School of Medicine

Niko Corrales 2023-present MCB '25

Anisa (Insia) Hakim 2017 MCB/Psychology '19

Sukji (Sally) Han 2020-2021 MCB '21

Natalie Klein 2015-2016 MCB '17
- 2016 MCB Summer Research Fellowship (awarded)

Jason Lamano 2014-2016 MCB/Psychology '16
- 2015 MCB Summer Research Fellowship
- 2016 MCB Thesis awarded High Distinction
- 2016 – Research Technologist, Northwestern University School of Medicine
- 2018 – Medical Student, Loyola University Chicago Stritch School of Medicine

Niraj Lawande 2019-2022 MCB '22
- 2019 Campus Honors Program Summer Research Grant
- 2020 MCB Summer Research Fellowship
- 2020 Beckman Institute Undergraduate Fellowship
- 2021 Jenner Family Summer Research Fellowship, MCB
- 2021 Campus Honors Program Summer Research Grant
- 2021 School of MCB Research Presentation Award
- 2022 MCB Thesis awarded Highest Distinction
- 2022 MIP Howard S. Ducoff Award for Outstanding Senior Thesis

Rao Li 2015-2016 MCB '17
- 2016 MCB Summer Research Fellowship
- 2017 – Graduate Student, Cybersecurity, New York University

Mia Maren	2022	MCB '24
Morgan McCarthy	2022-2023	MCB '23
Ethan Miranda	2021	MCB '23
L. Manisha Naganatanahalli	2018-2020	MCB '21

- 2020 MCB Summer Research Fellowship

Abhishek Pandravada	2020	MCB '21
Jill Patel	2020-2021	MCB '22
Denise Reynish	2014-2017	MCB '17

- 2016 MCB Summer Research Fellowship

Jordyn Robare	2016	MCB '16
Jessica Rose	2022-present	MCB '24

- 2023 Dawn M. Carlson Research Fellowship for Women in Science, MCB

Lillian Scanlon	2017-2018	MCB '18

- 2018 MCB Thesis awarded High Distinction

Terra Scranton	2016-2017	MCB '18
Olivia Swanson	2022	MCB '24
Ammar Ujjainwala	2015-2017	MCB/Psychology '17

- 2017 MCB Summer Research Fellowship
- 2017 MCB Thesis awarded High Distinction
- 2018 MIP Howard S. Ducoff Award for Outstanding Senior Thesis

Akhil Vytla	2023-present	MCB '26
Natalia Wojnowski	2017-2018	MCB/Economics '18

- 2017 Beckman Institute Undergraduate Fellowship
- 2017 MCB Summer Research Fellowship
- 2018 MCB Thesis awarded Highest Distinction
- 2019 – Medical Student, Northwestern University Feinberg School of Medicine

Rana Youssef	2018-2020	MCB '20

- 2019 Erik Haferkamp Memorial Award for Undergraduate Research
- 2019 MCB Summer Research Fellowship
- 2020 MCB Thesis awarded Highest Distinction
- 2020 MIP Howard S. Ducoff Award for Outstanding Senior Thesis
- 2021 – Medical Student, Northeast Ohio Medical University

Rotation Students

Benedict Igwe	Fall 2014	Neuroscience Program
Xuewei (Vivi) Chen	Fall 2019	MCB
Humayra Oishi	Fall 2021	MCB
Xinyi Dai	Fall 2021	MCB
Gargi Palashikar	Fall 2021	MCB
Lu (Lucy) Liu	Fall 2023	MCB

Community College Students

Adrian Garcia	Summer 2019	Moraine Valley Community College

- Phenotypic Plasticity Research Experience for Community College Students (PRECS) Program

Research Technicians

Victoria Daniels 2021-2022
- 2022 - Research Analyst, LabCorp

Mohammed Amin Ghane 2015-2017
- 2017 - Graduate Student in Neuroscience, Georgia State University

Jae Seong (David) Kim 2015
- 2016 - Graduate Student, Yonsei University, South Korea

Niraj Lawande 2022

Leanna Leverton 2018-2021
- 2021 – Graduate Student in Biomedical Sciences, University of Illinois at Chicago

Lola Lozano 2019-2020
- 2020 – M.D./Ph.D. student, Carver College of Medicine, University of Iowa

Stacey Ma 2022-2023
- 2023 – Veterinary Student, Cornell University

Steven Rhoads 2016-2017

Jordyn Robare 2017-2018
- 2018 – Graduate Student in Chemistry & Biochemistry, Arizona State University

Danielle Schuh 2018-2019

Alexandra Seielstad 2023-present

Ammar Ujjainwala 2018
- 2018 - Medical Student, University of Illinois College of Medicine at Peoria

GRADUATE STUDENT DISSERTATION AND EXAM COMMITTEES

University of Illinois Urbana-Champaign

Dissertation Defense

Brian Baculis	2022	Neuroscience Program
Matthew Biehl	2017	Molecular and Integrative Physiology/MSP
Elizabeth Davis	2018	Neuroscience Program
Xiyu Ge	2022	Molecular and Integrative Physiology
Santanu Ghosh	2022	Biochemistry
Rachel Gonzalez	2021	Neuroscience Program
Eman Hamed	2022	Neuroscience Program
Samuel Irving	2017	Molecular and Integrative Physiology/MSP
Sung-Soo Jang	2019	Neuroscience Program
Shuo Kang	2018	Neuroscience Program
Alexandria Lesicko	2018	Neuroscience Program
Daphne Lodes	2021	Molecular and Integrative Physiology
Zoë MacDowell Kaswan	2023	Neuroscience Program
Stephanie Soriano	2022	Neuroscience Program
Hua-Chia Tai	2018	Molecular and Integrative Physiology
Emily Tillmaand	2018	Neuroscience Program/MSP
Gregory Tracy	2023	Molecular and Integrative Physiology
Jennifer Walters	2022	Neuroscience Program
Mia Yu	2018	Molecular and Integrative Physiology/MSP

Preliminary Exam

Brian Baculis	2020	Neuroscience Program
Matthew Biehl	2015	Molecular and Integrative Physiology/MSP

Elizabeth Davis	2018	Neuroscience Program
Anupriya Edappalil Satheesan	2022	Chemistry
Xiyu Ge	2022	Molecular and Integrative Physiology
Rachel Gonzalez	2021	Neuroscience Program
Eman Hamed	2021	Neuroscience Program
Samuel Irving	2016	Molecular and Integrative Physiology/MSP
Sung-Soo Jang	2018	Neuroscience Program
Shuo Kang	2017	Neuroscience Program
Alexandria Lesicko	2017	Neuroscience Program
Daphne Lodes	2021	Molecular and Integrative Physiology
Zoë MacDowell Kaswan	2020	Neuroscience Program
Alokananda Ray	2016	Cell and Developmental Biology
Stephanie Soriano	2021	Neuroscience Program
Hua-Chia Tai	2016	Molecular and Integrative Physiology
Emily Tillmaand	2017	Neuroscience Program/MSP
Gregory Tracy	2022	Molecular and Integrative Physiology
Jennifer Walters	2022	Neuroscience Program
Mia Yu	2016	Molecular and Integrative Physiology/MSP

Qualifying Exam

Anjana Asokakumar	2021	Molecular and Integrative Physiology
Brian Baculis	2018	Neuroscience Program
Daniel Castro	2020	Molecular and Integrative Physiology
Jessie Cook	2022	Molecular and Integrative Physiology
Anasuya Das Gupta	2021	Molecular and Integrative Physiology
Xiyu Ge	2019	Molecular and Integrative Physiology
Nicole Godellas	2021	Molecular and Integrative Physiology
Eman Hamed	2020	Neuroscience Program
Steven Hobbs	2022	Molecular and Integrative Physiology
Sung-Soo Jang	2016	Neuroscience Program
Alexandria Lesicko	2015	Neuroscience Program
Keyin Li	2022	Neuroscience Program
Yushan Liu	2023	Molecular and Integrative Physiology
Simon Lizarazo	2021	Molecular and Integrative Physiology
Daphne Lodes	2019	Molecular and Integrative Physiology
Liqian Ma	2018	Molecular and Integrative Physiology
Qiuyan Ma	2018	Molecular and Integrative Physiology
Zoë MacDowell Kaswan	2018	Neuroscience Program
Ghazal Naseri Kouzehgarani	2016	Neuroscience Program
Adam Nelczyk	2020	Molecular and Integrative Physiology
James Nguyen	2019	Molecular and Integrative Physiology
Quang Nguyen	2022	Molecular and Integrative Physiology
Ingrid Possa Paranhos	2023	Molecular and Integrative Physiology
Kenneth Samuel	2023	Molecular and Integrative Physiology
Valeria Sanabria Guillen	2018	Molecular and Integrative Physiology
Jessica Saw	2018	Molecular and Integrative Physiology
Anushna Sen	2019	Molecular and Integrative Physiology
Ryan Shaw	2020	Molecular and Integrative Physiology

Stephanie Soriano	2020	Neuroscience Program
Hao Sun	2018	Molecular and Integrative Physiology
Gregory Tracy	2019	Molecular and Integrative Physiology
Hashini Vidana Gamage	2021	Molecular and Integrative Physiology
Jennifer Walters	2020	Neuroscience Program
Amanda Weiss	2019	Molecular and Integrative Physiology
Gang Xiao	2021	Molecular and Integrative Physiology
Yeeun Yook	2021	Molecular and Integrative Physiology
Jiaren Zhang	2018	Molecular and Integrative Physiology

Diagnostic Committee (First-Year Project)

Brian Baculis	2018	Neuroscience Program
Kerem Catalbas	2023-2024	Neuroscience Program
Eman Hamed	2019	Neuroscience Program
Zoë MacDowell Kaswan	2016-2018	Neuroscience Program
Hayden Noblet	2023-2024	Neuroscience Program
Stephanie Soriano	2018-2019	Neuroscience Program
Jennifer Walters	2019-2020	Neuroscience Program
Muxiao Wang	2021-2022	Neuroscience Program

TEACHING

Smith College
Undergraduate Students
1999 Tutor, Introduction to Neuroscience (Psychology 210)

University of Virginia
Graduate Students
2005 Tutor, Graduate Physiology (Biomedical Sciences 8320)

Undergraduate Students
2006 Teaching Assistant, Animal Behavior Laboratory (Biology 427)

Stanford University
Graduate Students
2011 Rotation project supervisor for Zoya Farzampour, Neurosciences Ph.D. Program

University of Illinois Urbana-Champaign
Undergraduate and Graduate Students
MCB 401 Cell and Membrane Physiology (2018-2019)
Course Director and Sole Lecturer (42 hours/year)

MCB 401 Cellular Physiology (2021-present)
Course Director and Sole Lecturer (42 hours/year)

Undergraduate Students

MCB 290 Undergraduate Research

Vincent Abejuela (Fall 2014-Fall 2015)
Prince Boadi (Fall 2018-Spring 2019)
Shivang Chaudhary (Fall 2017-Fall 2018)
Niko Corrales (Summer 2023-present)
Anisa (Insia) Hakim (Spring 2017)
Sukji (Sally) Han (Fall 2020-Spring 2021)
Natalie Klein (Fall 2015-Spring 2016)
Jason Lamano (Fall 2014-Fall 2015)
Niraj Lawande (Fall 2019-Spring 2020, Spring 2021-Fall 2021)
Rao Li (Fall 2015-Fall 2016)
Mia Maren (Spring 2022-Fall 2022)
Morgan McCarthy (Fall 2022-Spring 2023)
Ethan Miranda (Fall 2021)
Manisha Naganatanahalli (Fall 2018-Spring 2020)
Abhishek Pandravada (Fall 2020)
Jill Patel (Spring 2020-Spring 2021)
Denise Reynish (Fall 2014-Fall 2016)
Jessica Rose (Spring 2022-present)
Lillian Scanlon (Summer 2017-Fall 2017)
Terra Scranton (Fall 2016-Spring 2017)
Olivia Swanson (Fall 2022)
Ammar Ujjainwala (Spring 2016-Spring 2017)
Akhil Vytla (Summer 2023)
Natalia Wojnowski (Spring 2017-Fall 2017)
Rana Youssef (Summer 2018-Fall 2019)

MCB 492 Senior Thesis

Vincent Abejuela (Spring 2016)
Shivang Chaudhary (Spring 2019)
Jason Lamano (Spring 2016)
Niraj Lawande (Spring 2022)
Denise Reynish (Spring 2017)
Lillian Scanlon (Spring 2018)
Ammar Ujjainwala (Fall 2017)
Natalia Wojnowski (Spring 2018)
Rana Youssef (Spring 2020)

Graduate Students

NEUR 542 Interdisciplinary Approaches to Neuroscience

Lecturer (3 hours/year 2015-2019, 1 hour/year 2021-present)

NEUR 520 Professional Skills and Ethics

Guest Lecturer (1 hour, Spring 2019): Grant Writing and the NIH Grant Review Process
Guest Lecturer (1 hour, Spring 2022): NIH NRSA Graduate Fellowships

Medical Students
University of Illinois College of Medicine at Urbana
M2 Pharmacology (2016-2018)
Primary Lecturer for Neuropharmacology (26 hours/year)

M1 Neuroscience (2016)
Lecturer (3 hours) and Team-Based Learning Co-Facilitator (2 hours)

Carle-Illinois College of Medicine
M1 Brownbag (2020)
Lecturer (1 hour)

EDITORIAL ACTIVITIES

2016–2021
Contributing Editor, *Epilepsy Currents* – official journal of American Epilepsy Society

Ad hoc reviewer: *Biology of Reproduction; BMC Neuroscience; Brain; Brain Research Bulletin; Brain Sciences; Endocrinology; eNeuro; Epilepsia; Epilepsia Open; Epilepsy & Behavior; Experimental Neurology; Hippocampus; Journal of Neuroinflammation; Journal of Neuroscience; Journal of Neuroscience Research; Journal of Pharmacology and Experimental Therapeutics; Journal of Physiology; Nature; Neurobiology of Disease; Neurochemical Research; Neuroendocrinology; Neuropharmacology; Neuroscience; Neuroscience Letters; Pharmacological Reviews; PLoS One; PNAS; Scientific Reports*

GRANT AND OTHER REVIEW ACTIVITIES

External
Standing member:
- Review Panel, CURE Epilepsy – 2018-2019
- American Epilepsy Society Early Career Grants – 2019-2021
- NIH CNNT (Clinical Neuroplasticity and Neurotransmitters) – July 2021 – June 2025

Ad hoc reviewer:
- CURE Epilepsy
  - Gordon Research Conference Travel Grants – 2014, 2016
  - CURE Epilepsy Award Letters of Intent – 2017
  - CURE Epilepsy Taking Flight Awards – 2021
- L'Agence Nationale de la Recherche (France) - 2015
- Medical Research Council (United Kingdom) - 2016
- NIH SYN (Synapses, Cytoskeleton and Trafficking) – 2017, 2021
- Wellcome Trust (United Kingdom) – 2017
- Biotechnology and Biological Sciences Research Council (United Kingdom) – 2018
- Ministry of Health (Israel) - 2019
- National Science Foundation – 2019
- NIH CNNT (Clinical Neuroplasticity and Neurotransmitters) – 2019, 2020
- Swiss National Science Foundation (Switzerland) – 2020
- Austrian Science Fund (Austria) – 2021

Internal – University of Illinois Urbana-Champaign

Ad hoc reviewer:

Campus Research Board – 2015, 2018, 2023

Pre-Proposal Selection, Office of Vice Chancellor for Research – 2019, 2021

SERVICE - LOCAL

Undergraduate to Postdoctoral

1997-1998	First Year Class Representative, Smith College
1998-1999	Student Academic Adviser, Smith College
1998-1999	Treasurer, Smith College Orchestra
1999	Student Representative, Campus Center Planning Committee, Smith College
2003-2004	Brain Awareness Week Volunteer, Charlottesville and Albemarle County Elementary, Middle, and High Schools
2007	Graduate Recruiter, Office of the Vice President for Research and Graduate Studies, University of Virginia
2007	Student Representative, Peach Award nomination committee for the Neuroscience Graduate Program, University of Virginia
2007	Student Representative, Washington Advisory Group review, Univ. of Virginia
2013	Invited Panelist, New Postdoctoral Scholar Orientation, Stanford University School of Medicine

University of Illinois Urbana-Champaign

Departmental, Program, College, and Campus Committee Service

2015-2019	Newsletter Committee, Department of Molecular and Integrative Physiology
2015-2017	Graduate Admissions Committee, Neuroscience Program
2016-2019	Faculty Senator representing UI College of Medicine at Urbana, UIUC Senate
2017-2019	Seminar Committee, Neuroscience Program
2017-2021	Seminar Committee, Department of Molecular and Integrative Physiology
2017-2021	Prosser Lecture Committee, Department of Molecular and Integrative Physiology
2018-2023	Qualifying Examination Committee, Department of Molecular and Integrative Physiology (Chair, 2021-2023)
2018-2022	Executive Committee, Neuroscience Program
2019	Neuroscience Faculty Search Committee, Department of Comparative Biosciences, College of Veterinary Medicine
2019-2022	Courses and Curriculum Committee, School of Molecular and Cellular Biology
2019	Brain Plasticity Faculty Search Committee, School of Molecular and Cellular Biology
2020-2022	Chair, Awards Committee, Neuroscience Program
2021	Research Scientist Search Committee, Department of Molecular and Integrative Physiology
2021-present	Faculty Senator representing Department of Molecular and Integrative Physiology, UIUC Senate
2022	Five Year Review Committee for MIP Department Head, Prof. Claudio Grosman
2022	Five Year Review Committee for Neuroscience Program Director, Prof. Martha Gillette
2022-present	Courses and Curricula Committee, College of Liberal Arts and Sciences

2023-present Director of Graduate Studies, Department of Molecular and Integrative Physiology
2023-present MIP Representative, Neuroinformatics Cluster Hire Steering Committee
2023-present Chair, Computational Neurobiology Faculty Search Committee, Department of Molecular and Integrative Physiology

Other Campus Activities & Public Engagement:

2015 Invited Panelist, Career Development Workshop, "Building and Negotiating a Start-Up Package in STEM Fields"
2015 Poster Judge, College of Medicine Research Symposium
2016, 2017 Brain Awareness Day Lab Booth – "Hypothalamus – The Brain's Control Center"
2016-2019 Poster Judge, Department of Molecular and Integrative Physiology Retreat
2016 Orange and Blue Days MCB Lab Tour Host
2017 Oral Presentation Judge, Undergraduate Research Symposium
2017 Selected Host, Citizens United for Research in Epilepsy (CURE) Frontiers in Research Seminar Series, Neuroscience Program
Independently awarded funding from CURE ($2,500) to support speaker's travel, honorarium, and other seminar costs
2018, 2019 Brain Awareness Day Lab Booth – "Homunculus – Mapping the Body on the Brain"
2018 Speaker, MCB Graduate Student Association BioCafe Series at Champaign Public Library, "Does Your Brain Make Its Own Valium?"
2018 Poster Presentation Judge, Undergraduate Research Symposium
2018 MIP Department Representative and Name Reader, School of MCB Commencement Ceremony
2019 Oral Presentation Judge, Undergraduate Research Symposium
2019 MIP Department Representative, New Student Convocation
2019 Interviewee on "Period Podcast" – "Is it That Hard to Study Female Mice?" https://periodpodcast2.libsyn.com/s3-episode-34-is-it-that-hard-to-study-female-mice
2020 Poster Presentation Judge, Virtual Undergraduate Research Symposium
2021 Interviewee, SYNAPTalks Neuroscience Majors at Smith College Interview Series
2021 Speaker, Women in STEM Club, University Laboratory High School, Urbana
2022 Invited Panelist, Interdisciplinary Health Sciences Institute (IHSI) NIH Grant Writing Series, "Responding to Reviews"

SERVICE - EXTERNAL

2003 Workshop Facilitator, Symposium for Young Neuroscientists and Professors of the Southeast (SYNAPSE), James Madison University
2005 Co-moderator, Mahesh Neuroendocrine Symposium, Society for the Study of Reproduction Annual Meeting
2014-2017 Member, Scientific Program Committee, American Epilepsy Society
2014-2017 Member, Basic Science Committee, American Epilepsy Society
2017 Mentor, Global STEM Alliance Next Scholars Program, New York Academy of Sciences
2017, 2018 Co-coordinator and Co-chair, "Women in Epilepsy Professions" Workshop Luncheon, American Epilepsy Society Annual Meeting

2017	Invited Panelist, "NIH and Non-Profit Research Resources/Junior Investigator Workshop: Pearls on Writing a Successful Research Proposal," American Epilepsy Society Annual Meeting
2019-2022	Member, Early Career Grant Review Committee, American Epilepsy Society
2019	Member, Gender Diversity Task Force, American Epilepsy Society
2021	Chair, Investigators Workshop, "Emerging Roles of Hypothalamus in Epilepsy and Comorbidities," American Epilepsy Society
2021-2023	Neuroendocrinology Special Interest Group, American Epilepsy Society (2021, Incoming Vice Chair; 2022, Vice Chair; 2023, Chair)
2023-2026	Merritt-Putnam Symposium Committee, American Epilepsy Society (2023, Vice Chair; 2024-2026, Chair)
2023-2026	Annual Meeting Planning Committee, American Epilepsy Society
2023	Invited Panelist, "Career Pathways: Research Careers" Workshop, American Epilepsy Society Annual Meeting *(scheduled)*

PROFESSIONAL SOCIETY MEMBERSHIPS

Society for Neuroscience (2004-present)
American Epilepsy Society (2011-present)
The Endocrine Society (2005-2023)
Society for the Study of Reproduction (2005-2007)

INVITED PRESENTATIONS

Local Presentations

2006	Graduate Biosciences Symposium, University of Virginia
2007	Neuroscience Graduate Program, University of Virginia
2010	Stanford Institute for Neuro-Innovation and Translational Neurosciences (SINTN) Research Conference, Stanford University School of Medicine
2015	Department of Molecular and Integrative Physiology, UIUC
2015	Reproductive Biology Seminar Series, UIUC
2016	Neuroscience Program, UIUC
2017	Reproductive Biology Seminar Series, UIUC
2017	"Synapse: A Collaborative Neuroscience Conference," Carle Neuroscience Institute, Carle Hospital/Beckman Institute
2020	Keynote Speaker, Neuroscience Program Open House, UIUC
2020	Department of Molecular and Integrative Physiology, UIUC
2020	Intelligent Systems Research Theme External Review, Beckman Institute
2021	Beckman Director's Seminar Series, Beckman Institute
2021	UIUC Representative, Big 10 Neuroscience Seminar Series
2023	Frontiers in Miniature Brain Machinery Seminar Series, UIUC
2023	William Gelfand Distinguished Lecture, Phi Delta Epsilon Medical Fraternity, UIUC

External Presentations

2007	Biological Sciences Colloquium, Smith College
2007	Department of Neurobiology, Harvard Medical School
2007	Department of Neurology and Neurological Sciences, Stanford University
2007	Department of Neurobiology and Physiology, Northwestern University
2013	Department of Biological Sciences, Smith College

2013 Department of Neurobiology and Anatomical Sciences, University of Mississippi Medical Center
2013 Department of Biology, Boston University
2013 Department of Pharmacology, Perelman School of Medicine, University of Pennsylvania
2014 Department of Biology, University of Massachusetts, Amherst
2014 Department of Cellular and Physiological Sciences, University of British Columbia, Vancouver, Canada
2014 Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
2014 Department of Anatomy and Neurobiology, University of California, Irvine
2014 Department of Biomedical Sciences, Colorado State University
2016 Department of Neuroscience, University of Minnesota
2016 6th Gordon Research Conference on Mechanisms of Epilepsy and Neuronal Synchronization, Girona, Spain
2016 Department of Biology, Wabash College
2017 Department of Neuroscience, Tufts University School of Medicine
2017 Scientific Symposium on "Sex and the Seizure," 71st Annual Meeting of the American Epilepsy Society, Washington, D.C.
2018 Department of Physiology, Northwestern University Feinberg School of Medicine
2019 Department of Integrative Physiology, University of Colorado, Boulder
2020 Neuroscience Seminar Series, University of California, Riverside
2020 Department of Physiology, Southern Illinois University
2020 Neuroscience Colloquium, Department of Psychological Sciences, Purdue University
2020 Neuroscience Graduate Program Seminar Series, University of Virginia
2020 Departments of Neurosciences and Cardiometabolism, Centre Hospitalier de l'Université de Montréal, Montreal, Canada
2021 Department of Biomedical Sciences, University of Illinois College of Medicine at Rockford
2021 Sensory Biology Center Seminar Series, University of Wyoming
2021 Investigators Workshop, "Emerging Roles of Hypothalamus in Epilepsy and Comorbidities," 75th Annual Meeting of the American Epilepsy Society, Chicago, IL
2022 Basic Science Skills Workshop, "Addressing Sex as a Biological Variable in Epilepsy and Beyond," 76th Annual Meeting of the American Epilepsy Society, Nashville, TN
2022 Neuroendocrinology Special Interest Group, "Females and Cycling Hormones in Epilepsy – Misconceptions, Methods, Mechanisms," 76th Annual Meeting of the American Epilepsy Society, Nashville, TN
2022 "Introduction to Sex Differences in Epilepsy," Dialogues to Transform Epilepsy Special Lecture, 76th Annual Meeting of the American Epilepsy Society, Nashville, TN
2023 Basic Epilepsy Research Group, Department of Neurology, University of Michigan Medical School
2023 Neuroscience Seminar Series, University of Cincinnati and Cincinnati Children's Hospital Medical Center
2023 Workshop on Contraception Challenges in Women with Epilepsy, Brigham and Women's Hospital, Harvard Medical School
2023 Keynote Speaker, Big Ten Neurosciences Annual Meeting, Indiana University-Purdue University Indianapolis

Scheduled:
2024 Center for Reproductive Science and Medicine, University of California, San Diego
2024 12th International Meeting on "Steroids and the Nervous System," Turin, Italy

ABSTRACTS

1. **Christian CA**, Mobley JL, Moenter SM 2005 Time-of-day and estradiol-dependent changes in GnRH neuron firing activity in a mouse model exhibiting daily LH surges. 87th Annual Meeting of the Endocrine Society, San Diego, CA.

2. **Christian CA,** Moenter SM 2005 Vasoactive intestinal polypeptide can excite GnRH neurons in an estradiol-dependent manner. 38th Annual Meeting of the Society for the Study of Reproduction, Québec City, Québec, Canada. *(selected for oral presentation)*

3. **Christian CA,** Moenter SM 2005 GABAergic signaling to GnRH neurons increases near LH surge onset. 35th Annual Meeting of the Society for Neuroscience, Washington, D.C.

4. **Christian CA,** Moenter SM 2006 Diurnal signals from multiple populations of GABAergic neurons are associated with induction and maintenance of the GnRH surge. 88th Annual Meeting of the Endocrine Society, Boston, MA. *(selected for oral presentation)*

5. **Christian CA,** Moenter SM 2006 GABAergic transmission to GnRH neurons increases in association with induction and maintenance of the GnRH surge. National Institute of Mental Health Predoctoral Research Festival, Bethesda, MD.

6. Moenter SM, **Christian CA** 2006 Mechanisms of the neuroendocrine signal for ovulation. 29th Annual Meeting of the Japan Neuroscience Society, Symposium on Neurobiology of Reproduction, Kyoto, Japan.

7. Moenter SM, **Christian CA,** Chu Z 2006 An electrophysiological approach to gathering data needed to model the gonadotropin-releasing hormone neural network. Society for Industrial and Applied Mathematics, Life Sciences Symposium on Modeling in Endocrinology, Raleigh, NC.

8. **Christian CA,** Moenter SM 2006 Estradiol increases activity of GABA afferents to GnRH neurons during the LH surge. 36th Annual Meeting of the Society for Neuroscience, Atlanta, GA.

9. **Christian CA,** Moenter SM 2007 Investigating sources of GnRH surge-associated increases in GABA transmission to GnRH neurons. 89th Annual Meeting of the Endocrine Society, Toronto, Ontario, Canada.

10. **Christian CA,** Moenter SM 2007 Differential synaptic mediation of estradiol negative and positive feedback effects on GnRH neuron firing activity. 40th Annual Meeting of the Society for the Study of Reproduction, San Antonio, TX. *(selected for oral presentation)*

11. **Christian CA,** Moenter SM 2007 Diurnal changes in NMDA and AMPA/KA receptor-mediated glutamate transmission to GnRH neurons are associated with the GnRH/LH surge. 37th Annual Meeting of the Society for Neuroscience, San Diego, CA.

12. **Christian CA,** Glidewell-Kenney C, Jameson JL, Moenter SM 2008 Estrogen response element (ERE)-dependent ERα signaling is required for estradiol negative and positive feedback effects on GnRH neuron firing activity. 90th Annual Meeting of the Endocrine Society, San Francisco, CA.

13. Moenter SM, **Christian CA** 2008 Interactions between circadian clocks and E_2 in generating negative and positive feedback regulation of GnRH neurons. Symposium on Clocks and Reproduction, Korean Endocrine Society, Seoul, South Korea.

14. **Christian CA,** Moenter SM 2008 Estradiol suppresses glutamatergic transmission to GnRH neurons during negative feedback. 38th Annual Meeting of the Society for Neuroscience, Washington, D.C.

15. Moenter SM, **Christian CA** 2008 Neurobiological mechanisms underlying estradiol negative and positive feedback regulation of GnRH neurons. United States/Japan Bilateral Symposium on Neurobiology of Steroid Hormone Receptors, Gifu, Japan.

16. **Christian CA,** Huguenard JR 2009 Nucleus-specific and age-dependent effects of benzodiazepine receptor blockade in the thalamus during early postnatal development. 39th Annual Meeting of the Society for Neuroscience, Chicago, IL.

17. **Christian CA,** Kozitza R, Peng K, Rudolph U, Huguenard JR 2010 Disruption of the $GABA_AR$ α3 subunit benzodiazepine binding site alters intra-thalamic inhibition and absence seizures. 3rd Gordon Research Conference on Mechanisms of Epilepsy and Neuronal Synchronization, Waterville, ME. *(selected for oral presentation)*

18. **Christian CA,** Rudolph U, Huguenard JR 2010 Effects of endozepines on synaptic integration in the thalamic reticular nucleus. 40th Annual Meeting of the Society for Neuroscience, San Diego, CA.

19. **Christian CA,** Rudolph U, Huguenard JR 2011 Glial cells are sources of endozepines in the thalamic reticular nucleus. 41st Annual Meeting of the Society for Neuroscience, Washington, D.C.
    - Selected for SFN 2011 "Hot Topics" press materials

20. **Christian CA,** Huguenard JR 2011 Diazepam binding inhibitor-lacking *nm1054* mutant mice exhibit deficient endozepine signaling in the thalamic reticular nucleus. 65th Annual Meeting of the American Epilepsy Society, Baltimore, MD.

21. **Christian CA,** Herbert AG, Huguenard JR 2012 Diazepam binding inhibitor potentiates synaptic inhibition in the thalamic reticular nucleus and endogenously suppresses seizures. 4th Gordon Research Conference on Mechanisms of Epilepsy and Neuronal Synchronization, Waterville Valley, NH.

22. **Christian CA,** Huguenard JR 2012 Astrocytes modulate synaptic inhibition in the thalamic reticular nucleus via constitutive endozepine signaling mediated by diazepam binding inhibitor. 42nd Annual Meeting of the Society for Neuroscience, New Orleans, LA.

23. **Christian CA,** Foo LC, Barres BA, Huguenard JR 2013 Thalamic astrocytes potentiate GABA transmission. 6th Gordon Research Conference on Glial Biology: Functional Interactions among Glia and Neurons, Ventura, CA. *(selected for oral presentation)*

24. **Christian CA,** Huguenard JR 2013 Astrocytes potentiate GABAergic transmission in the thalamic reticular nucleus via endozepine signaling. 5th Gordon Research Conference on Inhibition in the CNS, Les Diablerets, Switzerland. *(selected for oral presentation)*

25. **Christian CA,** Huguenard JR 2013 Neurosteroidogenesis modulates thalamic activity via nucleus-specific effects on phasic and tonic inhibition. 43rd Annual Meeting of the Society for Neuroscience, San Diego, CA.

26. **Christian CA,** Huguenard JR 2013 Diazepam binding inhibitor knockout mice display increased absence seizures and loss of thalamic endozepine signaling. 67th Annual Meeting of the American Epilepsy Society, Washington, D.C. *(selected for oral presentation)*

27. Makinson CD, Sorokin J, **Christian CA**, Huguenard JR 2015 Thalamic hyperexcitability in the Scn8a model of absence epilepsy. 45th Annual Meeting of the Society for Neuroscience, Chicago, IL.

28. Makinson CD, Sorokin J, Wong J, **Christian CA,** Goldin A, Escayg A, Huguenard JR 2016 Diametric regulation of thalamic and cortical network synchrony by *Scn8a* (Nav1.6). 6th Gordon Research Conference on Mechanisms of Epilepsy and Neuronal Synchronization, Girona, Spain

29. Li J, Abejuela VA, Kim JS, Lamano JB, Ghane MA, Reynish D, **Christian CA** 2016 Elevated gonadotropin-releasing hormone neuron firing activity in a female mouse model of temporal lobe epilepsy. 46th Annual Meeting of the Society for Neuroscience, San Diego, CA.

30. Courtney CD, **Christian CA** 2017 Divergent effects of loss of diazepam binding inhibitor signaling on synaptic inhibition in hippocampal CA1 and dentate gyrus. 47th Annual Meeting of the Society for Neuroscience, Washington, D.C.

31. Li J, Robare J, Ghane MA, Nelson ME, **Christian CA** 2017 Estrous cycle stage-dependent and sex-specific alterations of GnRH neuron firing activity in a mouse model of temporal lobe epilepsy. 47th Annual Meeting of the Society for Neuroscience, Washington, D.C.

32. Sobieski C, Wojnowski NM, Ramakrishnan C, DeFazio RA, Deisseroth K, **Christian CA** 2018 Optogenetic stimulation of astrocytic G_q signaling differentially alters synaptic transmission in hippocampal CA1 and layer V of sensorimotor cortex. 48th Annual Meeting of the Society for Neuroscience, San Diego, CA.

33. Li J, Robare J, Gao L, Ghane MA, Flaws JA, Nelson ME, **Christian CA** 2018 Ovarian-cycle-linked and sex-specific changes in GnRH neuron firing and excitability in a mouse model of temporal lobe epilepsy. 7th Gordon Research Conference on Mechanisms of Epilepsy and Neuronal Synchronization, West Dover, VT.

34. Li J, Robare J, Gao L, Ghane MA, Flaws JA, Nelson ME, **Christian CA** 2018 Ovarian-cycle-linked and sex-specific changes in GnRH neuron firing and excitability in a mouse model of temporal lobe epilepsy. 72nd Annual Meeting of the American Epilepsy Society, New Orleans, LA.
    - Outstanding Abstract Selection, Investigators Workshop Poster Session

35. Courtney CD, Sobieski C, Wojnowski NM, Ramakrishnan C, Ingram R, DeFazio RA, Deisseroth K, **Christian CA** 2019 Optogenetic stimulation of astrocytes alters synaptic transmission in hippocampal CA1 in an opsin- and stimulation-specific manner. 8th Gordon Research Conference on Inhibition in the CNS, Newry, ME.

36. Courtney CD, Sobieski C, Wojnowski NM, Ramakrishnan C, Ingram R, DeFazio RA, Deisseroth K, **Christian CA** 2019 Optogenetic stimulation of astrocytes alters synaptic transmission in hippocampal CA1 in an opsin- and stimulation-specific manner. 49th Annual Meeting of the Society for Neuroscience, Chicago, IL.

37. Walters J, Jang SS, Jeong H, **Christian CA,** Chung HJ 2019 Sex differences in KA-induced seizure propensity by genetic and pharmacological inhibition of brain-specific tyrosine phosphatase STEP. 49th Annual Meeting of the Society for Neuroscience, Chicago, IL.

38. **Christian CA,** Pantier LK, Naganatanahalli LM, Li J 2019 Seizure burden changes with the reproductive cycle in the intrahippocampal kainate mouse model of temporal lobe epilepsy. 73rd Annual Meeting of the American Epilepsy Society, Baltimore, MD.
    - Late Breaking Abstract Selection

39. Cutia CA, Leverton LK, Li J, Naganatanahalli LM, **Christian-Hinman CA** 2020 Similar outcomes in HPO axis dysfunction and seizure patterning independent of laterality of injection in the IHKA mouse model of temporal lobe epilepsy. 74th Annual Meeting of the American Epilepsy Society, held online

40. Ingram RJ, Li J, **Christian-Hinman CA** 2020 GABAergic transmission to GnRH neurons is increased in diestrous females in a mouse model of temporal lobe epilepsy. 74th Annual Meeting of the American Epilepsy Society, held online
    - Outstanding Abstract Selection, Investigators Workshop Poster Session
    - Outstanding Abstract Selection, Better Patient Outcomes through Diversity Poster Session

41. Nagarajan R, Lyu J, Kambali M, Wang M, Courtney CD, **Christian-Hinman CA,** Rudolph U 2021 Genetic ablation of dentate hilar somatostatin-positive GABAergic interneurons is sufficient to induce cognitive impairment. 50th Annual Meeting of the Society for Neuroscience, held online

42. Cutia CA, Leverton LK, **Christian-Hinman CA** 2021 Increased pituitary sensitivity to GnRH without altered LH pulsatility in female mice in the intrahippocampal kainic acid model of temporal lobe epilepsy. 75th Annual Meeting of the American Epilepsy Society, Chicago, IL.

43. Ingram RJ, Li J, **Christian-Hinman CA** 2021 iGluR-dependent GABAergic transmission to GnRH neurons is increased in diestrous females in a mouse model of temporal lobe epilepsy. 75th Annual Meeting of the American Epilepsy Society, Chicago, IL.

44. Ingram RJ, Leverton LK, Daniels VC, Li J, **Christian-Hinman CA** 2022 Increased GABA transmission to GnRH neurons after intrahippocampal kainic acid injection in mice is sex-specific and associated with estrous cycle disruption. 1st Gordon Research Conference on Hypothalamus, Ventura, CA.

45. Cutia CA, Leverton LK, Weis KE, Raetzman LT, **Christian-Hinman CA** 2022 Female-specific pituitary hypersensitivity to GnRH in a mouse model of chronic temporal lobe epilepsy. 76th Annual Meeting of the American Epilepsy Society, Nashville, TN.

46. Rajan R, **Christian-Hinman CA** 2023 Epilepsy-associated alterations in potassium currents in GnRH neurons in a mouse model of temporal lobe epilepsy. 77th Annual Meeting of the American Epilepsy Society, Orlando, FL.

47. French AR, **Christian-Hinman CA** 2023 Effects of aromatase inhibition on hippocampal cellular excitability in the APP/PS1 mouse model of Alzheimer's disease. 52nd Annual Meeting of the Society for Neuroscience, Washington, D.C.

CURRICULUM VITAE
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Lab website	https://app.mcb.illinois.edu/chunghj/

I. PERSONAL HISTORY AND PROFESSIONAL EXPERIENCE

EDUCATION

1991-1995	B.A. in Biochemistry and Chemistry (*Cum Laude*), Cornell University
1996-2002	Ph.D. in Neuroscience, Johns Hopkins University School of Medicine Ph.D. advisor: Dr. Richard Huganir

PROFESSIONAL EMPLOYMENT

2002-2007	Postdoctoral Research Fellow with Dr. Lily Jan University of California, San Francisco (UCSF)
2007-2009	Research Associate Specialist with Dr. Lily Jan, UCSF
2010-2016	Assistant Professor, University of Illinois at Urbana Champaign (UIUC)
2010-present	Neuroscience Program Faculty, UIUC
2017-present	Associate Professor with Tenure, UIUC
2017-present	Faculty, Neurotechnology for Memory and Cognition (NMC) Research Group in Beckman Institute for Advanced Science and Technology, UIUC
2021-present	Faculty, the Multi-Cellular Engineered Living Systems (MCELS) Research Theme in Institute for Genomic Biology, UIUC
2022-present	Associate Director, Neuroscience Program, UIUC

HONORS AND AWARDS

1993-1995	Dean's List (Award for Excellence), Cornell University
2002	Paul Ehrlich Young Investigator Award, Johns Hopkins University
2011	Carver Young Investigator Grant Award, Roy J. Carver Charitable Trust
2011	Basil O'Connor New Investigator Grant Award, March of Dimes Foundation
2014	James E. Heath Award for Excellence in Teaching in Physiology, UIUC
2022	The Neuroscience Program Diversity Equity and Inclusion (DEI) Award, UIUC

PROFESSIONAL MEMBERSHIP AND SERVICES

1999-present Member, Society for Neuroscience
2010-present Member, American Epilepsy Society
2004-2009 Member, American Society for Cell Biology
2010-present Ad hoc reviewer for *Brain Research Bulletin Elsevier, Proceedings of the National Academy of Sciences (PNAS), Neuropharmacology, Molecular Basis of Disease, Scientific Reports, Neurobiology of Disease, PLoS1 Molecular and Cellular Neuroscience, Frontiers in Cellular Neuroscience, J. Neurochemistry, Human Gene Therapy, iScience, Biological Psychiatry, Comms Bio. Neurotherapeutics, J. Neuroscience*
2011-present Ad hoc reviewer of grant applications the following organizations.
2011 Alzheimer's Association grants
2012. Medical Research Council (MRC) grants, United Kingdom
2015 National Science Foundation (NSF), Division of Integrative Organismal Systems
2017 National Institute of Health (NIH) Study Section Neurodifferentiation, Plasticity, Regeneration and Rhythmicity (NDPR)
2018 National institute of Neurological Disorders and Stroke (NINDS)
Epilepsy Centers without Walls (CWOW) U54 Center Grant
Special Emphasis Panel NINDS ZNS1 SRB-M (07)
UIUC Campus Research Board
NINDS R35 Research Grant Study Section
Special Emphasis Panel NINDS ZNS1 SRB-M (07)
2019 NIH Study Section Synapses, Cytoskeleton & Trafficking (SYN)
NIH Study Section Biophysics of Neural Systems (BPNS)
NINDS R35 Research Grant Study Section
Special Emphasis Panel ZNS1 SRB-A(29)
2020 NINDS Epilepsy Centers without Walls (CWOW) U54 Center Grant
Special Emphasis Panel ZNS1 SRB-A(29) Study Section
VA Office of Research & Development
NURP (Neuroscience of Pain) study section,
2021 NIH Study Section
Special Emphasis Panel 2021/05 ZRG1 BDCN-K (02) Study Section
NIH Study Section: Molecular, Cellular, and Developmental Neuroscience (MDCN) (02).
2022 NIH Study Section NDPR

2017 Guest Editor, *Neural Plasticity*
2018-present Review Editor in Editorial Board, *Frontiers in Cellular Neuroscience*
2022-present Associate Editor in Editorial Board, *Frontiers in Cellular Neuroscience*
2023-2025 American Epilepsy Society (AES) Basic Science Committee

II. GRANT SUPPORT

ACTIVE

2017-2027 Research Project Grant 2 R01NS100019
National Institute of Neurological Disorders and Stroke (NINDS), NIH
Super-resolution microscopy of Neuronal Synapses with Small Quantum Dots and Advanced Imaging Tools
PI: Selvin (contact), Chung

2019-2023 (NCE) Research Grant New to Field 2019-AARG-NTF-644507

Alzheimer's Association
Nanotransporter of ApoE4 Modulator to Reduce Pathology in Alzheimer Disease
PI: Kong (contact), Chung

2021-2023 (NCE) Research Board Award RB21053
University of Illinois Campus Research Board
Unveiling novel roles of STEP61 in hippocampal excitability and the impact of its inhibitor as an anti-seizure drug
PI: Chung, Co-I: Kong

2023 The LAS COVID-19 Revitalization Fellowship
University of Illinois at Urbana Champaign
PI: Chung

PENDING

2022 Research Project Grant R01-A1 1R01NS126584-01
NINDS, NIH
Dynamic changes in PIP2 binding sites and their impact on axonal targeting and function of epilepsy-associated KCNQ/Kv7 channels
**Most likely get funded* (Impact score: 27, Percentile: 10.0)
PI: Chung, Co-I:Tajkhorshid, Christian-Hinman,

2022 Research Project Grant R01 AG083625-01
National Institute of Aging (NIA), NIH
Super-Resolution Fluorescence Microscopy of Synaptic Plasticity on Unmodified Brain Slices in Health and Tauopathy
**Most likely get funded* (Impact score: 29, Percentile: 12)
PI: Selvin (contact), Chung

2023 Research Project Grant R21, Submitted in 2/2023
NINDS/NIMH, NIH
The Role and Mechanism of Postsynaptic Kv7/KCNQ Channels at Excitatory Synapses
PI: Chung (contact), Selvin

2023 Research Project Grant R21, Submitted in 2/2023
NIA, NIH
Biomanufacturing of Neuroprotective Biologics Using Neuromuscular Engineered Tissue (NET)
PI: Kong (contact), Chung

2023 Research Project Grant R21-A1, Submitted in 3/2023
NINDS/NIMH, NIH
Novel function of brain-specific tyrosine phosphatase STEP61 in regulating hippocampal intrinsic excitability and TLE
PI: Chung, co-I: Christian-Hinman

2023 Research Project Grant R21, Submitted in 3/2023
NINDS/NIMH, NIH
The role of alcohol in ApoE4-associated cognitive decline and neuropathology
PI: Liang (contact), Chung

COMPLETED

1994 HHMI Summer Undergraduate Research Training Fellowship
Cornell University, Ithaca, NY (Advisor: Dr. Gerald W. Feigenson)

2004-2007	Individual Kirschstein-NRSA Postdoctoral Fellowship Award #5F32MH073187 National Institute of Mental Health (NIMH), NIH (PI: Chung)
2010-present	New Investigator ICR start-up fund (PI: Chung) University of Illinois at Urbana Champaign
2011-2013	Basil O'Connor New Investigator Grant Award #5-FY11-105 (PI: Chung) March of Dimes Foundation
2011-2014	Carver Young Investigator Grant Award #11-38870 (PI: Chung) Roy J. Carver Charitable Trust
2011-2012	Predoctoral Fellowship to Sara E. Royston #C4855 (Mentor: Chung) Epilepsy Foundation
2013-2014	Targeted Research Initiative for Severe Symptomatic Epilepsies Grant #C4107 Epilepsy Foundation (PI: Chung)
2016-2017	Carle Illinois Collaborative Research Seed Grant (PI: Chung, co-I: Huesmann) Carle Hospital, University of Illinois at Urbana Champaign
2018-2019	AES Predoctoral Research Fellowship (PI & Trainee: Jang, Mentor: Chung) American Epilepsy Society Foundation (AES).
2018-2020	Research Board Award RB19060 (PI: Kong, Co-I: Chung) University of Illinois Campus Research Board
2018-2020	NSF Research Traineeship (NRT) (Trainee: Baculis, Mentor: Chung) NSF
2015-2021	Research Project Grant #R01NS083402 (PI: Chung), No Cost Extension (NCE) NINDS, NIH
2016-2021	Research Project Grant #R01NS097610 (PI: Selvin, MPI: Chung, Smith) NINDS, NIH
2021-2022	NSF Research Traineeship (NRT) (Trainee: Walters, Mentor: Chung) NSF

III. BIBLIOGRAPHY

PEER-REVIEWED RESEARCH ARTICLES

1. **Chung HJ**, Xia J, Scannevin RH, Zhang X, and Huganir RL (2000). Phosphorylation of the AMPA receptor subunit GluR2 differentially regulates its interaction with PDZ domain-containing proteins. Journal of Neuroscience, 20(19): 7258-67.
2. Xia J, **Chung HJ**, Wihler C, Huganir RL, and Linden DJ (2000). Cerebellar long-term depression requires PKC-regulated interactions between GluR2/3 and PDZ domain-containing proteins. Neuron, 28(2): 499-510.
3. Kim CH*, **Chung HJ*,** Lee H-K-, and Huganir RL (2001). Interaction of the AMPA receptor subunit GluR2/3 with PDZ domains regulates hippocampal long term-depression. Proceedings of the National Academy of Sciences USA, 98(20): 11725-30. PMCID: PMC58797.
4. McDonald BJ, **Chung HJ**, and Huganir RL (2001). Identification of Protein Kinase C phosphorylation sites within the AMPA receptor GluR2 subunit. Neuropharmacology, 41(6): 672-679.
5. **Chung HJ*,** Steinberg JP*, Huganir RL, Linden DJ (2003). Requirement of AMPA receptor GluR2 phosphorylation for cerebellar long-term depression. Science, 300(5626): 1751-5.
6. Heynen AJ, Yoon BJ, Liu CH, **Chung HJ**, Huganir RL, and Bear MF (2003). Molecular mechanism for loss of visual cortical responsiveness following brief monocular deprivation. Nature Neuroscience, 6(8): 854-62.

7. **Chung HJ**, Lau LF, Huang YH, and Huganir RL (2004). Regulation of NMDA Receptor complex and trafficking by activity-dependent phosphorylation of NR2B subunit PDZ ligand. Journal of Neuroscience, 24(45): 10248-59.
8. **Chung HJ**, Jan YN, and Jan LY (2006). Impaired polarized surface expression of neuronal KCNQ channels as a mechanism for benign familial neonatal convulsion. Proceedings of the National Academy of Sciences USA, 103 (23): 8870-5. PMCID: PMC1472242.
9. **Chung HJ,** Qian X, Ehlers M, Jan YN, and Jan LY (2009). Neuronal activity regulates phosphorylation-dependent surface delivery of G-protein activated inwardly rectifying potassium channels. Proceedings of the National Academy of Sciences USA, 106(2): 629-34. PMCID: PMC2613039.
10. **Chung HJ*,** Ge WP*, Qian X, Wiser O, Jan YN, and Jan LY (2009). G-protein activated inwardly rectifying potassium channels mediate depotentiation of long-term potentiation. Proceedings of the National Academy of Sciences USA, 106(2): 635-40. PMCID: PMC2613041.
11. Hearing M, Kotecki L, Marron Fernandez de Velasco E, Fajardo-Serrano A, **Chung HJ**, Luján R, Wickman K (2013). Repeated cocaine weakens GABAB-Girk signaling in layer 5/6 pyramidal neurons in the prelimbic cortex. Neuron, 80(1): 159-70. PMCID: PMC3793643.
12. Vega L JC, Lee MK, Jeong JH, Smith CE, Lee KY, **Chung HJ**, Leckband DE, Kong H (2014). Recapitulating cell-cell adhesion using N-Cadherin biologically tethered to substrates. Biomacromolecules, 15(6): 2172-9. PMID: 24773064.
13. Cavaretta JP*, Sherer KS*, Lee KY, Issema R, Kim EH, and **Chung HJ** (2014). Polarized axonal surface expression of neuronal KCNQ potassium channels is regulated by KCNQ2 interaction with calmodulin. PLoS One, 9(7): e103655. PMCID: PMC4117524.
14. Lee KY and **Chung HJ** (2014). NMDA receptors and L-type voltage-gated Ca^{2+} channels mediate the expression of bidirectional homeostatic intrinsic plasticity in cultured hippocampal neurons. Neuroscience, 277: 610-623. PMID: 25086314.
15. Cai E, Ge P, Lee SH, Jeyifous O, Wang Y, Liu Y, Wilson KM, Lim SJ, Baird MA, Stone JE, Lee KY, Davidson MW, **Chung HJ**, Schulten K, Smith AM, Green WN, and Selvin PR (2014). Stable small quantum dots for synaptic receptor tracking on live neurons. Angewandte Chemie International Edition, 53(46): 12484-8. PMCID: PMC4240739.
16. Wang Y, Cai E, Rosenkranz T, Ge P, Teng KW, Lim SJ, Smith A, **Chung HJ**, Sachs F, Green W, Gottlieb P, and Selvin PR (2014). Small quantum dots conjugated to nanobodies as immunofluorescence probes for nanometric microscopy. Bioconjugate Chemistry, 25(12): 2205-11. PMCID: PMC4275168.
17. Lee K*, Royston SE*, Vest MO, Ley DJ, Lee S, Bolton EC, and **Chung HJ** (2015). N-methyl-D-aspartate receptors mediate activity-dependent down-regulation of potassium channel genes during the expression of homeostatic intrinsic plasticity. Molecular Brain, 8(1):4. PMCID: PMC4333247.
18. Jang SS*, Royston SE*, Xu J, Cavaretta JP, Vest MO, Lee KY, Lee S, Jeong H, Lombroso PJ, and **Chung HJ** (2015). Regulation of $STEP_{61}$ and tyrosine-phosphorylation of NMDA and AMPA receptors during homeostatic synaptic plasticity. Molecular Brain, 8(1):55. PMCID: PMC4578242.
19. Jang SS*, Royston SE*, Lee $G^{\#}$, Wang $S^{\#}$, and **Chung HJ** (2016). Seizure-induced regulations of amyloid-beta, $STEP_{61}$, and $STEP_{61}$ substrates involved in hippocampal synaptic plasticity. Neural Plasticity, 2016:2123748. PMCID: PMC4835651.
20. Vega L JC, Lee MK, Qin EC, Lee KY, **Chung HJ**, Leckband DE, Kong H (2016). Three dimensional conjugation of recombinant N-Cadherin to a hydrogel for in vitro anisotropic neural growth. Journal of Materials Chemistry B Materials for Biology and Medicine, 4(42):6803-6811. PMCID: PMC5423733
21. Zhu J, Lee KY, Jewett KA, Man H, **Chung HJ**, Tsai N-P- (2017). Epilepsy-associated gene Nedd4-2 mediates neuronal network activity and seizure susceptibility through AMPA receptors. PLOS Genetics, 2017 Feb 17;13(2):e1006634, PMID:28212375

22. Jang SS, Jeong H, **Chung HJ** (2017). Electroconvulsive seizures in rats and fractionation of their hippocampi to examine seizure-induced changes in postsynaptic density proteins. Journal of Visualized Experiments, 2017 Aug 15;(126). doi: 10.3791/56016. PMID:28829421
23. Baculis BC*, Weiss AC*, Pang W*, Jeong HG, Lee JH, Liu DC, Tsai NP, and **Chung HJ** (2017). Prolonged seizure activity causes caspase dependent cleavage and dysfunction of G-protein activated inwardly rectifying potassium channels. Scientific Reports, 2017 Sep 26;7(1):12313. PMID: 28951616
24. Liu DC, Seimetz J, Lee KY, Kalsotra A, **Chung HJ**, Lu H, and Tsai NP (2017). Mdm2 mediates FMRP- and Gp1 mGluR-dependent protein translation and neural network activity. Human Molecular Genetics, Oct 15;26(20):3895-3908. PMID: 29016848
25. Kim IJ, Lee J, Oh SJ, Yoon MS, Jang SS, Holland RL, Reno ML, Hamad MN, Maeda T, **Chung HJ**, Chen J, Blanke SR (2018). Helicobacter pylori Infection Modulates Host Cell Metabolism through VacA-Dependent Inhibition of mTORC1. Cell Host Microbe. May 9;23(5):583-593. PMID: 29746831.
26. Lee KY, Jewett KA, **Chung HJ,** Tsai NP (2018). Loss of Fragile X Protein FMRP Impairs Homeostatic Synaptic Downscaling through Tumor Suppressor p53 and Ubiquitin E3 Ligase Nedd4-2. Hum Mol Genet. doi: 10.1093/hmg/ddy189. PMID: 29771335
27. Kim EC, Zhang J, Pang W, Wang S, Lee KY, Cavaretta JP, Walters J, Procko E, Tsai NP, **Chung HJ** (2018). Reduced axonal surface expression and phosphoinositide sensitivity in Kv7 channels disrupts their function to inhibit neuronal excitability in Kcnq2 epileptic encephalopathy. Neurobiol Dis. 2018 Jul 6;118:76-93. PMID: 30008368
28. Le P, Lim SJ, Baculis BC, **Chung HJ**, Kilian KA, and Smith AM. (2019). Counting growth factors in single cells with infrared quantum dots to measure discrete stimulation distributions. Nat Commun. 2019 Feb 22;10(1):909. PMID: 30796217 PMCID: PMC6385258
29. Kim EC, Patel J, Zhang J, Soh H, Rhodes JS, Tzingounis A, and **Chung HJ** (2019). Heterozygous loss of epilepsy gene KCNQ2 alters social, repetitive, and exploratory behaviors. Genes, Brain, and Behavior. 2019. Jul 8:e12599. PMCID: PMC7050516
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31. Brill AL, Fischer TT, Walters JM, Marlier A, Sewanan LR, Wilson PC, Johnson EK, Moeckel G, Cantley LG, Campbell SG, Nerbonne JM, **Chung HJ**, Robert ME, Ehrlich BE (2020). Polycystin 2 is increased in disease to protect against stress-induced cell death. Scientific Reports, 2020 Jan 15;10(1):386. PMID: 31941974
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33. *Zhang J, *Kim EC, *Chen C, Procko E, Pant S, Lam K, Patel J, Choi R, Hong M, Joshi D, Bolton E, Tajkhorshid E, **Chung HJ** (2020). Identifying mutation hotspots reveals pathogenetic mechanisms of KCNQ2 epileptic encephalopathy. Sci Rep. 2020 Mar 16;10(1):4756. PMCID: PMC7075958.
34. Le P, Vaidya R, Smith LD, Han Z, Zahid MU, Winter J, Sarkar S, **Chung HJ**, Perez-Pinera P, Selvin PR, and Smith AM. (2020). Optimizing quantum dot probe size for single receptor imaging. ACS Nano, 2020. Jul 28;14(7):8343-8358. PMID: 32525656.
35. Urrutia J, Aguado A, Gomis-Perez C, Muguruza-Montero A, Ballesteros OR, Zhang J, Nuñez, Malo, **Chung HJ**, Leonardo A, Bergara A and Villarroel A (2021). An Epilepsy-Causing Mutation Leads to Co-translational Misfolding. BMC Biology. 2021. In Press.

36. Kandel M, Kim E, Lee YJ, Tracy G, **Chung HJ**, and Popescu G (2021). Multiscale assay of unlabeled neurite dynamics using phase imaging with computational specificity (PICS)". ACS Sensors. 2021. In Press.
37. *Pant S, *Zhang J, *Kim EC, Lam K, ^**Chung HJ,** and ^Tajkhorshid E. PIP2-dependent coupling of voltage sensor and pore domains in Kv7.2 channel. Commun Biol 4, 1189 (2021). https://doi.org/10.1038/s42003-021-02729-3.
38. Kim EC, Zhang J, Tang A, Bolton EC, Rhodes JS, Christian-Hinman CA, and **Chung HJ.** (2021). Spontaneous seizure and memory loss in mice expressing an epileptic encephalopathy variant in the calmodulin-binding domain of Kv7.2. PNAS. Dec 2021, 118 (51) e2021265118 (2021).
    # Highlighted in Epilepsia Current
    # Highlighted in Illinois News Bureau (https://news.illinois.edu/view/6367/1884974120), IGB and MCB Websites, Biological Research Information Center (BRIC), South Korea.
39. Walters JM, Kim EC, Zhang J, Jeong HG, Bajaj A, Baculis B, Tracy G, Ibrahim B, Christian-Hinman CA, Llano DA, Huesmann GR, **Chung HJ** (2022). Pharmacological inhibition of STriatal-Enriched protein tyrosine Phosphatase by TC-2153 reduces hippocampal excitability and seizure propensity. *Epilepsia*, 2022 Feb 21. doi: 10.1111/epi.17192
    #Highlighted in Illinois News Bureau (https://news.illinois.edu/view/6367/356876441), Beckman and MCB Websites
40. Tracy GC, Wilton AR, Rhodes JS, **Chung HJ**. (2022) Heterozygous deletion of epilepsy gene KCNQ2 has negligible effects on learning and memory. Frontiers in Behavioral Neuroscience. Front Behav Neurosci. 2022 Jul 19;16:930216. doi: 10.3389/fnbeh.2022.930216. PMID: 35928789; PMCID: PMC9344800.
41. Baculis BC, Kesavan H, Weiss AC, Kim EH, Tracy GC, Ouyang W, Tsai NP, **Chung HJ** (2022). Homeostatic regulation of extracellular signal-regulated kinase 1/2 activity and axonal $K_v7.3$ expression by prolonged blockade of hippocampal neuronal activity. Front Cell Neurosci. 2022 Jul 28;16:838419. doi: 10.3389/fncel.2022.838419.
42. Chen X, Kandel ME, He S, Hu C, Lee YJ, Sullivan K, Tracy GC, **Chung HJ**, Kong HJ, Anastasio M, Popescu G. Artificial confocal microscopy for deep label-free imaging. Nature Photonics. **17**, 250–258 (2023). *https://doi.org/10.1038/s41566-022-01140-6*
43. Youn Y, Lau GW, Lee YJ, Maity BK, Gouaux E, **Chung HJ,** and Selvin PR. Quantitative DNA-PAINT imaging of AMPA receptors in live neurons. Cell Report Methods. 2023 Feb 16;3(2):100408

* Contributed equally. ^Co-corresponding author. Underlined co-author is the Chung lab member who provided the data figure, performed experiments, and provided training in the collaborator's manuscript.

REVIEW ARTICLES

1. **Chung HJ** and Jan LY (2006). Channeling to the nucleus. Neuron, 52(6): 937-940.
2. **Chung HJ*,** Lee HK* (2009). Constructing a road map from synapses to behaviour. Meeting on Synapses: From Molecules to Circuits & Behavior. EMBO Reports, 2009 Aug 7. PMCID: PMC2750071.
3. **Chung HJ** (2014). Role of calmodulin in neuronal Kv7/KCNQ potassium channels and epilepsy. Frontiers in Biology, 9(3): 205-215.
4. Jang SS and **Chung HJ** (2016). Emerging link between Alzheimer's disease and homeostatic synaptic plasticity. Neural Plasticity, 2016:7969272. PMCID: PMC4785275.
5. Baculis BC, Zhang J, and **Chung HJ** (2020). The role of Kv7 channels in Neural Plasticity and Behavior. Front Physiol. 2020 Sep 18;11:568667. PMID: 33071824; PMCID: PMC7530275.

*These authors contributed equally to this work.

MANUSCRIPT SUBMITTED AND/OR UNDER REVIEW

Tracy GC*, Huang KY*, Hong YH*, Ding S, Kim EC, **Chung HJ**[#], Kong HJ[#]. Intracerebral Nanoparticle Transport Facilitated by Alzheimer Pathology and Age. *Nano Letters*. Under revision. [#]Equal Correspondence, [*]Equal Contribution

Jin C, Jang SS, Ge P, **Chung HJ**, and Selvin PR. AMPA receptor number and dynamics on a synapse-to-synapse basis during maintenance of chemical LTP. Cell Reports, *Under revision.* Available at SSRN: http://dx.doi.org/10.2139/ssrn.4112547

Underlined co-author is the Chung lab member who provided the data figure in the collaborator's manuscript.

IV. PRESENTATIONS

INVITED TALKS PRIOR TO UNIVERSITY OF ILLINOIS

2001 Winter Conference on Brain Research, Steamboat Springs, CO
2006 Research in Progress Seminar, University of California, San Francisco
2007 Excellent Biomedical Scientist Seminar Series, Seoul National University, Seoul, Korea
2007 Korean Life Scientist Bay Area Symposium, University of California, Berkeley
2008 Faculty Candidate Seminar, Penn State University, University Park, PA
2009 Faculty Candidate Seminar, New York Weill Cornell Medical Center, University of Colorado School of Medicine, University of Iowa School of Medicine, University of California, Irvine, Yale University, University of Illinois at Urbana Champaign
2009 Cold Spring Harbor Meeting: "Synapses: From Molecules to Circuits & Behavior", Cold Spring Harbor, NY

INVITED TALKS BASED ON RESEARCH AT UNIVERSITY OF ILLINOIS

2010 Seminar at the MIP Departmental Retreat, University of Illinois at Urbana Champaign
2010 Neuroscience Program Seminar Series, University of Illinois at Urbana Champaign
2011 MIP Departmental Seminar Series, University of Illinois at Urbana Champaign
2011 Seminar at the Mini-Symposium titled "GABAB receptor Signaling in the Brain: Insights into Plasticity and Function", Society of Neuroscience Meeting, Washington DC
2012 Seminar at "Friday on the Brain", University of Illinois at Urbana Champaign
2012 Seminar at the Session "New insights into Mechanisms of Sensory and Motor systems", Neurotalk Meeting, Beijing, China
2012 Seminar at the Satellite Meeting titled "Phosphatases in Neuroscience", Society of Neuroscience Meeting, New Orleans, LA
2014 Biophysics and Quantitative Biology Seminar Series, Center for the Physics of Living Cells (CPLC), University of Illinois at Urbana Champaign
2014 Department of Physiology Seminar Series, Seoul National University Medical Research Center, Seoul, Korea.
2014 Seminar at the Session "Advances in Neuroscience", Bio, Medical, and Pharmaceutical (BMP) symposium, US-Korea Conference, San Francisco, CA.
2015 Seminar at the Session "Biomarkers and Disease Mechanisms in Neurological Disorders", Neurological Disorder Summit meeting, San Francisco, CA.

2015 Seminar at the Illinois Summer Neuroscience Institute (ISNI), the Neuroscience Program University of Illinois at Urbana Champaign
2016 Seminar at the NIH-funded US-Japan Symposium in Synapses titled "Current Trends and Future Directions of Synaptic Plasticity Research", Baltimore MD.
2016 MIP Departmental Seminar Series, University of Illinois at Urbana Champaign
2017 Seminar at the Clinical and Translational Neuroscience Workshop 2017 Agenda, Carle Hospital and University of Illinois Interdisciplinary Health Sciences Initiative
2017 Seminar at the Laboratory of Integrative Neuroscience Seminar Series, University of Illinois at Chicago
2017 Seminar at the Session "Ion Channels and Regulation of Gene Expression", FASEB Ion Channel Regulation Meeting, Steamboat Springs, CO.
2017 Seminar at the 20th Annual meeting of the Korean Society of Brain and Neural Science. Seoul Korea.
2018 Invited Seminar at the Center for Neuromolecular Research Seminar Series Southern Research Institute and University of Alabama, Birmingham
2018 Seminar at Neuroscience Program Open House, the Neuroscience Program University of Illinois at Urbana Champaign
2019 Invited Seminar at the Center for Neuromolecular Research Seminar Series Winter Brain Conference Brain Research, CO
2019 Seminar at MCB Program Open House, the MCB Program University of Illinois at Urbana Champaign
2019 Research Presentation at Kv7 Channels Symposium, Naples, Italy
2019 Research Seminar, Medical and Pharmaceutical Science (MPS). Technical Group Symposium, UKC (US-Korea Conference), Chicago
2019 Lecture, Women in Science, KWiSE (Korean-American Women in Science Engineering), UKC (US-Korea Conference), Chicago
2020 Invited Seminar at the Department of Physiology and Neurobiology Seminar Series The University of Connecticut
2020 Invited Seminar at the Seizure Focus Research Seminar Series, Department of Pharmacology, Northwestern University Feinberg School of Medicine
2021 Invited seminar at "My Journey in Science" Fireside Chats, School of MCB, UIUC.
2022 Invited Seminar at the Department of Medicinal Chemistry and Molecular Pharmacology (MCMP), Purdue University College of Pharmacy & Purdue Institute for Integrative Neuroscience (PIIN)
2022 Lecture, Understanding the Brain: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery (2021-2022), UIUC.
2022 Short Talk Seminar at the Protein Phosphatases Conference - Jointly hosted by FASEB and the Japanese Association for Protein Phosphatase Research (JAPPR)
2023 Seminar at Neuroscience Program Open House, the Neuroscience Program University of Illinois at Urbana Champaign

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V. TEACHING ACTIVITIES AT UNIVERSITY OF ILLINOIS

FORMAL COURSE INSTRUCTIONS

2010 Guest Lecturer (2 lectures), MCB 416 (Neuroethology)
2011 Instructor, MCB 412 / NEUR 422 (Molecular and Cellular Neuroscience)
40 lectures. Instructor and Course Evaluation System (ICES) score =
4.5 out of 5 (1=exceptionally low; 5=exceptionally high)
Included in the List of Teachers Ranked as "Excellent"

2012-present Instructor, MCB 461 / NEUR 461 (Cell and Molecular Neuroscience)
Average 42 lectures. ICES score = Average >4.5 out of 5
Included in the List of Teachers Ranked as "Excellent"
Sabbatical leave in Fall 2020.

2015-2020 Team Instructor, NEUR 598 (Graduate level Neuroscience I and II)
3 lectures on Neurophysiology

2021-2022 Team Instructor, NEUR 542 (Graduate level Neuroscience I and II)
1 lecture

TRAINING IN TEACHING

2016 National Academies Summer Institute for Undergraduate Education
Named 2016-17 National Academies Education Fellow

MENTORING ACTIVITIES

Postdoctoral Research Fellows

2010-2014 Kwan Young Lee, Ph.D.

2015-2021 Eung Chang Kim, Ph.D.

2022-present Eung Chang Kim, Ph.D.
Co-mentoring Eung Chang Kim who is a Visiting Research Scientist,
at Paul Selvin's lab, UIUC (Supporting Kim by Selvin (67%) and Chung (33%))

Graduate Students

2010-2012 Sara E. Royston, M.S. (Neuroscience Program)
Currently a MD

2010-2012 Kaitlyn R. Sherer (Neuroscience Program)
Currently a DVM

2013-2019 Sung-Soo Jang, Ph.D. (Neuroscience Program)
Received Predoctoral Research Award 2015,
Korean Neuroscientist Association, Society of Neuroscience
Currently a postdoc at Stanford University.

2016-2021 Jiaren Zhang, B.S., M.S. Ph.D. (MCB Program)
Received MIP Outstanding Graduate Thesis Award
Currently Scientist II at Novo Nordisk, China

2016-2022 Brian Baculis, B.S. (Neuroscience Program)
Received NSF Research Traineeship in "Understanding the Brain:
Training the Next Generation of Researchers in Engineering and
Deciphering of Miniature Brain Machinery (2018-2020)
Currently Scientist III at Glaxo-Smith Kline, US

2018-2022 Jennifer Walters, B.S. (Neuroscience Program)
Received NSF Research Traineeship in "Understanding the Brain:
Training the Next Generation of Researchers in Engineering and
Deciphering of Miniature Brain Machinery (2021-2022)
Awarded the 2022 C. Ladd Prosser Award for the best scientific
achievement from the Neuroscience Program.

2018-2023 Gregory Tracy, Ph.D. (MCB Program)
Received an Outstanding Teaching Assistant Award 2020, MCB
Submitted his Ph.D. thesis in May 2023

2023-present Hayden Noblett, B.S. (Neuroscience Program)
Received NSP Research Fellowship in 2023

Undergraduate Students

2010-2011 Daniel J. Ley, MCB Major (MCB290)

2010-2012 Maxwell O. Vest, MCB Major (MCB290, MCB492 senior thesis)
Graduated with "Highest Distinction" for his senior thesis
Received MIP "Howard S Ducoff Prize for the Best Senior Thesis"
and "Proctor & Gamble Award for Undergraduate Research"

2010-2012 HanSol Oh, MCB Major, (MCB290, MCB492)
Graduated with "Distinction" for her senior thesis
Received MIP "C. Ladd Prosser Outstanding Achievement Award"

2011-2012 Ralph Bartley, MCB Major (MCB290)

2012 Max Crouse, MCB Major (MCB290)

2012-2013 Seung Du Beak, MCB Major (MCB290, MCB492)
Graduated with "Distinction" for his senior thesis

2012-2013 Edward Kim, Neuroscience Major (MCB290, MCB492)
Graduated with "Highest Distinction" for his senior thesis
Received MIP "Howard S Ducoff Prize for the Best Senior Thesis"

2012-2014 Ashley Czaplicki, Spanish Major (MCB290)

2013-2014 Gun Hee Lee, Public Health Major (MCB290)

2013-2015 Dhruv Joshi, MCB Major (MCB290, MCB492)
Graduated with "Highest Distinction" for his senior thesis

2013-2015 Seungbae Lee, MCB Major (MCB290, MCB492)
Graduated with "High Distinction" for his senior thesis

2013-2016 Mary Hong, MCB Major (MCB290, MCB492)
Graduated with "Distinction" for her senior thesis

2014 Whitney A Stevens Sostre, University of Puerto Rico at Mayagüez
University of Illinois Summer Research Opportunities Program

2014-2016 Shuwei Wang, MCB Major (MCB 290)
Received MCB Research Fellowship 2015

2014-2016 HanGil Jeong, MCB Major (MCB290, MCB492)
Graduated with "High Distinction" for his senior thesis

2016 Junhee Daniel Lee, Centre College, Kentucky
Received James G. Brown Undergraduate Research Fellowship

2014-2017 Weilun Pang, MCB Major (MCB290, MCB492)
Graduated with "Highest Distinction" for her senior thesis
Received MIP "Howard Ducoff Prize for the Best Senior Thesis"
Received "Proctor & Gamble Award for Undergraduate Research"

2014-2017 Zhuoli Huang, Biochem Major (BIOC290, BIOC492)
Received BIOC James Scholar Preble Research Award 2015
Graduated with "Highest Distinction" for her senior thesis
Received MIP "C. Ladd Prosser Outstanding Achievement Award"
Received "William T. and Lynn Jackson Senior Thesis Award"

2017 Staci Hammer, REU program Phenotypic plasticity Research Experience
for Community college Students (PRECS)

2015-2018 Rebecca Choi (MCB290 undergraduate research)

2018 Allison Houghton, REU program Phenotypic plasticity Research Experience for Community college Students (PRECS)

2017-2019 David Cao (MCB290/MCB492 undergraduate research)
Bronze Table 2019 from LAS
MCB492 senior thesis. Graduation with Highest Distinction.

2017-2019	Jaimin Patel (MCB290/MCB492 undergraduate research) Bronze Table 2019 from LAS MCB492 senior thesis. Graduation with Highest Distinction. MIP Howard S. Ducoff Award for Outstanding Senior Thesis
2017-2019	Justine Chee (MCB290 undergraduate research) James Scholar 2015-2019
2018-2019	Julianne Yang (BIOC290/BIOC492 undergraduate research) BIOC492 senior thesis. Graduation with Highest Distinction. BIOC William T. and Lynn Jackson Merit Award (senior thesis)
2019-2020	Andrew Zhu (MCB290 undergraduate research)
2019-2021	Eric Shin (MCB290 undergraduate research) MCB492 senior thesis. Graduation with Highest Distinction. C. Ladd Prosser Outstanding Achievement Award (senior thesis)
2019-2021	Diana Garcia (*URM, MCB290 undergraduate research) Summer Undergraduate research fellowship, 2020.
2019-2021	Harish Kesavan (MCB290 undergraduate research) Jenner's Summer research fellowship, MCB, 2021 MCB492 senior thesis. Graduation with High Distinction 12/2021
2019-2022	Angelina Wilton (MCB290 undergraduate research) Summer Undergraduate research fellowship, Mayo Clinic, 2021. MCB492 senior thesis. Graduation with Highest Distinction 5/2022 C. Ladd Prosser Outstanding Achievement Award from MIP
2022	Kyleah Rogers (*Underrepresented Minority, Engineering student) Emergent Behaviors of Integrated Cellular Systems (EBICS) research fellowship
2021-2023	Hyorim Jin (MCB290 undergraduate research)
2022-2023	Graham Kessler (BIOC 290 & 492 undergraduate research)
2021-2023	Archit Bajaj (MCB290 undergraduate research) MCB Summer undergraduate research fellowship, 2021 Summer Undergraduate research fellowship, Mayo Clinic, 2022. Graduation with High Distinction 5/2023 MIP Howard S. Ducoff Award for Outstanding Senior Thesis
2021-2023	Anisha Bhole (MCB290 undergraduate research) Graduation with High Distinction 5/2023
2021-present	Emma Bridgeman (MCB290 undergraduate research) Biology, Experience, Scholarship, and Training (BEST) scholar MCB Summer Undergraduate research fellowship 2022
2022-present	Joseph Jung (MCB290 undergraduate research) MCB Summer Undergraduate research fellowship 2023
2023-present	Logan Silzer (MCB290 undergraduate research) James Scholar

<u>Research Technicians</u>

2023	Elly Kyoeun Keum, B.S.

<u>Research Technicians</u>

2011	Stephanie Park, B.S.
2012	Rodal Issema, B.S.
2013	Edward Kim, B.S.
2012-2015	John Cavaretta, B.S.

015-2016	Gunhee Lee, B.A.
2015-2017	Amanda Weiss, B.S.
2016	Shuwei Wang, B.S., Nickolas Broches, B.S., HanGil Jeong, B.S.
2017-2018	Jennifer Walter, B.S.
2023	Elly Keum, B.S. (Research internship)

Graduate Student Thesis Committee

2010-2012	Ken A. Morris (Neuroscience Program)
2010-2012	Shane R. Crandall (Neuroscience Program)
2010-2017	Geena Skariah (Neuroscience Program)
2011	Franklyn Rocha-Cabrero (Neuroscience Program)
2011	Anthony E Becker (MIP)
2011	Huidong Yang (Neuroscience Program)
2011	Tongfei Wang (MIP)
2011-2016	Petra Majdak (Neuroscience Program)
2011-2013	Jacqueline Fenn (Neuroscience Program)
2011-2015	Annie Weisner (Neuroscience Program)
2012	David Papke (Neuroscience Program)
2012	Kevin A. Stebbings (Neuroscience Program)
2012-2018	Ghazal Naseri Kouzehgarani (Neuroscience Program)
2013-2019	Sung-Soo Jang (Neuroscience Program)
2014-2019	Georgiy Yudintsev (Neuroscience Program)
2015-2019	Shuo Kang (Neuroscience Program)
2016-present	Young Jae Lee (Neuroscience Program)
2016-2021	Monica Diliz Chinea (CDB/MCB Program)
2017-2019	Rosa Zhu (MIP/MCB Program)
2017-2019	Debby Liu (Neuroscience Program)
2017-2019	Li Zhang (Neuroscience Program)
2017-2020	Chaoyi Jin (Biophysics Program)
2017-2022	Yeoan Youn (Biophysics Program)
2018-2020	Sara Ruth Westbrook (Psychology Program)
2016-2021	Jiaren Zhang (MIP/MCB Program)
2016-2022	Brian Baculis (Neuroscience Program)
2017-2023	Greg Tracy (MIP/MCB Program)
2018-2022	Jennifer Walters (Neuroscience Program)
2019-present	Amanda Weiss (MIP/MCB Program)
2019-present	Jorge Alexis Maldonado DeJesus (Neuroscience Program)
2019-2021	Shashank Pant (Biophysics Program)
2020-present	Rohit Mohan Vaidya (Biophysics Program)
2021-present	Aatiqa Nawaz (CDB/MCB Program)
2021-present	Joanne Vanessa Huang (Chemical Engineering)
2021-present	Simón Lizarazo (MIP/MCB Program)
2021-present	Allison Yukiko Louie (Neuroscience)
2021-present	Eunyoung Kim (Neuroscience)
2021-present	Jilai Cui (Neuroscience)
2022-present	Yeeun (Yenny) Yook (Neuroscience)
2022-present	Dimitri Brunelle (Neuroscience)

2022-present	Talyor Jorgensen (Neuroscience)
2022-present	Quang Nguyen (MIP/MCB Program)
2023-present	Hayden Noblet (Neuroscience)
2023-present	Conrad Milton (Chemistry)
2023-present	Yongjae Lee (Physics)

VI. UNIVERSITY SERVICE

DEPARTMENT OF MOLECULAR AND INTEGRATIVE PHYSIOLOGY (MIP)

2010-2018	MIP Graduate Admissions Committee
2018-present	MIP Graduate Admissions Committee, Chair
2010-2015	MIP Departmental Retreat Committee, Co-chair
2010-present	MIP Qualification Examination Committee, Ad-hoc
2010-present	Invited and hosted speakers for MIP Departmental Seminars and Endowed Prosser Lectures
2010-present	Served in Prelim and Final Exam committee for MIP graduate students
2010-2021	Participation in multiple faculty searches in MIP
2010	Set-up MIP Departmental Biorad Gel Doc System
2010	Co-author for MIP Departmental Newsletter
2013-2014	MIP/MCB Faculty Search Committee, Molecular Neuroscience Search
2013-2014	Set-up MIP 2-photon microscope, histology microscope, and cryostat
2016	Discussion Leader for Assistant Professors during External Review of MIP
2016-present	A poster judge for MIP Departmental retreat
2017-2019	Volunteered for meeting candidates for Immunology & Neural Plasticity Search
2017-2020	Mentoring Committee for Nien-Pei Tsai Research evaluation for Nien-Pei Tsai's Tenure promotion
2019-2020	MCB/MIP Brain Plasticity Faculty Search Committee, Chair *Successfully recruited 2 Neuroscience Faculty members to MIP/MCB
2020-present	Mentoring Committee for Xinzhu Yu
Fall 2020	Prepared Sole Source document for MIP departmental 2-photon upgrade
2021	Coordinated the purchase of MIP departmental 2-photon microscope and installations
2021	Participated as a MIP representative in the MCB New Student Welcome
2021-present	MIP representative for MCB strategic committee *Drafted Neuroscience Faculty Hiring Plan for MIP, which was picked to pursue for 2023-2024 search by the MCB strategic committee
2021-present	MIP representative for Promotion and Tenure committee
2021-present	MIP representative for MCB Diversity, Equity, Inclusion (DEI) committee

CAMPUS

SCHOOL OF MOLECULAR AND CELLULAR BIOLOGY (MCB)

2010-present	MCB Graduate Admissions and Graduate Program Committee
2010-present	Research presentation during MCB interview weekends

2010-present	Research mentor for MCB graduate students, MCB/BIOC undergraduate students, SROP students
2010-present	Served in Prelim and Final Exam committee for MCB graduate students
2013-present	Lab tours to prospective MCB undergraduate students and their parents
2013-2014	MCB Faculty Search Committee, Molecular Neuroscience Search
2014	Participated in MCB150 Honor Students' Project – Video Interview
2018-2019	MCB Faculty Search Committee, Brain Plasticity Search
2018-2019	MCB Awards Committee
2019	MCB Neuroscience Undergraduate Major Committee (the first member show initiated the Neuroscience major and planned the courses with BioE representatives).
2019	Gave an invited research seminar at MCB interview weekends
2019-2020	MCB/MIP Brain Plasticity Faculty Search Committee, Chair *Successfully recruited 2 Neuroscience Faculty members to MIP/MCB
2021	Participated as a key MCB faculty in the MCB convocation
2021	Participated as a MIP representative in the MCB New Student Welcome
2021-present	MCB strategic committee
2021-present	MCB Diversity, Equity, Inclusion (DEI) committee *Initiated "My Journey in Science" Fireside Chats as the first speaker. Actively participated in the MCB DEI efforts Attended LAS DEI meetings held by Matt Ando (Associate Dean of LAS)
2022-2023	MCB/CDB Stem Cell Faculty Search Committee *Successfully recruited 1 Faculty member to MCB/CDB
2022-present	MIP representative for Promotion and Tenure committee

NEUROSCIENCE PROGRAM (NSP)

2010-2012	NSP Graduate Admissions Committee
2010-present	Invited and hosted speakers for NSP Seminars
2010-present	Interviewed NSP graduate applicants, gave seminars during NSP open house
2013-2015	Served in Illinois Summer Neuroscience Institute (ISNI) for minority students
2010-present	Served as an interviewer for ASPIRE candidates
2013-2015	NSP seminar committee
2013-2019	Chung lab booth "Build a neuron" in the Brain Awareness Day
2015-2019	Team Instructor, Neur598 (Neuroscience I and II) for NSP graduate students
2016-2017	NSP seminar committee, Chair
2016-2017	NSP executive committee
2021-present	NSP executive committee
2021-2022	Team Instructor, NEUR 542 (Graduate level Neuroscience I and II)
2021-present	NSP Diversity, Equity, Inclusion (DEI) committee, Chair *launched and led the DEI efforts in the NSP including - Drafted NSP DEI mission statement and DEI website, - Compiled DEI resources for the website and the NSP newsletter, - Arranged NSP DEI seminars (one/semester) - Mentor-mentee workshop at the NSP retreat, - Attended multiple DEI-related meetings. - Initiated a planning process for DEI in STEM for local high schools - Executed the LAS effort for climate survey.

- Led DEI efforts in the NSP including self-assessment worksheet for NSP,
* The Neuroscience Program Diversity Equity and Inclusion Award, UIUC.

2022-present Associate Director, NSP

COLLEGE OF LIBERAL ARTS AND SCIENCES (LAS)

2010-present	Research mentor for 24 undergraduate students
2011-2012	Faculty trainer, Cell & Molecular Biology Training Grant (CMBTG)
2011-2015	A poster judge for CMBTG symposium and Undergraduate Research Symposium
2012	Participated in NIH video conference review on CMBTG
2012	Invited speaker for the "Workshop on starting a research program for postdocs and graduate students" organized by Postdoctoral Affairs, Graduate College
2013-present	Lab tours to prospective undergraduate students and their parents
2013-present	Served as an interviewer for ASPIRE URM candidates and fellows
2015	Served in LAS Cluster Hiring-Neuroscience Committee
2017-2018	IACUC committee member
2017-present	Executive committee member, NSF Research Training Grant, "Understanding the Brain: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery (MBM-NRT)
2017-present	Affiliate Faculty, Beckman Institute for Advanced Science and Technology Neurotechnologies for Memory and Cognition (NMC) Research Group
2018-present	Participated in MBM-NRT/ NMC retreat
2019	LAS/MCB Neuroscience Major Committee
2021-present	Affiliate Faculty, the Carl R. Woese Institute for Genomic Biology (IGB), Multi-Cellular Engineered Living Systems (MCELS) Research Theme
2023	Prepared key documents and attended meetings for NSP external review.

VII. COMMUNITY OUTREACH

1998-1999	Volunteered at the "Readings for Life" program in Johns Hopkins University and taught illiterate K-5 students how to read
2012	Volunteer teacher at the Korean Language School, Urbana
2013	Organized / delivered "Neuroweek" outreach event at a local elementary school to teach neuroscience using interactive lectures, crafts, and games
2013	Chung lab tours to K-12 children from under-served / economically disadvantaged group through "College Mentor for Kids" organization (http://www.collegementors.org/)
2013-2015	Served in Illinois Summer Neuroscience Institute (ISNI) for minority students
2013-2019	Chung lab booth "Build a neuron" in the Brain Awareness Day
2017-2019	Participating faculty, REU program Phenotypic plasticity Research Experience for Community college Students (PRECS). *Will resume after COVID-19 pandemic
2021	Participating faculty, Mentor-Mentee research program for Emergent Behaviors of Integrated Cellular System (EBICS). Mentee: Kyleah Rogers (URM student)
2022	Initiated the planning process for URM high school student research internship with Centennial High School through the Neuroscience Program DEI committee.

2022 Seminar on Alzheimer's Disease at The Champaign West Rotatory Club (educating local community about the brain hyperactivity and Alzheimer's disease).

CURRICULUM VITAE
Rhanor Gillette

Citizenship: United States

Present Address:
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Integrative Physiology
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524 Burrill Hall
University of Illinois
Urbana, lllinois 61801

Phone: (217) 333-0328
Email: rhanor@illinois.edu

Education:

B.S.	University of Miami	Zoology	1967
M.S.	University of Hawaii	Zoology	1969
Ph.D.	University of Toronto	Zoology	1974

Website: https://publish.illinois.edu/slug-city/

Affiliations:
Department of Molecular & Integrative Physiology, Neuroscience Program, Beckman Institute Neurotechnology Group, Carl Woese Genomics Institute, Center for Artificial Intelligence Innovation (National Center for Supercomputing Applications)

Professional Experience:
1991-present: Professor, Department of Molecular & Integrative Physiology, University of Illinois. 2004: Affiliate, Institute for Genomic Biology (Neural and Behavioral Plasticity Research Theme). 2001-2004: Director, Systems and Integrative Biology Training Grant. 2000-2003 Executive committee, Program in Biophysics & Computational Biology. 2000, 2001 (Summers) Visiting lecturer in Tropical Neuroethology, Institute of Neurobiology, University of Puerto Rico, San Juan, PR. 1994: Visiting Scientist, Stazione Zoologica Anton Dohrn, Napoli, Italy. 1992-5, 1997-2001, 2003-4: Visiting Researcher, Hopkins Marine Station, Stanford University. 1991: Visiting Scientist, Laboratoire Arago (Université de Paris), Banyuls-sur-Mer, France. 1989-1994: NSF Learning and Memory Center core faculty member, University of Illinois. 1989, 1994: Visiting Researcher, Duke University Marine Labs. 1988-present: Chairman, Research Diving Board, University of Illinois. 1988-present: Neural Patterns Analysis Group, Beckman Institute, University of Illinois. 1988: UIUC Arnold 0. Beckman Research Distinction Award, University of Illinois. 1987-1989: Grant Review Panel Member, Cellular and Molecular Neurobiology, National Science Foundation. 1985: Visiting Researcher, Port Erin Marine Biological Laboratory, The Isle of Man, U.K. 1984-1991: Associate Professor, Department of Physiology & Biophysics, University of Illinois. 1983, 1986, 1996, 1997, 1999: Visiting Researcher, Friday Harbor Labs, University of Washington. 1978-1989, 2000-2003: Executive committee, Neural & Behavioral

Biology/Neuroscience Program, University of Illinois. 1978-1984: Assistant Professor, Department of Physiology & Biophysics, University of Illinois. University Affiliations: Systems & Integrative Biology Training Grant (Director), Neuroscience Program, Neurotechnology Group, Beckman Institute Affiliate, Program in Biophysics and Computational Biology, Center for Artificial Intelligence Innovation (NCSA). 2017-2020, PIRE (Partnership for International Research and Education) at the University of Puerto Rico (UPR): "Neural Mechanisms of Reward and Decision", External Advisory Board.

Personal Statement

I have breadth of experience in neurophysiology and behavior, ecology, classical psychology, biochemistry, and biophysics. I began work in field and lab with anemone development, then with anemone fish symbioses, which brought abiding interest in behavior. I began working with gastropod mollusks as model systems, combining ultrastructural studies of neurons with electrophysiology of simple circuits, with invention of one of the first successful intracellular stains for the EM. In postdoctoral work on motor control and learning in the sea slug *Pleurobranchaea californica*, I identified novel command neurons and did the first complete definition of their roles in neuronal networks and conditioned motor responses. As Assistant Professor I carried this work into the biophysics and biochemistry of neuromodulator regulation of ion channels and neuronal networks, with novel discoveries and mathematical models. On sabbatical in France in 1991, I studied learning in the octopus. Fortuitous observations showed how learning and motivation interact to determine foraging decisions, which has directed the most of my later work. The behavioral results on the octopus were repeated for *Pleurobranchaea* and extended to characterizing the neuronal circuitry underlying cost-benefit decision. General computational models resulted that were implemented in simulation. Modifications allowed reproduction of realistic, subjective valuation, for which the major sequelae of addiction are extreme expressions. Recent development of a neural network model for spatial and episodic memory with Hebbian and reinforcement learning markedly expands the potential of this work (pat. pend.). A present model is immediately applicable, testable, and modifiable toward breakthrough technology.

Honors and Awards:

2005 Microsoft Research Institute/University of Washington Summer Institute on Intelligent Systems: Biological and Computational Perspectives. Presentation: "Neural mechanisms of decision-making." The Foster Club Lecturer, 2002, Dept. Physiology, Cambridge University, Cambridge, UK. "Building Animals." 1998 Microsoft Research Institute/University of Washington Summer Institute on Intelligent Systems: Biological and Computational Perspectives. Presentation: "Building Animals." 1999 Chair, Benedetti-Pichler Award Symposium Honoring Jonathan Sweedler, Eastern Analytical Symposium & Exposition, Somerset, NJ. Presentation: "What am I doing here? I'm a Physiologist!" Physiology Teaching Awards, 1996, 2002; ranked as excellent by the 500 students of Biology 121, 1996-2002. The Don Abbott Memorial Lecturer in Marine Biology 1995, Stanford University Hopkins Marine Station. "Neural Mechanisms of Decision-Making in Foraging Animals." MacFarland Fund award for the Holistic Biology Expedition (Stanford) to the Sea of Cortez, 2010. Distinguished Faculty Award, Dept. Molecular & Integrative Physiology, 2019.

Research Interests and Activities:

1. The structural organization of behavior and its neural bases.
2. Cellular and molecular mechanisms of regulation of neuronal activity.
3. Computational and robotics simulation of cost-benefit analysis by neural networks

Present Directions:

1. Neural circuitry and mechanisms of decision-making in foraging behavior: interactions of sensory, learning, and motivational processes in the expression of appetitive and aversive behavior.
2. Software and hardware platforms for autonomous cost-benefit analyses in computer and robot function.

Grant Support:

MURI (MultiUniversity Research Institute; ONR), 2019-2024: A *CyberOctopus* that Learns, Evolves, and Adapts

Teaching Experience:

Instructor:

2010 Instructor, lecture and field, Holistic Biology Expedition (Stanford) to the Sea of Cortez.

2008 Winter, Instructor, lecture and field, in Marine Biology & Behavior. Carmabi Marine Station, Curaçao, Netherlands Antilles.

2004 Spring, invited Holistic Lecturer/Lab Instructor in Marine Biology, Hopkins Marine Station, Stanford University.

Summers 2000, 2001: Invited lecturer, Summer Course in Tropical Neuroethology, Instituto de Neurobiologia, Universidad de Puerto Rico, San Juan, Puerto Rico, "Behavioral Decision and Computational Approaches to Neuroethology."

1992-2003: Biology 121: Introductory Biology (Systems Physiology & Behavior). University of Illinois

1978-present: Integrative Neuroscience.

1978-1992: Structure and Function in the Nervous system. University of Illinois
Comparative Neurophysiology
Neurophysiology Laboratory

1982-1986: Physiology 301: Cell Physiology (Neurophysiology)

Fall, 1986: Seminar on Computational Neuroscience: Natural and Artificial Intelligence Systems.

1978-present: Guest lectures in Clinical Neuroscience, Neuroanatomy, Neurochemistry, Honors Biology, Receptors and Modulators (Biophysics), and Neuroethology

1977-1978: Neurobiology and Behavior. University of California at Santa Cruz

Graduate Teaching Assistant:

1971-1973: Neurophysiology Laboratory, University of Toronto

1972 (Summer): Marine Biology, Huntsman Marine Laboratory, St. Andrews, New Brunswick

1970-1971: Neurobiology and Behavior Laboratory, University of Toronto

1967-1968: General Zoology, Parasitology Laboratories, University of Hawaii

1967: Comparative Anatomy Laboratory, University of Miami

Continuing Education:

Symposium organizer. "Common and Divergent Evolution of Neural Modules for Memory, Action Selection, Premotor Translation, and Motor Patterning" for the International Society for Neuroethology (ICN) 2024 conference in Berlin: https://www.neuroethology.org/meetings.

Workshop, panel member, 1980-2001, 2004, 2012: "Learning Mechanisms in Invertebrates", "Intracellular pH in the activation of excitable and inexcitable cells", "Comparative analysis of evolutionary mechanisms in the nervous system, Recent developments in learning and behavior research, Diversity of sources and targets for neuromodulation, Cellular correlates of chemosensory discrimination, Building Animals," Winter Conference on Brain Research.

Meeting organizer: The 6th Annual Meeting of the Midwest Neurobiologists, 1983. Allerton House, Monticello, Illinois.

Program Committee: Winter Conference on Brain Research, 1983, 1991, 1992.

Symposium: "Behavioral Neuromodulators: Cellular, Comparative and Evolutionary Patterns". American Society of Zoologists Annual Meeting, 1987 at New Orleans, Louisiana.

Microsoft Research Institute/University of Washington Summer Institutes on Intelligent Systems: Biological and Computational Perspectives, 1997-1998.

Symposium, Society for Integrative and Comparative Biology, 1999, Atlanta: Swimming in Opisthobranch Mollusks: Contributions to Control of Motor Behavior. Presentation: Multifunctionality in neurons of the swim motor network of *Pleurobranchaea*.

Symposium, Animal Behavior Society, 2003, Boise: Behavioral Switching. Presentation: Building animals.

Understanding Complex Systems: Networks. 2004, UIUC. Presentation: Evolving biological neural networks for social cooperation.

Symposium, Gastropod Neuroscience: Past Successes and Future Prospects, June 5 - June 9, 2007. Friday Harbor Laboratories, San Juan Island, University of Washington. Presentation: "Neural network judo for decisions and hierarchies."

Molluscan Neuroscience '09, Recent Advances and New Vistas. Institute of Neurobiology, San Juan, Puerto Rico, Feb. 12 – 15, 2009. Symposium organizer: "Neural circuits for decision making." Presentation: The detailed neuronal circuitry of neuroeconomics in molluscan behavior.

International Society for Neuroethology. Molluscan Neuroscience '09, Recent Advances and New Vistas. Institute of Neurobiology, San Juan, Puerto Rico, Feb. 12 – 15, 2009. Symposium organizer: "Neural circuits for decision making." Presentation: The detailed neuronal circuitry of neuroeconomics in molluscan behavior.

Society for Neuroeconomics. Annual Conference on Neuroeconomics: Decision Making and the Brain. October 15-17, 2010, Evanston, IL. Presentation: "Value, risk, reward and decision in neuronal circuitry of a simple model animal."

J.B. Johnston Club. 31st Karger Workshop in Evolutionary Neuroscience: The neuronal circuitry of foraging in the predatory sea-slug *Pleurobranchaea*, and the addiction process, Oct.17, 2019, University Center, Chicago.

Publications:
(*Formally reviewed. **Invited contributions, formally reviewed.)

Journal Articles

*1. Gillette, R. and B. Pomeranz. Neuron geometry and circuitry via the electron microscope: Intracellular staining with osmiophilic polymer. **Science** 182, 1256-1258 (1973). THESIS WORK.

*2. Gillette, R. and B. Pomeranz. A study of neuron morphology in *Aplysia californica* using Procion Yellow Dye. **Comparative Physiology and Biochemistry**. 44A, 1257-1259 (1973). THESIS W0RK.

*3. Gillette, R. Microstructural and ultrastructural studies on identified neurons of the abdominal ganglion of *Aplysia californica*. Ph.D. Thesis, University of Toronto, 1974. THESIS WORK.

*4. Gillette, R. and Pomeranz, B. Ultrastructural correlates of interneuronal function in the abdominal ganglion of Aplysia. **Journal of Neurobiology**. 6, 463-474 (1975). THESlS WORK.

*5. Gillette R. and W. J. Davis. The role of the metacerebral giant neuron in the feeding behavior of *Pleurobranchaea*. **Journal of Comparative Physiology** 116, 129-159 (1977).

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*16. Davis, W. J., Gillette, R. and Kovac, M. P., Croll, R. P. and Matera, E. Organization of synaptic inputs to paracerebral feeding command interneurons of *Pleurobranchaea californica* III. Modifications induced by experience. **Journal of Neurophysiology** 49, 1557-1572 (1983).

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25. Gillette, R. Command neurons? FAP! **Behavioral and Brain Sciences 9, 727-729 (1986).

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*31. Gillette, R., Gillette, M. U., Lipeski, L. and Connor, J. M. Specific pH- and Ca^{2+}/calmodulin-sensitive phosphorylation of a unique protein in molluscan nervous tissue. **Biochimica et Biophysica Acta** 1036, 207-212 (1990).

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*85. Gribkova ED, Chowdhary G, Gillette R. Cognitive Mapping and Episodic Memory Emerge From Simple Associative Learning Rules. Submitted.

Invited: (Chapters, essays)

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98. Hirayama K, Catanho M, Brown JW, Gillette R. (2012) A core circuit module for cost/benefit decision. **Frontiers in Neuroscience 6:123. PMID: 22969700.

**99. Rhanor Gillette (2014) Pleurobranchaea. Scholarpedia, 9(11):3942.

100. Gillette R, Brown JW (2015) The Sea Slug, *Pleurobranchaea californica*: A Signpost Species in the Evolution of Complex Nervous Systems and Behavior. **Integrative and Comparative Biology, pp. 1–12 doi:10.1093/icb/icv081

And numerous abstracts…

CURRICULUM VITAE

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EDUCATION

1985–1989	University of Buenos Aires, Argentina B.S. in Biochemistry, School of Pharmacy and Biochemistry.
1990–1991	University of Buenos Aires, Argentina M.S. in Biochemistry School of Pharmacy and Biochemistry.
1992–1996	University of Buenos Aires, Argentina Ph.D., Department of Analytical and Physical Chemistry, School of Pharmacy and Biochemistry. Dissertation title: Characterization of ion channels from syncytial epithelia at the single-molecule level Advisor: Dr. Ignacio L. Reisin.

PROFESSIONAL EXPERIENCE

1997–1999	*Postdoctoral Associate*; Dept. Physiology & Biophysics; SUNY at Buffalo (Mentor: Dr. Anthony Auerbach)
01/2000–07/2002	*Research Assistant Professor*; Dept. Physiology & Biophysics; SUNY at Buffalo
08/2002–07/2008	*Assistant Professor*, Dept. Molecular & Integrative Physiology; University of Illinois at Urbana-Champaign
08/2008–07/2013	*Associate Professor*, Dept. Molecular & Integrative Physiology; University of Illinois at Urbana-Champaign
2009–2014	*Director of the NIH Molecular Biophysics Training Grant*
08/2013–present	*Professor*, Dept. Molecular & Integrative Physiology; University of Illinois at Urbana-Champaign
2014–present	Member of the Editorial Advisory Board of the *Journal of General Physiology*
2014–2017	Richard and Margaret Romano Professorial Scholar

2015–present Affiliated faculty of the Computational Science and Engineering Group; College of Engineering, University of Illinois at Urbana-Champaign

2017–present *Head*, Dept. Molecular & Integrative Physiology; University of Illinois at Urbana-Champaign

GRANTS

- Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH 04/01/18–03/31/23 (R01 Award) **$1,326,584** (direct costs)
- Supplement for Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH 06/30/17–11/30/17 **$66,872** (direct costs)
- Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH 06/01/12–05/31/18 (R01 Award) **$1,134,375** (direct costs)
- Supplement for Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH 09/01/09–08/31/11 **$150,000** (direct costs)
- Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH 06/01/08–05/31/12 (R01 Award) **$875,000** (direct costs)
- Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH 06/01/07–05/31/08 (R56 Award). **$250,000** (direct costs)
- Mechanisms of Neurotransmitter-gated Ion Channels, NINDS/NIH: 04/01/03–03/31/07 (R01 Award). **$760,000** (direct costs)
- Linear Free-Energy Relationships and Acetylcholine Receptor Channels, American Heart Association (USA): 07/01/02–06/30/03 (postdoctoral). **$35,000**
- Single-Channel Characterization of Recombinant Ganglionic Nicotinic Acetylcholine Receptors, American Heart Association (USA): 07/01/99–06/30/02 (postdoctoral). **$105,000**
- Binding, Gating and Desensitization of Acetylcholine Receptor Channels, Myasthenia Gravis Foundation of America (USA): 04/01/98–03/31/99 (postdoctoral). **$30,000**

INVITED TALKS

1996 Characterization of ion channels from the parasite *Echinococcus granulosus* at the single-molecule level. Putative interaction between neighboring channels. **Department of Anesthesiology, Washington University in Saint Louis.** Host: Dr. Joe Henry Steinbach.

1996 Characterization of ion channels from the parasite *Echinococcus granulosus* at the single-molecule level. Putative interaction between neighboring channels. **Department of Biomedical Engineering, The Johns Hopkins University.** Host: Dr. David Yue.

2000 Linear free-energy relationships and the gating of acetylcholine receptor channels. **Department of Biological Sciences, SUNY at Buffalo.** Host: Dr. Bruce Nicholson.

2001 Allosteric mechanisms in neurotransmitter-gated ion channels. A quantitative study at the single-channel level. **Department of Membrane Biochemistry and Biophysics, Merck & Co. Research Laboratories.** Host: Dr. Doris Cully.

2001 Allosteric mechanisms in neurotransmitter-gated ion channels. A quantitative study at the single-molecule level. **Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign.** Host: Dr. Mark Nelson.

2001 Allosteric mechanisms in neurotransmitter-gated ion channels. A quantitative study at the single-molecule level. **Department of Pharmacology, University of Virginia Health System. Host:** Dr. Patrice Guyenet.

2001 Allosteric mechanisms in neurotransmitter-gated ion channels. A quantitative study at the single-channel level. **Department of Pharmacology, Yale University.** Host: Dr. William Sessa.

2001 Linear free-energy relationships and the dynamics of gating in the acetylcholine receptor channel. **4th International Conference on Biological Physics, Kyoto, Japan.** Chairperson: Dr. Nobuhiro Go.

2001 Allosteric mechanisms in neurotransmitter-gated ion channels. A quantitative study at the single-channel level. **Department of Physiology, Nagoya University School of Medicine, Japan.** Host: Dr. Masahiro Sokabe.

2002 The dissociation of acetylcholine from open nicotinic receptor channels. **Neuroscience Program, SUNY at Buffalo**. Host: Dr. Malcolm Slaughter.

2002 Molecular mechanisms of neurotransmitter-gated ion channels. A quantitative study of the muscle nicotinic receptor at the single-molecule level. **Theoretical Biophysics Group, Department of Physics, University of Illinois at Urbana-Champaign.** Host: Dr. Klaus Schulten.

2002 Molecular mechanisms of neurotransmitter-gated ion channels. A quantitative study of the muscle nicotinic receptor at the single-molecule level. **National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign.** Host: Dr. Eric Jakobsson.

2002 Molecular mechanisms of neurotransmitter-gated ion channels. A quantitative study of the muscle nicotinic receptor at the single-molecule level. **Department of Chemistry, University of Illinois at Urbana-Champaign.** Host: Dr. Martin Gruebele.

2003 Molecular mechanisms of neurotransmitter-gated ion channels. A quantitative study of the muscle nicotinic receptor at the single-molecule level. **Neuroscience Graduate Program, University of Illinois at Urbana-Champaign.** Host: Dr. Tzumin Lee.

2003 A few new ideas on how acetylcholine receptor channels might work: insight from kinetic studies at the single-channel level **Department of Pharmacology, University College London, London, UK.** Host: Prof. David Colquhoun.

2004 Linear free-energy relationships and the dynamics of gating in the acetylcholine receptor channel. A Φ-value analysis of an allosteric transition at the single-molecule level **Department of Medicine, University of Chicago.** Host: Dr. Dorothy Hanck.

2004 How malleable are free-energy landscapes of ion-channel gating? A Φ-value analysis, at the single-channel level, of the gating allosteric transition in nicotinic receptors **FASEB Summer Research Conferences (invited speaker).**

2005 Probing the structure and electrostatics of ion-channel pores using engineered ionizable residues. **Department of Medicine, University of Chicago.** Host: Dr. Harry Fozzard.

2006 Probing the structure and electrostatics of ion-channel pores one proton at a time. **Gordon Research Conference on Ion Channels (invited speaker).**

2006 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **Department of Biological Chemistry, School of Pharmacy and Biochemistry, University of Buenos Aires, Argentina.** Host: Dr. Luis González-Flecha.

2007 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **Institute for Biophysical Dynamics, University of Chicago.** Host: Dr. Eduardo Perozo.

2007 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **Membrane Transport Biophysics Unit, NINDS/National Institutes of Health.** Host: Dr. Joseph Mindell.

2007 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **Department of Pharmacology, Yale University Medical School.** Host: Dr. James Howe.

2007 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **Department of Pharmacology, Southern Illinois University School of Medicine.** Host: Dr. Julio Copello.

2007 Individual proton-transfer events as a probe of the structure and electrostatics of the nicotinic acetylcholine receptor pore. **Workshop on Proton Transfer and Solvation in Biology and Model Systems, Telluride Science Research Center (invited speaker).**

2007 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **234th American Chemical Society National Meeting (invited speaker).**

2007 Individual proton-transfer events as a probe of the structure and electrostatics of the nicotinic acetylcholine receptor pore. **Department of Physiology, University of Wisconsin School of Medicine.** Host: Dr. Meyer Jackson.

2007 Individual proton-transfer events as a probe of the structure and electrostatics of the nicotinic acetylcholine receptor pore. **Department of Chemistry, Technical University of Munich, Munich, Germany.** Host: Dr. Thomas Kiefhaber.

2008 Individual proton-transfer events as a probe of the structure and electrostatics of the nicotinic acetylcholine receptor pore. **Gordon Research Conference on Ligand Recognition and Molecular Gating (invited speaker).**

2008 Systematic Engineering of Ionizable Residues in Ion Channels: pK_a values and effect of introduced charges on the passing currents as a means to probe structure on well-defined functional states. **Workshop on Protein Electrostatics, Telluride Science Research Center (Invited speaker).**

2008 Individual proton-transfer events as a probe of the structure and electrostatics of the nicotinic acetylcholine receptor pore. **Leloir Institute Foundation, University of Buenos Aires, Argentina.**

2008 Acid-base chemistry, and the structure and electrostatics of the nicotinic-receptor pore. **XIII International Symposium on Cholinergic Mechanisms, Foz do Iguaçu, Brazil (invited speaker).**

2009 Probing structure on well-defined functional states of ion channels using systematically-engineered ionizable residues and proton-transfer events. **53rd Annual Meeting of the Biophysical Society (invited symposium speaker).**

2009 Individual proton-transfer events as a probe of the structure and electrostatics of the nicotinic acetylcholine receptor pore. **Department of Physiology, University of Pennsylvania.** Host: Dr. Toshinori Hoshi.

2009 Probing structure on well-defined functional states of ion channels using systematically-engineered ionizable residues and proton-transfer events. **Department of Biochemistry, University of Illinois at Urbana-Champaign.** Host: Dr. Maria Spies.

2009 Probing structure on well-defined functional states of ion channels using systematically-engineered ionizable residues and proton-transfer events. **Department of Anesthesiology, Washington University at Saint Louis.** Host: Dr. Chris Lingle.

2009 Probing structure on well-defined functional states of ion channels using systematically-engineered ionizable residues and proton-transfer events. **Department of Biophysics, Johns Hopkins University.** Host: Dr. Bertrand Garcia Moreno.

2009 Single-channel electrophysiology: an unheralded tool in membrane-protein structural biology. **MRC Laboratory of Molecular Biology, Cambridge, UK.** Host: Dr. Nigel Unwin.

2010 Tunable pK_a values and the elusive basis of opposite charge selectivities in the nicotinic-receptor superfamily. **Department of Physiology and Biophysics, Albert Einstein College of Medicine, Yeshiva University.** Host: Dr. Myles Akabas.

2011 Tunable pK_a values and the elusive basis of opposite charge selectivities in the nicotinic-receptor superfamily. **Department of Physiology, The University of Texas Health Science Center at San Antonio.** Host: Dr. David Weiss.

2011 Tunable pK_a values and the elusive basis of opposite charge selectivities in the nicotinic-receptor superfamily. **Department of Physiology, Texas Tech University.** Host: Dr. Luis Cuello.

2011 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Workshop on Protein Electrostatics, Telluride Science Research Center (invited speaker).**

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Gordon Research Conference on Protons and Membrane Reactions (invited speaker).**

2012 The ring of glutamates in the charge-selectivity filter region of the nicotinic receptor forms a system of unanticipated complexity. Minisymposium on Ligand-gated Ion Channels, **56th Annual Meeting of the Biophysical Society (invited symposium speaker).**

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Biochemistry and Molecular Biology, The University of Texas Health Sciences Center at Houston.** Host: Dr. Vasanthi Jayaraman.

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Theoretical and Computational Biophysics Group, University of Illinois at Urbana-Champaign.** Host: Dr. Emad Tajkhorshid.

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Anesthesiology, Texas Tech University.** Host: Dr. Luis Reuss.

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Physiology and Biophysics, Rush University.** Host: Dr. Robert Eisenberg.

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Life Sciences Institute, The University of British Columbia.** Host: Dr. Harley Kurata.

2012 Anesthesiology and ion-channel research. **Department of Anesthesiology, Texas Tech University.** Host: Dr. John Wasnick.

2012 Dissecting the mechanism of cation-transport catalysis by glutamate side chains in nicotinic receptors. **Workshop on Proton Transfer in Biology, Telluride Science Research Center (invited speaker).**

2012 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign.** Host: Dr. Milan Bagchi.

2013 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Physiology and Pharmacology, Oregon Health and Sciences University.** Host: Dr. David Dawson.

2013 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Biochemistry & Molecular Biology, University of Chicago.** Host: Dr. Eduardo Perozo.

2013 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Institute of Chemical and Physico-chemical Biology, School of Pharmacy and Biochemistry, University of Buenos Aires, Argentina.** Host: Dr. Sergio Kaufman.

2013 The unanticipated complexity of the ring of glutamates in the charge selectivity filter of the nicotinic acetylcholine receptor. Protonation–deprotonation or side-chain dynamics? **Department of Biological Chemistry, School of Exact and Natural Sciences, University of Buenos Aires, Argentina.** Host: Dr. Diego Ferreiro.

2013 Single-channel electrophysiology as a tool in ion-channel structural biology. **Department of Biochemistry, Stockholm University, Stockholm, Sweden.** Host: Dr. Peter Brzezynski.

2014 Side-chain conformational flexibility and its impact on ion conduction through channels. **Department of Neuroscience, University of Texas Southwestern Medical Center at Dallas.** Host: Dr. Ryan Hibbs.

2014 Searching for the structures that underlie the physiological states of pentameric ligand-gated ion channels: an attempt using X-ray crystallography. **Frontiers in Membrane Protein Structural Dynamics, Chicago (invited speaker).**

2015 Cation conduction and selectivity in nicotinic receptors: functional simplicity belies chemical complexity. **GEPROM–University of Montreal, Canada.** Host: Dr. Derek Bowie.

2015 Using single-molecule electrophysiology and computer simulations to understand the molecular basis of cation conduction and charge selectivity in acetylcholine-receptor channels. **Center for the Physics of Living Cells, University of Illinois at Urbana-Champaign.** Host: Dr. Taekjip Ha.

2015 Single-molecule electrophysiology: multiple conformations inferred from dwell-time and current-amplitude measurements. **Membrane Protein Structural Dynamics Consortium, Chicago (invited speaker).**

2015 Conformational dynamics in pentameric ligand-gated ion channels. **Membrane Protein Structural Dynamics Consortium, Chicago (invited speaker).**

2016 Charge selectivity in pLGICs: an aspect of channel function that remains elusive even when multiple structures are known. Symposium on Pentameric Ligand-gated Ion Channels, **60th Annual Meeting of the Biophysical Society (invited symposium speaker).**

2017 Identifying the elusive link between amino-acid sequence and charge selectivity in the nicotinic-receptor superfamily. **Department of Pharmacology, Physiology and Neuroscience, Rutgers University New Jersey Medical School.** Host: Dr. Jorge Contreras.

2018 Identifying the elusive link between amino-acid sequence and charge selectivity in the nicotinic-receptor superfamily. **Department of Biological Sciences, University of Missouri, Columbia.** Host: Dr. Lorin Milescu.

2019 A structural view of the lipid dependence of function in pentameric ligand-gated ion channels. **International Society for Neurochemistry Satellite Meeting, Montréal, Canada**.

2022 Signal transduction through biological membranes: the case of ionotropic neurotransmitter receptors. **Physics Institute, Universidad Autónoma de San Luis Potosí, Mexico.** Host: Dr. Jorge Arreola.

2023 Signal transduction through biological membranes: Mechanistic aspects of binding–gating coupling in Cys-loop receptor channels. **Department of Biochemistry, University at Buffalo.** Host: Dr. Gabriela Popescu.

2023 Unconventional applications of single-channel electrophysiology. **Department of Biophysics, Humboldt University, Berlin, Germany**. Host: Dr. Andrew Plested.

2023 Signal transduction across biological membranes: Mechanistic aspects of binding–gating coupling in Cys-loop receptor channels. **MRC Laboratory of Molecular Biology (LMB), Cambridge, UK.** Host: Dr. Radu Aricescu.

MEMBERSHIPS

- Member of the Biophysical Society
- Member of the Society of General Physiologists
- Member of the American Physiological Society
- Member of the Society of Latin American Biophysicists

PERSONNEL TRAINED

Graduate students

08/2002–12/2006: Dr. Yamini Purohit, now in the Biotechnology sector in Toronto, Ontario (Canada)
05/2008–09/2012: Dr. David Papke, now a physician in the Pathology Department of Brigham and Women Hospital, Boston, MA.
10/2012–05/2016: Dr. Tyler Harpole, now a Data Scientist at Facebook.
08/2019–present: Ms. Nicole Godellas.

Visiting graduate students

08/2013–04/2014: Ms. Irene Heredero-Bermejo, University of Alcalá de Henares, Spain.
01/2015–06/2015: Ms. Marlene Lindner, Humboldt University, Berlin, Germany.

Postdoctoral associates

08/2002–present: Dr. Gisela D. Cymes.
06/2004–11/2004: Dr. Sergio Elenes, now an Associate Professor at the Center for Biomedical Research, University of Colima (Colima, Mexico).
01/2006–08/2007: Dr. Pratip Mitra, now an Assistant Professor at the Department of Immunotherapeutics and Biotechnology, School of Pharmacy, TexasTech University
06/2008–08/2016: Dr. Giovanni Gonzalez-Gutierrez, now a Staff Scientist at Indiana University.
08/2017–08/2021: Dr. Pramod Kumar, now a Research Associate at Cold Spring Harbor Laboratories.

Technicians

08/2002–08/2003: Amy Berg
08/2003–08/2005: Dr. Ying Ni.
09/2005–09/2007: Mr. Glenn Westfield.
10/2007–08/2008: Dr. Michael Decker.
8/2014–5/2016: Mr. Nicholas Kowalczyk.

Undergraduate students

Pikul Patel: Unknown
Chris Kramer: Unknown
Jagoda Jasielec: Now a practicing physician in Evanston, Illinois
Jessica Gasser: Now a staff scientist at the Broad Institute
Gina Papke: Now a practicing physician
Scott Czarnik: Now a practicing dentist
Kimberly Sidell: Now a practicing pharmacist
John Pizarek Now a practicing dentist
Marc Maybaum Now a data analyst at VML
Christopher Staehlin: Now a practicing pharmacist
Marissa Pasquini: Now a practicing pharmacist

Amy Holmstrom: Now a practicing physician
Marni Gonnering: Now a practicing veterinarian
Michael Rigby: Now a medical resident at Mayo Clinic
Shyam Saladi: Now the owner of Nelix Labs
Caroline Johnson: Now a PhD student at Loyola University
Joseph Leasure: Unknown
Yocelin Bello: Now a Lab Assistant at Loyola University
Gloria Wang: Unknown
Eric Shin: Now a PhD student at UIUC
Jialing Jiang: Now a practicing physician
Samuel Romo: Now a Lab Assistant at Loyola University
Ishan Taneja: Currently a graduate student at Scripps Research
Sophie Gough: Now a medical resident at Stanford University
Alexis Susralski: Now a Masters student at the University of Colorado, Boulder
Nicole Godellas: Currently a PhD student in the Grosman lab at UIUC.
Nicholas Lombardo: Now a Pharmacy student at UIC
Minwoo Choi: Currently a Dentistry student at UIC
Anastasia Metropulos: Currently a Medical Student
Brian Tible: Currently a Medical student
Jeremy Weissman Unknown
Daniel Kiernan Unknown
Brandon Shurdhi Unknown
Lauren Lane Currently an undergraduate student at UIUC

High School students
Jay Sridaharan
Lindsay Huang
Mehul Putnam
Minwoo Choi

GRADUATE COMMITTEES

(Committees at institutions other than the University of Illinois are underlined)

2002: Qing Zhao: Qualifying Examination Committee, Department of Molecular and Integrative Physiology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best.**
2002: Ren-Shiang Chen: Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best.**
2003: Jeremy Van Buren: Ad-hoc member of the PhD-Thesis Dissertation Committee, Department of Pharmacology, **Southern Illinois University School of Medicine. Mentor: Dr. Louis Premkumar.**

2003: Sameer Varma: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2003: Ashok Palaniappan: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2003: Xinguo Xiang: Qualifying Examination Committee, Department of Molecular and Integrative Physiology, **University of Illinois at Urbana-Champaign. Mentor: Dr. David Shapiro.**

2004: Asba Tasneem: Preliminary Examination Committee, Department of Molecular and Integrative Physiology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2005: Sameer Varma: Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2005: Brian Wilson: Qualifying Examination Committee, Department of Molecular and Integrative Physiology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Charles L. Cox.**

2005: Nyla Ismail: Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Gene Robinson.**

2005: Asba Tasneem: Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2005: Ren-Shiang Chen: Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best.**

2005: Yi Wang: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2006: Feng Liu: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Martin Gruebele.**

2006: Ren-Shiang Chen: Ph.D.-Thesis Dissertation Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best.**

2007: Mao-Feng Ger: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2007: Thomas García: Preliminary Examination Committee, Molecular and Integrative Physiology Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best.**

2007: Zachary Sellers: Qualifying Examination Committee, Department of Molecular and Integrative Physiology**, University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best.**

2007: Kyuri Kim: Qualifying Examination Committee, Department of Molecular and Integrative Physiology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Benita Katzenellenbogen.**

2007: Katie Bittner: Preliminary Examination Committee, Department of Medicine**, The University of Chicago. Mentor: Dr. Dorothy Hanck.**

2009: Yi Wang: Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2009: Feng Liu: Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Martin Gruebele.**

2009: Thomas Garcia: Ph.D.-Thesis Dissertation Committee, Department of Molecular and Integrative Physiology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Phil Best**.

2009: Katie Bittner: Ph.D.-Thesis Dissertation Committee, Department of Medicine, **The University of Chicago. Mentor: Dr. Dorothy Hanck.**

2010: Taejin Kim: Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Peter Wang.**

2010: Po-Chao Wen: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2010: Kieran Normoyle: Qualifying Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. William Brieher.**

2010: Dylan Reid: Qualifying Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Paul Selvin.**

2010: Ramya Gamini. Preliminary Examination Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2010: David Tanner. Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2010: Shane Crandall. Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Lee Cox.**

2010: Rishi Parikh: Ph.D.-Thesis Dissertation Committee, **Yeshiva University Albert Einstein College of Medicine. Mentor. Dr. Myles Akabas.**

2010: Rebecca Mongeon: Ph.D.-Thesis Dissertation Committee, **Oregon Health and Science University. Mentor: Drs. Paul Brehm and Gail Mandel.**

2011: Anthony Becker. Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2011: Hui-Chia Yu. Qualifying Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. William Brieher.**

2011: Daniel Ryerson. Qualifying Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Jongsook Kim Kemper.**

2011: Carleigh Hebbard: Qualifying Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Peter Orlean.**

2011: Mao-Feng Ger: Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2011: Anthony Becker. Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Jakobsson.**

2012: Jing Li: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2012: Congcong Chen: Qualifying Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Eric Bolton.**

2012: Hui-Chia Yu. Preliminary Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. William Brieher.**

2012: David Tanner. Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2012: Shane Crandall. Ph.D.-Thesis Dissertation Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Lee Cox.**

2012: Carleigh Hebbard: Preliminary Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Peter Orlean.**

2012: Hang Yu: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2013: Jacqueline Fenn: Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Lee Cox.**

2013: Po-Chao Wen. Ph.D.-Thesis Dissertation Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2013: Ramya Gamini: PhD-Thesis Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2014: Jing Li: PhD-Thesis Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2014: Kieran Normoyle: Preliminary Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. William Brieher.**

2014: Katrina Diaz: Preliminary Examination Committee, School of Molecular and Cellular Biology, University of **Illinois at Urbana-Champaign. Mentor: Dr. Martin Burke.**

2014: Carleigh Hebbard: Preliminary Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. James Morrissey.**

2014: Daniel McDougle: Preliminary Examination Committee, School of Veterinary Medicine, **University of Illinois at Urbana-Champaign. Mentor: Dr. Aditi Das.**

2014: Tao Jiang: Preliminary Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2015: Carleigh Hebbard: PhD-Thesis Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. James Morrissey.**

2015: Yuhang Wang: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2015: Hang Yu: PhD-Thesis Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Klaus Schulten.**

2015: David Park: PhD-Thesis Examination Committee, Center for Biophysics and Computational Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Satish Nair.**

2016 Sung-Soo Jang: Qualifying Examination Committee, Neuroscience Program **University of Illinois at Urbana-Champaign. Mentor: Dr. Hee-Jung Chung.**

2016: Paween Mahinthichaichan: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentors: Dr. Emad Tajkhorshid/Dr. Robert Gennis.**

2016: Hui-Chia Yu. PhD-Thesis Examination Committee, School of Molecular and Cellular Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. William Brieher.**

2016: Daniel McDougle: PhD-Thesis Examination Committee, School of Veterinary Medicine, **University of Illinois at Urbana-Champaign. Mentor: Dr. Aditi Das.**

2016: Paween Mahinthichaichan: PhD-Thesis Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentors: Dr. Emad Tajkhorshid/Dr. Robert Gennis.**

2016: Ian Traniello: Qualifying Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Gene Robinson.**

2017: Mrinal Shekar: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2017: Chaoyi Jin: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Paul Selvin.**

2017: Rajeev Chorghade: Preliminary Examination Committee, School of Chemical Sciences, University of **Illinois at Urbana-Champaign. Mentor: Dr. Martin Burke.**

2017: Yuhang Wang: PhD-Thesis Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2017: Kin Lam: Preliminary Examination Committee, Physics Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2017: Katrina Diaz: Preliminary Examination Committee, School of Molecular and Cellular Biology, University of **Illinois at Urbana-Champaign. Mentor: Dr. Martin Burke.**

2018: Rezvan Shahoei: Preliminary Examination Committee, Physics Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2018: Monika Makurath: Preliminary Examination Committee, Molecular and Integrative Physiology Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Yann Chemla.**

2018: Sung-Soo Jang: Preliminary Examination Committee, Neuroscience Program **University of Illinois at Urbana-Champaign. Mentor: Dr. Hee-Jung Chung.**

2018: Ian Traniello: Preliminary Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Gene Robinson.**

2019: Sung-Soo Jang: PhD-Thesis Examination Committee, Neuroscience Program **University of Illinois at Urbana-Champaign. Mentor: Dr. Hee-Jung Chung.**

2019: Chaoyi Jin: PhD-Thesis Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Paul Selvin.**

2019: Tania Martín-Pérez: PhD-Thesis Examination Committee, Department of Microbiology, **University of Alcalá de Henares, Spain. Mentor: Dr. Jorge Pérez Serrano.**

2019: Zhiyu Zhao: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid**

2019: Cristina Verdú Expósito: PhD-Thesis Examination Committee, Department of Microbiology, **University of Alcalá de Henares, Spain. Mentor: Dr. Jorge Pérez Serrano.**

2019: Rezvan Shahoei: PhD-Thesis Examination Committee, Physics Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2019: Shidi Zhao: Preliminary Examination Committee, Physics Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Aleksey Aksimentiev**.

2020: Kin Lam: PhD-Thesis Examination Committee, Physics Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2020: Jiaren Zhang: Preliminary Examination Committee, Molecular and Integrative Physiology Department **University of Illinois at Urbana-Champaign. Mentor: Dr. Hee-Jung Chung.**

2020: Ian Traniello: PhD-Thesis Examination Committee, Neuroscience Program, **University of Illinois at Urbana-Champaign. Mentor: Dr. Gene Robinson.**

2021: Jiaren Zhang: PhD-Thesis Examination Committee, Molecular and Integrative Physiology Department **University of Illinois at Urbana-Champaign. Mentor: Dr. Hee-Jung Chung.**

2021: Shidi Zhao: PhD-Thesis Examination Committee, Physics Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Aleksey Aksimentiev**.

2021: Johnnatan Marin-Toledo: Preliminary Examination Committee, School of Chemical Sciences, University of **Illinois at Urbana-Champaign. Mentor: Dr. Martin Burke.**

2021: Kumar Sarthak: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Aleksey Aksimentiev**.

2022: Zhiyu Zhao: PhD-Thesis Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2022: Monika Makurath: PhD-Thesis Examination Committee, Molecular and Integrative Physiology Department, **University of Illinois at Urbana-Champaign. Mentor: Dr. Yann Chemla.**

2022: Daniel Cruz Castro: Preliminary Examination Committee, Molecular and Integrative Physiology Department, University of **Illinois at Urbana-Champaign. Mentor: Dr. Johnathan Sweedler.**

2023: Kumar Sarthak: PhD-Thesis Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Aleksey Aksimentiev**.

2023: Daniel Cruz Castro: PhD-Thesis Examination Committee, Molecular and Integrative Physiology Department, University of **Illinois at Urbana-Champaign. Mentor: Dr. Johnathan Sweedler.**

2023: Gloria Lau: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Paul Selvin.**

2023: Eric Shin: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

2023: Yongjae Lee: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Paul Selvin.**

2023: Tianle Chen: Preliminary Examination Committee, Center for Biophysics and Quantitative Biology, **University of Illinois at Urbana-Champaign. Mentor: Dr. Emad Tajkhorshid.**

TEACHING

1988–1989 Teaching Assistant; *Physical Chemistry* for undergraduate students. Dept. Analytical and Physical Chemistry; University of Buenos Aires; Argentina.

1992–1996	Lecturer; *General and Inorganic Chemistry* for undergraduate students. Dept. of Analytical and Physical Chemistry; University of Buenos Aires; Argentina.
1993–1996	Lecturer; *Ion Channels of Excitable and Non-Excitable Cells* for graduate students. Dept. of Analytical and Physical Chemistry; University of Buenos Aires; Argentina.
1998–1999	Lecturer; *Neurophysiology: Physicochemical Basis of Synaptic Transmission* for graduate students. Dept. of Physiology and Biophysics; SUNY at Buffalo.
1998–2001	Lecturer; *Practical Ion-Channel Kinetics* for graduate and undergraduate students. Dept. of Physiology and Biophysics, SUNY at Buffalo.
2000–2001	Lecturer; *Introductory Quantitative Biology: Ordinary Differential Equations in Chemical Kinetics* for graduate students. Dept. of Physiology and Biophysics, SUNY at Buffalo.
2001–2002	Lecturer; *Biophysics: Ion-Channel Basics* for graduate students. Dept. of Physiology and Biophysics, SUNY at Buffalo.
2003–2017	Assistant/Associate/Full Professor; *Cell and Membrane Physiology* (MCB 401), School of Molecular and Cellular Biology, University of Illinois at Urbana-Champaign.

AWARDS

2012	James E. Heath Award for Excellence in Teaching Physiology, University of Illinois at Urbana-Champaign
2012	Outstanding Advisor, College of Medicine, University of Illinois at Urbana-Champaign
2015	Faculty Excellence Award, School of Molecular & Cellular Biology, University of Illinois at Urbana-Champaign

EDITORIAL REVIEW

2002–present	*Nature*, *Nature Chemical Biology, Nature Communications, PNAS*, *eLife*, *Journal of General Physiology, Journal of Physiology*, *Journal of the American Chemical Society*, *Biophysical Journal*, *Biochemistry, Journal of Physical Chemistry, Plos Biology*, *Plos Computational Biology*, *Journal of Neuroscience, Journal of Molecular Biology*, *Journal of Membrane Biology*, *Proteins*, *FEBS Letters*, *European Journal of Neuroscience*, *Journal of Neurochemistry*, *Biochimica et Biophysica Acta*, *Protein Expression and Purification*, *Brain*, and *Journal of Inorganic Biochemistry*.

NATIONAL REVIEW COMMITTEES

2006	Temporary (Ad-Hoc) member of the NIH Scientific Review Group (Study Section) Biophysics and Biochemistry of Membranes (BBM).
2008	Temporary (Ad-Hoc) member of the NIH Scientific Review Group (Study Section) Biophysics of Neural Systems (BPNS).
2011–2017	Member of the NIH Scientific Review Group Biophysics of Neural Systems (BPNS).
2017	Temporary (Ad-Hoc) member of the NIH Scientific Review Group Special Emphasis Panel ZRG1 BCMB-A.

2018 Temporary (Ad-Hoc) member of the NIH NIDCR Special Grants Review Committee.
2019 Temporary (Ad-Hoc) member of the NIH ZRG1 F03B-R Fellowship Review Group.
2020 Temporary (Ad-Hoc) member of the NIH Scientific Review Group Special Emphasis Panel ZRG1 MDCN-R.
2022 Temporary (Ad-Hoc) member of the NIH ZRG1 F03B-L Fellowship Review Group.
2023 Temporary (Ad-Hoc) member of the NIH Scientific Review Group Special Emphasis Panel ZGM1 TRN-V (LR) 1—Loan Repayment Program

INTERNATIONAL REVIEW COMMITTEES

2015 Temporary (Ad-Hoc) reviewer of grant proposals submitted to the National Science Centre of Poland.
2017–present Temporary (Ad-Hoc) reviewer of grant proposals submitted to the French National Research Agency.
2021 Temporary (Ad-Hoc) reviewer of grant proposals submitted to the Austrian Science Fund (FWF).

ACADEMIC COMMITTEES

2004–2010 Core Course and Curriculum Committee, UIUC MCB School
2004–2005 Graduate-Student Admissions, UIUC Center for Biophysics and Computational Biology
2004–2005 Graduate-Student Admissions, UIUC Program in Neuroscience
2005–2006 Faculty search, UIUC Pharmacology Department
2005–2006 Executive Committee, UIUC Program in Neuroscience
2006–2007 Executive Committee, UIUC Center for Biophysics and Computational Biology
2009–2011 Advisory Committee, UIUC Molecular and Integrative Physiology
2010–2012 Promotion and Tenure Committee, UIUC MCB School
2010–present Affirmative Action Officer, UIUC Molecular and Integrative Physiology
2011–2012 Promotions and Tenure Committee, UIUC College of Medicine
2011–2015 Biology Coordinating Committee, UIUC
2012–2015 Executive Committee, UIUC Center for Biophysics and Computational Biology
2012–2015 Executive Committee, UIUC School of Cell and Molecular Biology
2013–2017 Advisory Committee, UIUC Molecular and Integrative Physiology
2017–present Executive Committee, UIUC MCB School
2021–present Academic Integrity and Grievance Committee, UIUC MCB School

PUBLICATIONS

1. Godellas, N. E., Cymes, G. D., and **Grosman, C.** 2022. An experimental test of the nicotinic hypothesis of COVID-19. *Proceedings of the National Academy of Sciences* 119: e2204242119.
2. Godellas, N. E., and **Grosman, C.** 2022. Probing function in ligand-gated ion channels without measuring ion transport. *Journal of General Physiology* 154: e202213082.

3. Kumar, P., Cymes, G. D., and **Grosman, C.** 2021. Structure and function at the lipid–protein interface of a pentameric ligand-gated ion channel. *Proceedings of the National Academy of Sciences* 118: e2100164118.
4. Cymes, G. D., and **Grosman, C.** 2021. Signal transduction through Cys-loop receptors is mediated by the nonspecific bumping of closely apposed domains. *Proceedings of the National Academy of Sciences* 118: e2021016118.
5. Sethuramanujam, S., Matsumoto, A., deRosenroll, G., Murphy-Baum, B., **Grosman, C.**, McIntosh, J. M., Jing, M., Li, Y., Berson, D., Yonehara, K., Awatramani, G. B. 2021. Rapid multi-directed cholinergic transmission in the central nervous system. *Nature Communications* 12:1374.
6. Kumar, P., Wang, Y., Zhang, Z., Zhao, Z., Cymes, G. D., Tajkhorshid, E., and **Grosman, C.** 2020. Cryo-EM structures of a lipid-sensitive pentameric ligand-gated ion channel embedded in a phosphatidylcholine-only bilayer. *Proceedings of the National Academy of Sciences* 117:1788–1798.
7. Harpole, T. J., and **Grosman, C.** 2019. A crucial role for side-chain conformation in the versatile charge selectivity of Cys-loop receptors. *Biophysical Journal* 116:1667–1681.
8. Gonzalez-Gutierrez, G., Wang, Y., Cymes, G. D., Tajkhorshid, E., and **Grosman, C.** 2017. Chasing the open-state structure of pentameric ligand-gated ion channels. *Journal of General Physiology* 149:1119–1138.
9. Cymes, G. D., and **Grosman, C.** 2016. Identifying the elusive link between amino-acid sequence and charge selectivity in pentameric ligand-gated ion channels. *Proceedings of the National Academy of Sciences* 113:E7106–7115.
10. Cymes, G. D., and **Grosman, C.** 2015. *Engineered Ionizable Side Chains*. In Novel Chemical Tools to Study Ion Channel Biology. *Advances in Experimental Medicine and Biology* 869:5–23.
11. Gonzalez-Gutierrez, G., and **Grosman, C.** 2015. The atypical conduction and gating properties of ELIC underscore the marked functional versatility of the pentameric ligand-gated ion-channel fold. *Journal of General Physiology* 146:15–36.
12. Harpole, T. J., and **Grosman, C.** 2014. Side-chain conformation at the selectivity filter shapes the permeation free-energy landscape of an ion channel. *Proceedings of the National Academy of Sciences* 111:E3196–E3205.
13. Papke, D., and **Grosman, C.** 2014. The role of intracellular linkers in gating and desensitization of human pentameric ligand-gated ion channels. *Journal of Neuroscience* 34:7238–7252.
14. Gonzalez-Gutierrez, G., Cuello, L. G., Nair, S. K., and **Grosman, C.** 2013. Gating of the proton-gated ion channel from *Gloeobacter violaceus* at pH 4 as revealed by X-ray crystallography. *Proceedings of the National Academy of Sciences* 110:18716–18721.
15. Cymes, G. D., and **Grosman, C.** 2012. The unanticipated complexity of selectivity-filter glutamates of nicotinic receptors. *Nature Chemical Biology* 8:975–981.
16. Gonzalez-Gutierrez, G., Lukk, T., Agarwal, V., Papke, D., Nair, S. K., and **Grosman, C.** 2012. Mutations that stabilize the open state of the *Erwinia chrisanthemi* ligand-gated ion channel

fail to change the conformation of the pore domain in crystals. *Proceedings of the National Academy of Sciences* 109:6331–6336.

17. Cymes, G. D., and **Grosman, C.** 2011. Estimating the pK_a values of basic and acidic side chains in ion channels using electrophysiological recordings: a robust approach to an elusive problem. *Proteins* 79:3485–3493.
18. Cymes, G. D., and **Grosman, C.** 2011. Tunable pK_a values and the basis of opposite charge selectivities in nicotinic-type receptors. *Nature* 474:526–530.
19. Papke, D., Gonzalez-Gutierrez, G., and **Grosman, C.** 2011. Desensitization of neurotransmitter-gated ion channels during high-frequency stimulation: A comparative study of Cys-loop, AMPA and purinergic receptors. *Journal of Physiology* 589:1571–1585.
20. Gonzalez-Gutierrez, G., and **Grosman, C.** 2010. Bridging the gap between structural models of nicotinic-receptor superfamily ion channels and their corresponding functional states. *Journal of Molecular Biology* 403:693–705.
21. Elenes, S., Decker, M., Cymes, G. D., and **Grosman, C.** 2009. Decremental response to high-frequency trains of acetylcholine pulses but unaltered fractional Ca^{2+} currents in a panel of 'slow-channel syndrome' nicotinic-receptor mutants. *Journal of General Physiology* 133:151–169.
22. Cymes, G. D., and **Grosman, C.** 2008. Pore-opening mechanism of the nicotinic acetylcholine receptor evinced by proton transfer. *Nature Structural & Molecular Biology* 15:389–396.
23. Elenes, S., Ni, Y., Cymes, G. D., and **Grosman, C.** 2006. Desensitization contributes to the synaptic response of 'gain-of-function' mutants of the muscle nicotinic receptor. *Journal of General Physiology* 128:615–627.
24. Purohit, Y., and **Grosman, C.** 2006. Block of muscle nicotinic receptors by choline suggests that the activation and desensitization gates act as distinct molecular entities. *Journal of General Physiology* 127:703–717.
25. Purohit, Y., and **Grosman, C.** 2006. Estimating binding affinities of the nicotinic receptor for low-efficacy ligands using mixtures of agonists and two-dimensional concentration-response relationships. *Journal of General Physiology* 127:719–735.
26. Cymes, G. D., Ni, Y., and **Grosman, C.** 2005. Probing ion-channel pores one proton at a time. *Nature* 438:975–980.
27. **Grosman, C.** 2003. Free-energy landscapes of ion-channel gating are malleable: changes in the number of bound ligands are accompanied by changes in the location of the transition state in acetylcholine-receptor channels. *Biochemistry* 42:14977–14987.
28. **Grosman, C.** 2002. Linear free-energy relationships and the dynamics of gating in the acetylcholine receptor channel. A Φ-value analysis of an allosteric transition at the single-molecule level. *Journal of Biological Physics* 28:267–277.
29. Cymes, G. D., **Grosman, C.,** and Auerbach, A. 2002. Structure of the transition state of gating in the acetylcholine-receptor channel pore. A Φ-value analysis. *Biochemistry* 41:5548–5555.

30. **Grosman, C.** and Auerbach, A. 2001. The dissociation of acetylcholine from open nicotinic receptor channels. *Proceedings of the National Academy of Sciences* 98:14102–14107.

31. Pérez-Serrano, J., **Grosman, C.,** Urrea-París, M. A., Denegri, G., Casado, and N., Rodríguez-Caabeiro, F. 2001. Depolarization of the tegument precedes morphological alterations in *Echinococcus granulosus* protoscoleces incubated with ivermectin. *Parasitology Research* 87:804–807.

32. **Grosman, C.,** Salamone, F. N., Sine, S. M, and Auerbach, A. 2000. The extracellular linker of muscle acetylcholine receptor channels is a gating control element. *Journal of General Physiology* 116:327–339.

33. **Grosman, C.,** and Auerbach, A. 2000. Asymmetric and independent contribution of M2 12' residues to diliganded gating of acetylcholine receptor channels. A single-channel study with choline as the agonist. *Journal of General Physiology* 115:637–651.

34. **Grosman, C.,** and Auerbach, A. 2000. Kinetic, mechanistic and structural aspects of unliganded gating of acetylcholine receptor channels. A single-channel study of second transmembrane segment 12' mutants. *Journal of General Physiology* 115:621–635.

35. **Grosman, C.,** Zhou, M., and Auerbach, A. 2000. Mapping the conformational wave of acetylcholine receptor channel gating. *Nature* 403:773–776.

36. **Grosman, C.,** and Reisin, I. L. 2000. Single-channel characterization of a non-selective cation channel from human placental microvillous membranes. Large conductance, multiplicity of conductance states, and inhibition by lanthanides. *Journal of Membrane Biology* 174:59–708

37. Cantiello, H. F., Jackson Jr., G. R., **Grosman, C. F.,** Prat, A. G., Borkan, S. C., Wang, Y., Reisin, I. L., O'Riordan, C. R., and Ausiello, D. A. 1998. Electrodiffusional ATP movement through the cystic fibrosis transmembrane conductance regulator. *American Journal of Physiology* 274 (*Cell Physiol.* 37): C799–C809.

38. **Grosman, C.**, and Reisin, I. L. 1997. Interconverting gating modes of a non-selective cation channel from the tapeworm *Echinococcus granulosus* reconstituted on planar lipid bilayers. *Journal of Membrane Biology* 158:87–94.

39. **Grosman, C.**, Mariano, M. I., Bozzini, J. P., and Reisin, I. L. 1997. Properties of two multisubstate Cl^- channels from human syncytiotrophoblast reconstituted on planar lipid bilayers. Journal of Membrane Biology 157:83–95.

40. Cymes, G. D., **Grosman, C.**, Delfino, J. M., and Wolfenstein-Todel, C. 1996. Detection of a stable intermediate in the urea-induced unfolding of ovine placental lactogen. *Protein Science* 5:2074–2079.

41. **Grosman, C.**, and Reisin, I.L. 1995. *Echinococcus granulosus:* partial characterization of the conductive properties of two cationic channels from protoscoleces of the ovine strain, reconstituted on planar lipid bilayers. *Experimental Parasitology* 81:546–555.

42. Bari, S., Frydman, R. B., **Grosman, C.**, and Frydman, B. 1992. The interplay between basicity, conformation and the enzymatic reduction in biliverdins. *Biochemical and Biophysical Research Communications* 188:48-56.

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Daniel A. Llano M.D., Ph.D.

EDUCATION:

1992	B.S.	Biology. University of Illinois at Urbana-Champaign, IL (UIUC,
2000	Ph.D.	Molecular and Integrative Physiology. UIUC "Information processing in the auditory thalamus of *Myotis lucifugus*: Implications for temporal pattern recognition." Advisor: Albert S. Feng, Ph.D.
2002 (Honors)	M.D.	University of Illinois, External rotations: Medicine (Ramon E. Betances Hospital, Mayaguez, Puerto Rico), Neurology (Mayo Clinic, Rochester, Mn.)

POSTDOCTORAL TRAINING:

2002-03	Internship in Internal Medicine, Massachusetts General Hospital/Harvard Medical School.
2003-06	Residency in Neurology, Massachusetts General Hospital/Brigham and Women's Hospital, Harvard Medical School.
2007	MGH/MIT/HMS Athinoula A. Martinos Center for Biomedical Imaging Visiting Fellowship Program in fMRI
2006-08	Post-doctoral research, Laboratory of Dr. Murray Sherman Research Fellow, Cognitive and Behavioral Neurology, University of Chicago.

POSITIONS AND EMPLOYMENT:

2002-03	Clinical Fellow in Medicine, Harvard Medical School, Boston, MA
2003-06	Clinical Fellow in Neurology, Harvard Medical School, Boston, MA
2006-08	Instructor, Department of Neurology, University of Chicago, Chicago, IL
2008-10	Associate Medical Director, Neuroscience Development, Abbott Laboratories
2010-17	Assistant Professor, Dept of Molecular and Integrative Physiology, UIUC
2010-	Staff Neurologist, Cognitive and Behavioral Neurology Carle Hospital and Carle Neuroscience Institute, Urbana, Illinois
2010-	Full-time faculty member, Beckman Institute for Advanced Science and Technology, University of Illinois, Urbana-Champaign
2017-2023	Associate Professor and Benjamin R. and Elinor W. Bullock and Edwin E. and Jeanne Bullock Goldberg Professorial Scholar, Dept of Molecular and Integrative Physiology, Neuroscience, Dept of Biomedical and Translational Sciences, UIUC
2022-	Courtesy appointment, Speech and Hearing Science, UIUC
2023-	Full Professor and Benjamin R. and Elinor W. Bullock and Edwin E. and Jeanne Bullock Goldberg Professorial Scholar, Dept of Molecular and Integrative Physiology, Neuroscience, Dept of Biomedical and Translational Sciences, UIUC

LICENSE AND CERTIFICATION:

2003-2007	Massachusetts Full Medical License Registration
2006-	Illinois Full Medical License Registration
2008-	Diplomate, American Board of Psychiatry and Neurology, Certificate #54519, Maintenance of Certification 2018

HONORS AND AWARDS:

1991	Howard Hughes Undergraduate Research Award
1993	Walter Rice Craig Fellow, University of Illinois
1999	Outstanding Thesis Award, Dept of Molecular and Integrative Physiology, UIUC
1999	Dr. P.S. and Kalpagam Ramachandran Research Award
2001	Ross Award for Excellence in Pediatrics
2002	Alpha Omega Alpha, Medical Honor Society
2006	Excellence in Teaching, Harvard Medical School

2011 American Neurological Assn, Invited Symposium Speaker on "Brain and Language."
2012 Guest editor, *Brain and Language*
2013 Keynote Speaker, Molecular and Cellular Biology Commencement Ceremonies, UIUC
2015 Golden Apple Teaching Award, University of Illinois College of Medicine
2016 Advances in Medicine Award, Carle Hospital, Urbana, IL.
2017 Helen Corley Petit Scholar, UIUC
2017 Benjamin R. and Elinor W. Bullock and Edwin E. and Jeanne Bullock Goldberg Professorial Scholar
2017 Arnold O. Beckman Research Award, UIUC
2012-19,'21-22 Excellence in Teaching Recognition, UIUC
2019 Presidential Early Career Award for Scientists and Engineers (PECASE)
2023 LAS Dean's Distinguished Professorial Scholar

TEACHING:

1992-2000: Graduate Teaching Assistant: University of Illinois, Urbana-Champaign: Medical Neuroscience, Introduction to Human Physiology, Cellular and Molecular Physiology, Systems and Integrative Physiology, Ecology and Organismic Biology and General Chemistry.

2005: St. Mary of Nazareth Hospital, Chicago, IL. Family practice residency educational lecture, "The neurologic exam."

2007: University of Chicago, Lecture for neurology residents, "The thalamus."

2007-2011: University of Chicago undergraduate course: Workings of the Human Brain, "Hearing, language and music."

2008: University of Chicago, graduate course: Neurobiology of Disease, "Language and aphasia."

2008: University of Chicago, Lecture for neurology residents "Aphasia prognosis."

2008: Rush University, Department of Communication Disorders and Sciences, graduate course: Auditory Neuroscience,: "The auditory thalamus."

2009: University of Chicago, Chicago Academic Medicine Program, "The pathophysiology and treatment of Alzheimer's Disease."

2010: University of Chicago, graduate course: Neurotheology: Brain, Mind and Religion. "Attention and transcendental meditation."

2010: University of Chicago, graduate course: Human Memory. "Pharmacological enhancement of human memory?"

2011: Lecture to Internal Medicine Residency Program, University of Illinois "Non-Alzheimer Dementia"

2011: Lecture to Geriatric Fellowship Program, Carle Hospital "Update on Alzheimer Disease"

2013: "Ethics in Dementia Care," Carle Hospital Seminar Series.

2014: "Dementia overview: Diagnosis and management," Carle Hospital Seminar Series.

2012-2014: Course Director and Primary Lecturer, UIUC College of Medicine M1 Step 1 USMLE Review for Medical Neuroscience, UIUC College of Medicine.

2016: "Evaluation of memory loss," Carle primary care provider lecture, Mattoon, IL.

2004-2019: Falcon/Becker USMLE Reviews Lecturer: Step 1: Physiology, Biostatistics, Pharmacology, Neuroscience, Behavioral Science Step 2: Neurology, Pharmacology

2012-2018: Course director, primary lecturer, Brain, Behavior and Human Development. 30 lectures/year, ~150 students/year **Ranked as Excellent by students 2012-2018** (UIUC ICES system).

2012-2018: Lecturer, MCB 493/320, Mechanisms of Human Disease, UIUC "Mechanisms of Neurological Disease." 6 lectures/year, ~100 students/year **Ranked as Excellent by students 2012-2018** (UIUC ICES system).

2015-2019: Lecturer, UIUC College of Medicine M2 Pathophysiology
"Movement Disorders" and "Dementia"
2 lectures/year, ~20 students/year

2016-2020: Lecturer, Neuroscience survey course (UIUC NEUR 598)
"Translational neuroscience" and "Dementia"
3 lectures/year, ~15 students/year

2017-Current: Associate Course Director, Clinical Neurosciences, Carle Illinois College of Medicine
Co-developed curriculum
10-20 lectures/year, ~30-60 students/year
This course does not participate in ICES system

2018-Current: Course Director, Primary lecturer, Neuroscience for Psychiatry Residents,
Carle Illinois College of Medicine.
30 lectures/year, ~4-8 students/year
This course does not participate in ICES system

2018-Current: Course Director, primary lecturer MCB 314, Introduction to Neurobiology, UIUC
~30 lectures/year, ~150 students/year
Ranked as Excellent by students 2018, 2019, 2021, 2022 (UIUC ICES system).

FUNDING:

Current:

National Institute on Deafness and Other Communications Disorders
R01DC016599 (Llano, PI) 01/01/21 - 12/31/25
"Synaptic mechanisms of auditory cross-modal communication"
$250,000/year x 5 years, Direct

National Institute on Deafness and Other Communications Disorders
R01DC013073-01 (Llano, PI) 4/01/2015 – 12/31/28
"Functional organization of the auditory corticocollicular system"
$ 2,027,247 total/5 years

National Institute on Deafness and Other Communications Disorders
R21DC021605 (Llano, PI) 12/01/2023-11/30/2025
"Novel subdivisions of the dorsal cortex of the inferior colliculus"
$436,150 total/2 years

National Institute on Aging
R21 AG077173 (Llano, PI, Song Co-I) 04/2022-03/31/2024
"Super-resolution imaging of brain microvascular changes in a model of Alzheimer Disease"
$275,000/2 years, Direct

National Institute on Deafness and Other Communications Disorders
R21DC019473 (Llano, PI, Rhodes, Dobrucki, Park Co-I) 04/01/2021-03/31/2024
"Examination of the bidirectional relationship between hearing loss and Alzheimer Disease pathology"
$275,000/2 years, Direct

Kiwanis Neuroscience Research Foundation
(Llano, PI) 7/01/2014 – 6/30/2024
"Seeing phantom sounds: Imaging the neural correlates of tinnitus"
$20,000/year x 5 years, Direct

Alzheimer's Association Discovery Grant
(Llano, PI, Song Co-I) 12/01/2023-11/30/2026
"Super-resolution ultrasound to measure vascular pathology in a LOAD model"
$250,000/3 years, Total

Previous:

National Cancer Institute (NCI)
R01CA241618-01 8/15/2019-7/31/2023
(PI: Tu)
"Imaging tumor microenvironment by optical fiber-tethered simultaneous lifetime-resolved autofluorescence multiharmonic (OFT-SLAM) microscopy"

National Institutes of Mental Health (NIMH)
1R43-MH119979-01 4/15/2019-3/31/2022
(PI: Durack)
"Fiber-delivered programmable supercontinuum laser adaptive to evolving neurophotonic research"

National Institute on Aging
R03AG059103 (Llano, PI) 9/01/2018 - 8/31/2021
Mechanisms of exercise-induced neuroprotection in a mouse model of presbycusis
$50,000/year x 2 years, Direct

Capita Foundation (Llano, PI) 1/08/2019- 12/31/2019
"An exercise intervention to prevent aging-related hearing loss in a mouse model."
$10,000/year x 1 year, Direct

UIUC Campus Research Board
(Llano, PI) 1/01/2017-7/31/2019
"Examination of exercise-induced protection against aging-related hearing loss in a mouse model of presbycusis"
$29,031/year x 1 year, Direct

National Science Foundation (NSF) Division of Information and Intelligent Systems
1515587 8/16/2015 – 8/15/2018
(Llano, PI, Berger-Wolf, co-PI, Kenyon, co-I)
"CRCNS: Community Dynamic Imaging of Corticothalamic Projections"
$250,000/year x 3 years, Direct

Carle Neuroscience Institute 6/1/2017 – 5/30/2018
"Strategic Processing Ability in Mild Cognitive Impairment"
(Llano, PI, Mudar co-PI)
$15,000/year x 1 years, Direct

NIH-Office of Research Infrastructure Programs
S10OD023569-01 (Llano, PI) 3/01/2017 – 2/28/2018
"An upright multiphoton microscope for biomedical research applications"

National Institute on Aging (NIA)
R21-AG05421602S1 9/15/2017-5/31/2018
(PI: Stine-Morrow)
"Everyday reading, personality and cognitive health in older adults"

National Institutes of Mental Health (NIMH)
R43-MH11221401 4/04/2017-4/03/2018
(PI: Zhao)
"Portable optogenetics/Two-photon imaging instrument for in vivo brain studies"

Center for Nutrition Learning and Memory, UIUC
Grant (PI: Barbey) 6/1/2012 - 5/31/2017
"Nutritional Intake, Cognitive Function, and Measures of Brain Aging"

$250,000/year x 5 years, Direct

National Institute on Deafness and Other Communications Disorders
R21 DC014765-01 (Llano, PI) 6/23/2015-5/31/2017
"Thalamic reticular nucleus modulation of auditory thalamocortical function"
$275,000 over two years, Direct

National Institute on Aging (NIA)
L30 AG045918-02 (Llano, PI) 7/01/2015-6/30/2017
"Biomarkers for Subjective Cognitive Impairment"
$12,000/year x 2 years, Direct

UIUC Campus Research Board
(Llano, PI) 10/06/2015-4/30/2017
"Impact of developmental PCB exposure on synaptic inhibition in the rodent auditory cortex"
$25,000/year x 1 year, Direct

Beckman Institute Seed Grant
(Llano, Ceman, Sutton, co-PIs) 5/16/2014 - 8/15/2016
"Development of novel optogenetic and brain imaging approaches to study top-down control mechanisms"
$100,000/year x 2 years, Direct

National Institute on Aging (NIA)
L30 AG045918-01 (Llano, PI) 7/01/2013-6/30/2015
"Biomarkers for Subjective Cognitive Impairment
$12,000/year x 2 years, Direct

Center for Health, Aging and Disability, UIUC
Grant (PI: Mudar) 9/1/2012 – 8/31/2013
"Neural Markers of Strategic Learning in Individuals with Subject Memory Impairment"
$30,000/year x 1 year, Direct

National Institute on Deafness and Other Communications Disorders
1R03DC012125-01 (Llano, PI) 9/26/2011 – 5/31/2015
"Age-Related changes in GABAergic influence on auditory corticothalamic projection."
$100,000/year x 3 years, Direct

Alzheimer Association
NIRG-12-242848 (Llano, PI) 9/01/2012 – 8/31/2014
"Diminished cortical GABAergic inhibition in mouse model of Alzheimer Disease"
$50,000/year x 2 years, Direct

Social Science Brownbag, UIUC 6/01/2013-5/31/2014
(Co-PI, with Matt Dye, Speech/Hearing Science, UIUC)
"iHear: Promoting Hearing Sciences at the University of Illinois"
$2500/year x 1 year, Direct

American Federation for Aging Research
AFAR 2011-03147 (Llano, PI) 7/01/2011 – 6/30/2013
"Changes in Auditory Cortical Circuitry in Aging: Exploration of the Links between Aging and the Cortical Circuitry of Attention"
$50,000/year x 2 years, Direct

National Institute on Deafness and Other Communications Disorders
K08 DC008320 (Llano, PI) 6/01/2006-6/01/2008

"Functional Organization of Auditory Corticothalamic Projection Systems."

Brain Research Foundation Seed Grant 6/01/2007-5/31/2008
(Llano, PI)
"Investigation of attentional modulation via fronto-thalamic networks."
$50,000/year x 1 year, Direct

National Institute on Deafness and Other Communications Disorders
L30 DC009286-01 (Llano, PI) 7/01/2007-6/30/2009
"Development of an Aphasia Database"

As Mentor:

National Institute on Aging (NIA)
Individual Predoctoral NRSA for M.D./Ph.D. Fellowships
F30AG055283-01 (PI: Cerjanic) 9/15/2017 – 9/15/2020
"Developing quantitative biomarkers for monitoring longitudinal changes in brain microvascular health"
$30,000/year x 3 years, Direct

National Institute on Deafness and Other Communications Disorders (NIDCD)
Individual Predoctoral Fellowship (National Research Service Award)
F31 DC 015967-01 (PI: Lesicko) 1/01/2017 – 12/31/2019
"Functional modularity and multisensory convergence in the lateral cortex of the mouse inferior colliculus"
$30,000/year x 3 years, Direct

Beckman Graduate Fellows Award 8/16/2016-8/15/2017
(PI: Stebbings, co-mentor: Justin Rhodes, Psychology, UIUC)
"Redox mechanisms of exercise-induced rescue of decline in neural function with aging"
$30,000/year x 1 year, Direct

National Institute on Deafness and Other Communications Disorders (NIDCD)
Individual Predoctoral Fellowship (National Research Service Award)
F31 DC013501-01 9/1/2013-8/31/2016
(PI: Slater, co-mentor: Lee Cox, UIUC)
"The role of the thalamic reticular nucleus in temporal processing in the medial geniculate body"
$30,000/year x 3 years, Direct

Beckman Postdoctoral Fellows Award 9/1/2013-8/31/2015
(PI: Sadowski, Primary mentor: Susan Schantz, Comparative Biosciences, UIUC)
"Effects of developmental PCB exposure on activation of the adult auditory cortex and hippocampus"
$50,000/year x 2 years, Direct

Beckman Graduate Fellows Award 8/16/2013-8/15/2014
(PI: Slater, co-mentors: Matt Dye, Speech/Hearing Science and Brad Sutton, Biomedical Eng., UIUC)
Declined since another award was in place
"The impact of hearing loss on cross-modal plasticity: An interdisciplinary investigation using optogenetic approaches in a novel in vitro system"
$30,000/year x 1 year, Direct

As Trainee:

F32DC008215 NIDCD 07/01/2006 - 07/02/2006
"Auditory corticothalamic projection systems"
Awarded and declined in lieu of K08 award.

Systems and Integrative Physiology Predoctoral Training Grant

NRSA T32 8/01/1995-7/31/1998
"Neural correlates of fluttering target detection in the echolocating bat"

PEER-REVIEWED PUBLICATIONS:

1. **Llano D.A.** and Ramirez V.D. (1994) Isolation of DARP (dopamine-releasing protein) from fetal rat brain and effects of DARP immunoneutralization on fetal mesencephalic dopamine levels. *Molecular and Cellular Neuroscience*. Dec;5(6):649-57.

2. **Llano D.A.** and Feng A.S. (1999) Response characteristics of neurons in the medial geniculate body of the little brown bat to simple and temporally-patterned sounds. *Journal of Comparative Physiology [A]*. 184: 371-385.

3. Galazyuk A.V., **Llano D**. and A.S. Feng (2000) Temporal dynamics of acoustic stimuli enhance amplitude tuning of inferior colliculus neurons. *Journal of Neurophysiology.* Jan;83(1):128-38.

4. **Llano D.A.** and A.S. Feng (2000) Computational models of temporal processing in the auditory thalamus. *Biological Cybernetics*. 83: 419-433.

5. **Llano D.A.** and R.S. Abernethy (2004) Severe depression, obsessive-compulsive disorder, and pulmonary embolism. (case report) *Psychosomatics*. Jul-Aug;45(4):364-5.

6. Galazyuk A.V., Lin W., **Llano D.** and A.S. Feng. (2005) Leading inhibition and oscillation in time-domain processing in the auditory midbrain. *Journal of Neurophysiology.* Jul;94(1):314-26.

7. **Llano D.A.** and S.M. Sherman (2008) Evidence for non-reciprocal organization of the mouse auditory thalamocortical-corticothalamic projection systems. *Journal of Comparative Neurology*. 507:1209-1227.

8. **Llano D.A.,** Theyel B.B., Mallik A., Sherman S.M. and N.P. Issa (2009) Rapid and sensitive mapping of long range connections in vitro using flavoprotein autofluorescence imaging combined with laser photostimulation. *Journal of Neurophysiology*. 101(6):3325-40

9. **Llano D.A.** and S.M. Sherman (2009) Differences in intrinsic properties and local network connectivity of identified layer 5 and layer 6 adult mouse auditory corticothalamic neurons support a dual corticothalamic projection hypothesis. *Cerebral Cortex*. Dec;19(12):2810-26.

10. Small S.L. and **Llano D.A**. (2009) Biological therapy for aphasia. (Invited review) *Current Neurology and Neuroscience Reports*. Nov;9(6):443-50.

11. Lu E., **Llano D.A.** and S. M. Sherman. (2009) Different distributions of calbindin and calretinin immunostaining across the medial and dorsal divisions of the mouse medial geniculate body. *Hearing Research*. Nov;257(1-2):16-23.

12. Theyel B.B., **Llano D.A.** and S. M. Sherman. (2010) Evidence for a cortico-thalamocortical pathway for cortical communication. *Nature Neuroscience*. 13(1):84-8.

13. Luo F., Seifert T., Roesner B., Hradil V., Hillen H., Ebert U., Day M., **Llano D.A.**, Rustay N.R. and G.B. Fox. (2010) MRI detection and time course of cerebral microhemorrhages during Aβ antibody treatment in living APP transgenic mice. *Journal of Pharmacology and Experimental Therapeutics.* Dec;335(3):580-8.

14. **Llano D.A.,** Laforet, G. and V. Devanarayan (2011) Derivation of a new ADAS-cog composite using tree-based multivariate analysis: Prediction of conversion from mild cognitive impairment to Alzheimer's disease. *Alzheimer's Disease and Associated Disorders*. Jan-Mar;25(1):73-84.

15. Chin C-L, Carr R.A., **Llano D.A.**, Barret O., Xu H., Marsh K.C., Tamagnan G., Decker M.W., Day M., and G.B. Fox. (2011) Displacement of [123I]-5IA-85380 Binding in baboons by the nicotinic α4β2 receptor partial agonist ABT-089 - Implications of dosing regimens. *Journal of Pharmacology and Experimental Therapeutics*. Mar;336(3):716-23.

16. Theyel B.B., **Llano D.A.,** Issa N., Mallik A. and S. M. Sherman. (2011) Laser photostimulation with flavoprotein autofluorescence imaging *in vitro. Nature Protocols.* Apr;6(4):502-8.

17. Luo F. Rustay N., Ebert U., Hradil V., Cole, T., **Llano, D.A.,** Mudd, S., Zhang, Y. and G.B. Fox (2012) Characterization of 7 and 19 month old Tg2576 mice using multimodal in-vivo imaging: Limitations as a translatable model of brain glucose metabolism in Alzheimer's disease. *Neurobiology of Aging*. May;33(5):933-44.

18. Li J., **Llano D.A.**, Ellis T., LeBlond D., Lenz R. and J. F. Waring. (2012) Effect of CSF draw frequency on Aβ levels in human subjects. *Alzheimer's and Dementia.* Jul;8(4):295-303.

19. **Llano D.A.**, Li J., Lenz R.A., Ellis T., Cassar S., Groebe D., Gopalakrishnan M. and J.F. Waring (2012) Cerebrospinal fluid cytokine dynamics differ between Alzheimer disease patients and elderly controls. *Alzheimer's Disease and Associated Disorders* Oct;26(4):322-8.

20. Yang S., Yang S., Cox C.L., **Llano D.A.** and Feng A.S. (2012) Cell's intrinsic biophysical properties play a role in the systematic decrease in time-locking ability of central auditory neurons. *Neuroscience*. 2012 Apr 19;208:49-57.

21. **Llano D.A.,** Caspary D. and J. Turner (2012) Diminished cortical inhibition in an aging mouse model of chronic tinnitus. *Journal of Neuroscience* Nov 14;32(46):16141-8.

22. **Llano D.A.,** Simon A. and V. Devanarayan (2013) Evaluation of plasma proteomic data for Alzheimer's Disease state classification and for prediction of progression from mild cognitive impairment to Alzheimer Disease. *Alzheimer Disease and Associated Disorders* Jul-Sep;27(3):233-43.

23. **Llano D.A.** (2013) Functional imaging of the thalamus in language. (review) *Brain and Language.* Jul;126(1):62-72.

24. Hasadsri L., Wang B.H., Lee J.V., Erdman J.W., **Llano D.A.,** Barbey A.K., Wszalek T., Sharrock M.F. and H. Wang (2013) Omega-3 fatty acids for treatment of traumatic brain injury. (review) *Journal of Neurotrauma.* 2013 Jun 1;30 (11):897-906.

25. Slater B.J., Willis A.M and **D.A. Llano** (2013) Evidence for layer-specific differences in auditory corticocollicular neurons. *Neuroscience*. Jan 15;229:144-54.

26. **Llano D.A.** (2013) Voices below the surface: A role for the thalamus in language? *Brain and Language.* Jul;126(1):20-1.

27. **Llano D.A**., Slater B.J., Lesicko A.M. and K.A. Stebbings (2014) An auditory colliculo-thalamocortical brain slice preparation in mouse. *Journal of Neurophysiology*, Jan;111(1):197-207.

28. Hasson U., **Llano D. A.,** Miceli G. and A.S. Dick (2014) Does it talk the talk? On the role of basal ganglia in emotive speech processing. *Behavioral and Brain Sciences,* Dec;37(6):556-7.

29. Stebbings K.A., Lesicko A.M.H. and **D.A. Llano** (2014) The auditory corticocollicular system: Molecular and circuit-level considerations. (review) *Hearing Research*, Aug;314C:51-59.

30. Wang H., Wang B., Normoyle K., Jackson K., Spitler K., Sharrock M.F., Miller C., Best C., **Llano D.** and R. Du (2014) Brain temperature and its fundamental properties: A review for clinical neuroscientists (review) *Frontiers in Neuroscience*, Oct 8;8:307.

31. Lenz R.A., Pritchett Y., Berry S.M., **Llano D.A.**, Han S., Berry D.A., Sadowsky D.A., Abi-Saab W.M. and M.D. Saltarelli (2015) Adaptive, dose-finding phase 2 trial evaluating the safety and efficacy of ABT-089 in mild-to-moderate Alzheimer's Disease. *Alzheimer Disease & Associated Disorders*, Jul-Sep;29(3):192-9.

32. Wang, H, Wang, B, Jackson, K, Miller CM, Hasadsri L, **Llano D**, Rubin R, Zimmerman J, Johnson C and B. Sutton (2015) A novel head-neck cooling device for concussion injury in contact sports. *Translational Neuroscience*, Volume 6, Issue 1, p20-31.

33. Slater B.J., Fan A., Stebbings K.A., Saif T., **Llano D.A.** (2015) Modification of a colliculo-thalamocortical mouse brain slice, incorporating 3-D printing of chamber components and multi-scale optical imaging. *Journal of Visualized Exp*, Sep 18;(103).

34. Fan, A, Stebbings KA, **Llano DA** and T Saif (2015) Stretch Induced Hyperexcitability of Mice Callosal Pathway. *Frontiers in Cellular Neuroscience*, Aug 5;9:292.

35. Normoyle K.P., Kim M., Farahvar A., **Llano D.** and H. Wang (2015) The emerging neuroprotective role of mitochondrial UCP2 in TBI translational neuroscience. (review) *Translational Neuroscience*, 6(1), 179-186.

36. Willis A.M., Slater B.J., Gribkova E. and **D.A. Llano** (2015) Open-loop organization of thalamic reticular nucleus and dorsal thalamus: A computational model. *Journal of Neurophysiology* Oct;114(4):2353-67.

37. Ma C., Forbes A.G., **Llano D.A.**, Berger-Wolf T. and R.V. Kenyon (2016) SwordPlots: Exploring neuron behavior within dynamic communities of brain networks. *Journal of Imaging Science and Technology*. Volume 60, Number 1, pp. 10405-1-10405-13(13).

38. Stebbings K.A., Choi H.W., Ravindra A., Caspary D.M., Turner J.G. and **D.A. Llano** (2016) Aging-related changes in GABAergic inhibition in the mouse auditory cortex, measured using in vitro flavoprotein autofluoresence imaging. *Journal of Physiology*. Jan 1;594(1):207-21.

39. Wang H., Kim M., Normoyle K.P. and **D. Llano** (2016) Thermal regulation of the brain – an anatomical and physiological review for clinical neuroscientists. (review) *Frontiers in Neuroscience*, Jan 21;9:528.

40. Stebbings K.A., Choi H.W., Ravindra A., and **D. A. Llano** (2016) The impact of aging, hearing loss and body weight on mouse hippocampal redox state, measured in brain slices using fluorescence imaging. *Neurobiology of Aging*, Jun;42:101-9.

41. Sadowski R.N., Stebbings K.A., Slater, B.J., Bandara, S.B., **Llano, D.A.** and S.L. Schantz (2016) Developmental exposure to PCBs alters the activation of the auditory cortex in response to $GABA_A$ antagonism. *Neurotoxicology*. Jul 12;56:86-93.

42. Paul K., Cauller L.J. and **D.A. Llano** (2016) Presence of a chaotic region at the sleep-wake transition in a simplified thalamocortical circuit model. *Frontiers in Computational Neuroscience*, Sep 1;10:91.

43. Lesicko A.M.H., Hristova T.S., Maigler K.C., and **D.A. Llano** (2016) Connectional modularity of top-down and bottom-up multimodal inputs to the lateral cortex of the inferior colliculus. *Journal of Neuroscience*, Oct 26;36(43):11037-11050.

44. Lesicko A.M.H. and **D.A. Llano** (2017) Impact of peripheral hearing loss on top-down auditory processing. (review) *Hearing Research*, Jan;343:4-13

45. Patel M., Sons S., Yudintsev G., Lesicko A.M.H., Yang L., Taha G.A., Pierce S.M. and **D.A. Llano** (2017) Anatomical characterization of subcortical descending projections to the inferior colliculus in mouse. *Journal of Comparative Neurology*, Mar 1;525(4):885-900.

46. Caspary D.M. and **D.A. Llano** (2017) Auditory thalamic circuits and $GABA_A$ receptor function: Putative mechanisms in tinnitus pathology. (review) *Hearing Research*, Jun;349:197-207.

47. **Llano, D.A.,** Mudar R., Bundela S. and D. Devanarayan (2017) A multivariate predictive modeling approach reveals a novel CSF peptide signature for both Alzheimer's Disease state classification and for predicting future disease progression. *PLOS One*, Aug 3;12(8):e0182098.

48. Ibrahim B.A., Wang H., Lesicko A.M.H., Bucci B., Paul K. and **D.A. Llano** (2017) Effect of temperature on FAD and NADH-derived signals and neurometabolic coupling in the mouse auditory and motor cortex. *JPflügers Archiv - European Journal of Physiology*, Dec;469(12):1631-1649.

49. Sottile S.Y., Hackett T.A., Cai R., **Llano D.A.,** and D.M. Caspary (2017) Presynaptic neuronal nicotinic receptors differentially shape select inputs to auditory thalamus and are negatively impacted by aging. *Journal of Neuroscience*, Nov 22;37(47):11377-11389.

50. Ma C., Pellolio F, **Llano DA**, Stebbings KA, Kenyon RV , Marai GE (2018). RemBrain: Exploring dynamic biospatial networks with mosaic-matrices and mirror glyphs *Visualization and Data Analysis* pp. 060404-1-060404-13(13).

51. Swords G.M., Nguyen L.T., Mudar R.A. and **D.A. Llano** (2018) Auditory system dysfunction in Alzheimer Disease and its prodromal states: A review. (review) *Ageing Research Reviews*, Apr 6;44:49-59.

52. Swords G.M., Nguyen L.T., Mudar R.A. and **D.A. Llano** (2018) Incorporating audiological measurements into Alzheimer's diagnosis. *The Hearing Journal*. June 71(6) 6.

53. Gribkova, E.D., Ibrahim, B.A. and **D.A. Llano** (2018) A novel mutual information estimator to measure spike train correlations in a model thalamocortical network. *Journal of Neurophysiology*, Dec 1;120(6):2730-2744.

54. Devanarayan, P., Devanarayan, V. and **D.A. Llano** (2019) Identification of a simple and novel cut-point based CSF and MRI signature for predicting Alzheimer's disease progression that reinforces the 2018 NIA-AA research framework. *Journal of Alzheimer Disease*, 68(2):537-550.

55. Slater, B.J., Sons S.K., Yudintsev G., Lee C.M. and **D.A. Llano** (2019) Thalamocortical and intracortical inputs differentiate layer-specific mouse auditory corticocollicular neurons. *Journal of Neuroscience*, Jan 9;39(2):256-270.

56. Nguyen LT, Marini F, Zacharczuk L, **Llano D.A.**, Mudar RA. (2019) Theta and Alpha Band Oscillations During Value-Directed Strategic Processing. *Behav Brain Res*. 2019 Jul 23;367:210-214.

57. **Llano, D.A.,** Devanarayan, P. and V. Devanarayan, (2019) VGF in cerebrospinal fluid combined with conventional biomarkers enhances prediction of conversion from MCI to Alzheimer's Disease. *Alzheimer's Disease and Associated Disorders*, 33(4):307-314.

58. Esmaeeli, S., Murphy K., Swords, GM, Ibrahim BA, Brown JW, **D.A. Llano** (2019) Visual hallucinations, thalamocortical physiology and Lewy Body Disease: A review. *Neuroscience and Biobehavioral Reviews*, Aug;103:337-351.

59. Rajagopal MC, Brown JW, Gelda D, Valavala KV, Wang H, **Llano DA**, Gillette R, and S. Sinha (2019) Transient heat release during induced mitochondrial proton uncoupling. *Communications Biology*, Jul 26;2:279.

60. Ibrahim, BA and **DA Llano** (2019) Aging and central auditory disinhibition: Is it a reflection of homeostatic downregulation or metabolic vulnerability? (Invited Review). *Brain Sciences*. Dec 1;9(12).

61. Zhao Y, Maguluri G, Ferguson RD, Tu H, Paul K, Boppart SA, **Llano DA**, Iftimia N (2020) Two-photon microscope using a fiber-based approach for supercontinuum generation and light delivery to a small-footprint optical head. *Optics Letters*. Feb 15;45(4):909-912.

62. Brown JW, Taheri A, Kenyon RV, Berger-Wolf T, **DA Llano** (2020) Propagation of cortical activity via open-loop intrathalamic architectures: a computational analysis. *ENeuro.* Feb 25;7(1).

63. Maclaine KD, Stebbings KA, **Llano DA**, Rhodes JS. (2020) Voluntary wheel running has no impact on brain and liver mitochondrial DNA copy number or mutation measures in the PolG mouse model of aging. *PLoS One*. 2020 Mar 2;15(3):e0226860.

64. Nguyen LT, Marini F, Shende S.A., **Llano D.A.**, Mudar RA. (2020) Investigating EEG theta and alpha oscillations as measures of value-directed strategic processing in cognitively normal younger and older adults. *Behav Brain Res*. May 24;391:112702

65. Mohandass A., Krishnan V, Gribkova ED, Asuthkar S, Baskaran P, Nersesyan Y, Hussain Z, Wise LM, George RE, Stokes N, Alexander B, Cohen A, Pavlov E, **Llano DA**, Zhu MX, Thyagarajan B, and E Zakharian (2020) A rapid testosterone signaling receptor, TRPM8, regulates dimorphic sexual and social behaviors. *FASEB Journal*, Jul 1.

66. Nadhimi, Y. and **D.A. Llano** (2020) Does hearing loss lead to dementia? A review of the literature (Review). *Hearing Research*, Jul 30:108038.

67. Lesicko A.M.H., Sons S.K. and **D.A. Llano** (2020) Circuit mechanisms underlying the segregation and integration of parallel processing streams in the inferior colliculus. *Journal of Neuroscience*, Aug 12;40(33):6328-6344.

68. Liu Y-Z, Renteria C, Courtney CD, Ibrahim B, You S, Chaney EG, Barkalifa R, Iyer RR, Zurauskas M, Tu H, **Llano DA**, Christian CA, SA Boppart (2020) Simultaneous two-photon activation and imaging of neural activity based on spectral-temporal modulation of supercontinuum light *Neurophotonics*, Oct;7(4):045007.

69. Xiao G. and **D.A. Llano** (2020) Hitting the right spot: NMDA receptors in the auditory thalamus may hold the key to understanding schizophrenia. *Journal of Neuropsychopharmacology*. Dec 3;23(9):578-580.

70. **Llano, D.A.,** Issa, L.K., Devanarayan, P., and V. Devanarayan (2020). Hearing loss in Alzheimer Disease is associated with altered serum lipidomic biomarker profiles. *Cells.* Nov 28;9(12):E2556.

71. Asilador A and **D.A. Llano** (2021) Top-down inference in the auditory system: Potential roles for corticofugal projections. (Review) *Frontiers in Neural Circuits,* Jan 22;14:615259.

72. **Llano, D.A.,** and V. Devanarayan (2021). Serum phosphatidylethanolamine and lysophosphatidylethanolamine levels differentiate Alzheimer Disease from controls and predict progression from mild cognitive impairment. *Journal of Alzheimer Disease,* 80(1):311-319.

73. Lee CM, Sadowsky, RN, Schantz SL and **D.A. Llano** (2021) Developmental PCB exposure disrupts synaptic transmission and connectivity in the rat auditory cortex, independent of its effects on peripheral hearing threshold. *eNeuro.* Feb 1;8(1):ENEURO.0321-20.2021.

74. **Llano DA**, Ma C, Di Fabrizio U, Taheri A, Stebbings KA, Yudintsev G, Xiao G, Kenyon RV, Berger-Wolf TY (2021) A novel dynamic network imaging analysis method reveals aging-related fragmentation of cortical networks in mouse. *Network Neuroscience,* Jun 21;5(2):569-590.

75. Stauffer K. **Llano DA**, Kitten S (2021) Nicotinic ganglionic acetylcholine receptor autoantibodies associated with paraneoplastic disease in a neuropsychiatric patient. *BMJ Case Reports,* May 27;14(5):e240824.

76. Ibrahim BA, Murphy C, Yudintsev G., Shinagawa Y, Banks MI, **Llano DA** (2021) Corticothalamic gating of population auditory thalamocortical transmission in mouse. *eLife,* May 24;10:e56645.

77. Chandrasekaran NV, Deshpande MS, Ibrahim BA, Xiao G, Shinagawa Y, **Llano DA** (2021) Patterns of unilateral and bilateral projections from layer 5 and 6 of the auditory cortex to the inferior colliculus in mouse. *Frontiers in Systems Neuroscience,* Oct 21;15:674098.

78. **Llano DA**, Kwok SS and V. Devanarayan (2021) Reported hearing loss in Alzheimer disease is associated with loss of brainstem and cerebellar volume. *Frontiers in Human Neuroscience,* Sep 24;15:739754.

79. Maclaine, KD, Stebbings, KA, **Llano, DA**, Havird, JC (2021) The mtDNA mutation spectrum in the PolG mutator mouse reveals germline and somatic selection. *BMC Genomic Data*, Nov 26;22(1):52.

80. Yudintsev, G, Asilador A, Sons S, Vaithiyalingam Chandra Sekaran N, Coppinger M, Nair K, Prasad M, Xiao G, Ibrahim BA, Yoshitaka Shinagawa Y, **DA Llano** (2021) Evidence for layer-specific connectional heterogeneity in the mouse auditory corticocollicular system. *Journal of Neuroscience*, Dec 1;41(48):9906-9918.

81. Lowerison, MR, Chandra Sekaran N, Zhang W, Dong Z, Chen X, **Llano DA** and Pengfei Song. (2022) Aging-related cerebral microvascular changes visualized using Ultrasound Localization Microscopy in the living mouse. *Scientific Reports*. Jan 12;12(1):619.

82. Kim J, Lowerison MR, Sekaran NC, Kou Z, Dong Z, Oelze ML, **Llano DA**, Song P. (2022) Improved Ultrasound Localization Microscopy based on Microbubble Uncoupling via Transmit Excitation (MUTE). *IEEE Trans Ultrason Ferroelectr Freq Control*. 2022 Jan 18;PP.

83. Kwok SS, Nguyen X-MT, Wu D, Mudar RA, and **DA Llano** (2022) Pure tone audiometry and hearing loss in Alzheimer's Disease: A metaanalysis. *Frontiers in Psychology*, Jan 21;12:788045.

84. You Q , Trzasko J , Lowerison M, Chen X , Dong Z, ChandraSekaran N, **Llano D,** Chen S, and Pengfei Song. (2022) Curvelet Transform-based Sparsity Promoting Algorithm for Fast Ultrasound Localization Microscopy. *IEEE Transactions on Medical Imaging*. 41(9), pp.2385-2398.

85. Walters JM, Kim EC, Zhang J, Jeong HG, Bajaj A, Baculis BC, Tracy GC, Ibrahim B, Christian-Hinman CA, **Llano DA**, Huesmann GR, Chung HJ. (2022) Pharmacological inhibition of STriatal-Enriched protein tyrosine Phosphatase by TC-2153 reduces hippocampal excitability and seizure propensity. *Epilepsia*. May;63(5):1211-1224.

86. Nguyen LT, Lydon EA, Shende SA, **Llano DA**, RA Mudar (2022) Disrupted Value-Directed Strategic Processing in May 11;7(3):56. Individuals with Mild Cognitive Impairment: Behavioral and Neural Correlates. *Geriatrics*, May 11;7(3):56.

87. Pérez-González D, Schreiner TG, **Llano DA** and MS Malmierca (2022) Alzheimer's Disease, Hearing Loss and Deviance Detection (Review) *Frontiers in Neuroscience*, Jun 2;16:879480.

88. EA L Stine-Morrow, GS Mccall, I Manavbasi, S Ng, **DA Llano**, AK. Barbey (2022) The Effects of Sustained Literacy Engagement on Cognition and Sentence Processing among Older Adults *Frontiers in Psychology*, Jul 11;13:923795.

89. S Kitten, ND Jani, **DA Llano** (2022) Functional Neurological Symptom Disorder Manifesting as Auditory Verbal Agnosia in a 19-Year-Old Patient. *Cureus*, Aug 12;14(8):e27930

90. Narins, PM, **Llano DA**, GKH Zupanc (2023) Neuroethology of auditory systems: contributions in memory of Albert S. Feng (commentary). *Journal of Comparative Physiology A*, Jan;209(1):1-4.

91. **Llano DA,** Devanarayan P, Devanarayan D (2023) CSF peptides from VGF and other markers enhance prediction of MCI to AD progression using the ATN framework. *Neurobiology of Aging*. Jan;121:15-27.

92. Kou Z, You Q, Kim J, Dong Z, Lowerison MR, V. Chandra Sekaran N, **Llano DA**, Song P, Oelze M (2023) High-level synthesis design of scalable ultrafast ultrasound beamformer with single FPGA. *IEEE Transactions on Biomedical Circuits and Systems*. 17 April: 1-12.

93. Macias S. and **DA Llano** (2023) Descending projection to the auditory midbrain: Evolutionary considerations (Review). *Journal of Comparative Physiology A.* Jan;209(1):131-143

94. Naik AG, Kenyon RV, Taheri A, Berger-Wolf T, Ibrahim B, Shinagawa and **DA Llano** (2023) V-Neurostack: Open-source 3D time stack software for identifying patterns in neuronal data. *Journal of Neuroscience Research*, Feb;101(2):217-231

95. Ghimire M, Cai R, Ling L, Brownell KA, Hackett TA, **Llano DA**, DM Caspary (2023) Increased pyramidal and VIP neuronal excitability in primary auditory cortex directly correlates with tinnitus behavior *Journal of Physiology*, Jun;601(12):2493-2511.

96. Yu Z, Moshood Y, Wozniak MK, Patel S, Terpstra K, **Llano DA**, Dobrucki LW, Mirica LM. (2023) Amphiphilic Molecules Exhibiting Zwitterionic Excited-State Intramolecular Proton Transfer and Near-Infrared Emission for the Detection of Amyloid β Aggregates in Alzheimer's Disease.*Chemistry*. 2023 Aug 24:e202302408.

97. You Q, Lowerison MR, Shin Y, Chen X, Sekaran NVC, Dong Z, **Llano DA**, Anastasio MA, Song P. Contrast-free Super-resolution Power Doppler (CS-PD) based on Deep Neural Networks. (2023) *IEEE Trans Ultrason Ferroelectr Freq Control.* 2023 Aug 11;PP.

98. Brunelle DL, **Llano DA**. (2023) Role of auditory-somatosensory corticothalamic circuit integration in analgesia. (Mini-review) *Cell Calcium*. 2023 Mar 12;111:102717.

99. Ibrahim BA, Louie JJ, Shinagawa Y, Xiao G, Asilador AR, Sable HK, Schantz S, **DA Llano** (2023) Developmental exposure to polychlorinated biphenyls prevents recovery from noise-induced hearing loss and disrupts the functional organization of the inferior colliculus. *Journal of Neuroscience*, Jun 21;43(25):4580-4597.

100. Issa LK, Vaithiyalingam Chandra Sekaran N, **DA Llano** (2023) Highly branched and complementary distributions of layer 5 and layer 6 auditory corticofugal axons in mouse *Cerebral Cortex*, Jun 29:bhad227.

101. Ibrahim BA, Shinagawa Y, Xiao G, Asilador AR, **DA Llano** (2023) Microprism-based two-photon imaging of the lateral cortex of the mouse inferior colliculus reveals novel organizational principles of the auditory midbrain. *eLife*, accepted as reviewed preprint.

PREPRINTS:

1. Lowerison MR, Vaithiyalingam Chandra Sekaran N, Dong Z, Chen X, You Q, **Llano DA**, P Song (2022) Super-resolution ultrasound imaging of cerebrovascular impairment in a mouse model of Alzheimer's disease bioRxiv 2022.10.05.511008.

2. You Q, Lowerison MR, Shin YR, Chen X, Vaithiyalingam Chandra Sekaran N, Zhijie Dong Z, Daniel A. **Llano DA**, Mark A. Anastasio MA, P Song. (2022) Contrast-free Super-resolution Doppler (CS Doppler) based on Deep Generative Neural Networks bioRxiv 2022.09.29.510188.

3. Wang Y, Lowerison MR, You Q, Lin BZ, **Llano DA**, Song P. (2023) Longitudinal Awake Imaging of Deep Mouse Brain Microvasculature with Super-resolution Ultrasound Localization Microscopy. bioRxiv. 2023 Sep 5:2023.09.01.555789.

BOOK CHAPTERS:

1. Varela, C., **Llano D.A.** and B.B. Theyel. (2012) "Brain slice electrophysiology." In Neuronal Network Analysis, Fellin T, Hallasa M, eds. Springer Publishers.

2. **Llano D.A.** (2015) "Thalamus and Language" In The Neurobiology of Language. Small S. and Hickok G. eds. Elsevier Publishers.

3. **Llano D.A.** and Small S. L. (2015) "Pharmacotherapy for Aphasia" In The Neurobiology of Language. Small S. and Hickok G. eds. Elsevier Publishers.

4. Small S.L. and **Llano D.A.** (2015) "Biological Approaches to Treatment of Aphasia" In Handbook on Adult Language Disorders, Hillis A., eds. Taylor & Francis Publishers.

5. Huynh, N, Lee C.M., Ibrahim B.A., Key M.N. and **Llano D.A.** (2019) "Injections of viral optogenetic tracers into the cerebral cortex of neonatal mouse" In Neuromethods: Basic Neurobiology Techniques. Wright N. ed. Springer Publishers.

6. Yudintsev G., Lee C.M., Asilador A. and **Llano D.A.** (2019) "Transcranial imaging of the mouse auditory cortex in the GCaMP6 mouse" In Neuromethods: Basic Neurobiology Techniques. Wright N. ed. Springer Publishers.

7. Caspary D.M. and **Llano D.A.** (2019) "The aging auditory brainstem" in Neuroscience

Handbook Series: The Auditory Brainstem: Organization, Function, and Plasticity, Kandler, K. ed. Oxford Press.

8. Maclaine K.D. and **Llano D.A.** (2020) "The aging central auditory system" in The Senses - Vol.II Audition, Grothe, B. ed. Elsevier Press.

9. Singh M and **Llano D.A**. (2023) "Drugs for Neurodegenerative Dementias" in An Introduction to Basic and Clinical Pharmacology, Uteshev, Shadiak, Llano eds. Cambridge Scholars Press.

10. **Llano D.A.** (2023) "Ataxia, Dizziness and Balance Problems" in An Introduction to Basic and Clinical Pharmacology, Uteshev, Shadiak, Llano eds. Cambridge Scholars Press.

11. **Llano DA** (2023) "Auditory thalamic nuclei, cell types and parallel pathways" in The Cerebral Cortex and Thalamus. Shermand and Usrey ed. Oxford University Press.

CONFERENCE PROCEEDINGS:

1. Ma C., Kenyon R.F., Forbes A., Berger-Wolf T., Slater B.J. and **D.A. Llano** (2015) Visualizing dynamic brain networks using an animated dual-representation. *Eurographics Conference on Visualization (EuroVis)*, May 25-29.

2. Patel M. B., Sons S., Yang L., Taha G.A., Lesicko A.M.H., Yudintsev, G. and **D.A. Llano** (2015). The thalamotectal system: An ancient projection for modulating the auditory midbrain. *Proceedings of Meetings on Acoustics*, 25(1).

3. Lowerison, M; Chen, X; Huang, C; Zhang, W; Tang, S; Sekaran, N; **Llano, D**; Chen, S; Song, P Multi-resolution Data Processing for Accelerated and Robust Ultrasound Localization Microscopy (2020) *IEEE International Ultrasonics Symposium* (IUS). 2020, p.1-4

4. Kim, J., Dong, Z., Lowerison, M.R., Sekaran, N.V.C., You, Q., **Llano, D.A.** and Song, P., 2022, October. Deep Learning-based 3D Beamforming on a 2D Row Column Addressing (RCA) Array for 3D Super-resolution Ultrasound Localization Microscopy. In 2022 *IEEE International Ultrasonics Symposium* (IUS) (pp. 1-4). IEEE.

5. Shin, Y., Lowerison, M.R., Dong, Z., Chen, X., You, Q., ChandraSekaran, N.V., **Llano, D.A.,** Anastasio, M. and Song, P., 2022. Deep learning-based fast and dense microbubble localization for ultrasound localization microscopy. *The Journal of the Acoustical Society of America*, 152(4), pp.A112-A112.

INVITED LECTURES:

2002: Ramon E. Betances Hospital, Department of Medicine, Mayaguez, PR
"tPA en accidente cerebrovascular agudo"
2006: Massachusetts General Hospital/Brigham and Women's Hospital Resident Conference,
"The role of the thalamus in cortical function."
2007: University of Chicago Neurology Grand Rounds,
"The role of the thalamus in cortico-cortical communication."
2007: University of Chicago Neuroscience Roundtable,
"Proposal for fMRI investigation of the role of the thalamus in attention."
2009: Abbott Neuroscience Grand Rounds,
"The use of biomarkers in Alzheimer's Disease drug development."
2010: New Faculty Talk, Cell and Molecular Biology & Molecular Biophysics Training Grants - 23rd Annual Research Symposium, UIUC. "A role for the thalamus in cortical function."
2010: UIUC Neuroscience Program Colloquia Talk
"A role for the thalamus in cortical function."
2010: Southern Illinois University, Department of Pharmacology
"A role for the thalamus in auditory cortical function."

2011: Grand Rounds, Department of Medicine, Carle Hospital
"Management of Behavioral Symptoms of Alzheimer Disease"
2011: American Neurological Association, Symposium Speaker
"The role of the thalamus in language"
2011: Northeast Ohio University College of Medicine, Department of Anatomy and Neurobiology.
"A role for the thalamus in auditory cortical function."
2012: Ear Day Symposium at Rush University, Chicago, IL.
"Studies on the mouse auditory forebrain in normal and pathological states"
2013: UIUC, Department of Molecular/Integrative Physiology Seminar
"Studies on mouse auditory forebrain processing"
2013: UIUC, Department of Psychology Brownbag Seminar
"Sounds from the deep: Studies of auditory subcortical processing"
2013: University of Iowa, Department of Neurosurgery Seminar
"Flavoprotein imaging as a potential tool in functional neurosurgery"
2013: Ear Day Symposium at Rush University, Chicago, IL.
"Sounds from the deep: Insights on subcortical auditory processing"
2013: University of Wisconsin-Madison. Bioengineering Imaging Seminar
"Top-down modulation of auditory processing in the mouse midbrain and thalamus."
2014: Illiana Alzheimer Disease Conference, Covington, IN
"MCI and Early Alzheimer's: Screening, Assessment and Intervention"
2014: Kiwanis Club Annual Meeting, Bloomington, IL
"Seeing phantom sounds: Imaging the neural correlates of tinnitus"
2014: Purdue University, Biological Sciences Seminar
"Sounds from the deep: New insights on auditory subcortical processing"
2014: Ear Day, Rush University
"Bottom up meets top-down: Studies of auditory corticofugal projections"
2015: Illiana Alzheimer Disease Conference, Urbana, IL
"New therapies for mild cognitive impairment and Alzheimer disease"
2015: Illinois Summer Neuroscience Institute, Distinguished Lecture
"Mechanisms of top-down auditory control"
2015: Acoustic Society for America, semi-annual meeting
"Frogs, thalamotectal neurons and other things I learned about from Al Feng"
2015: Ear Day Symposium at Rush University, Chicago, IL.
"The thalamotectal system: an ancient projection for modulating the auditory midbrain"
2016: *Synapse: A Collaborative Neuroscience Symposium*, Beckman Institute, Urbana, IL
"What's new in the treatment of Alzheimer's Disease?"
2016: Molecular and Integrative Physiology Seminar, UIUC
"Bottom up meets top-down: Modulation in the auditory system"
2016: Department of Cancer Biology and Pharmacology, University of Illinois at Peoria
"Top-down modulation in the mouse auditory system"
2016: University of Wisconsin-Madison, "Brain and Bagels" seminar series
"Descending projections in the mouse auditory system"
2017: Carle Brain Injury Symposium
"Vascular Dementia: An Update"
2017: Clinical and Translational Neuroscience Workshop
Interdisciplinary Health Sciences Initiative, UIUC
"Maladaptive auditory cortical network changes associated with aging and hearing loss"
2017: The Bullock-Goldberg Award Inaugural Seminar, UIUC
"Voices down below: cortical-subcortical interactions in the mouse auditory system"
2017: Illinois State University, Department of Physics Colloquium Series
"Neurophysiology of the auditory system: Cortical-subcortical interactions"
2018: University of Illinois Internal Medicine Grand Rounds
"Update on Dementia"
2018: 7th Biennial Regional Conference. Alzheimer's Disease: Challenges and Choices
"Alzheimer's Update: Research and Practice"

2018: Synapse: Frontiers of Stroke Management
"tPA use in stroke mimics"
2018: ZNI Seminar Series, University of Southern California
"Parallel pathways in the auditory corticocollicular system"
2019: University of Illinois Neuroscience Program Seminar
"Is amyloid responsible for Alzheimer Disease" (A debate along with Dr. Stephanie Ceman)
2019: UTSA Neurobiology Seminar Series (invited, could not attend)
"Sounds from the deep: Cortical modulation of auditory subcortical function in the mouse"
2020: Univ of Michigan, Kresge Hearing Research Institute
"Echoes from below: Examination of cortico-tectal interactions in the mouse auditory system."
2021: Carle Illinois College of Medicine Innovation Grand Rounds:
"Is perception just a controlled hallucination? Evidence from the thalamocortical system"
2022: Carle Bioethics Series
"Bioethics in Dementia"
2022: Department of Pharmacology, SIU School of Medicine
"Mice, modules and modulation: Examination of a major descending projection in the auditory system."
2022: Department of Neurology Grand Rounds, SIU School of Medicine
"Hearing loss and dementia – what's the connection?"
2022: Colloquium Seminar Series, Department of Biological Sciences, Lehigh University
"Potential roles of the thalamic reticular nucleus in controlling cortical activation"
2023: Institute of Neuroscience, University of Oregon
"Sounds from the deep: Corticollicular interactions in the mouse"
2023: Pittsburgh Hearing Research Center seminar:
"Of mice and modules: Cortex-midbrain interactions in the auditory system"
2023: Rutgers/RWJMS Brain Health Institute/Dept Otolaryngology
"Sounds from the deep: Functional interactions in the auditory corticocollicular system"
2023: Virginia Tech University (Invited, lecture to be given Dec 2023)
2024: Stanford University (Invited, lecture to be given Mar 2024)

AD HOC JOURNAL REVIEWER (since 2010):
Austin Journal of Clinical Neurology, BMJ Open, Brain and Behavior, Brain and Cognition, Brain and Language, Brain Imaging and Behavior, Brain Research, Cell Reports, Cerebral Cortex, Clinical Interventions in Aging, Ear and Hearing, ELife, European Journal of Neuroscience, Frontiers in Auditory Cognitive Neuroscience, Frontiers in Computational Neuroscience, Frontiers in Human Neuroscience, Frontiers in Neural Circuits, Frontiers in Neuroanatomy, Frontiers in Systems Neuroscience, Hearing Research, IEEE Transactions on Neural Systems and Rehabilitation Engineering, Journal of Comparative Physiology, Journal of Neurophysiology, Journal of Neuroscience, Journal of Neuroscience and Neurological Disorders, Journal of Neuroscience Methods, Journal of Neurotrauma, Journal of the Neurological Sciences, Journal of Visualized Experiments, Language and Cognition, Nature Communications, Neurobiology of Aging, Neurobiology of Disease, Neuroscience, Neuroscience Letters, Neuroscience Research, Noise and Health, Nutritional Neuroscience, Pain, Pediatric Investigation, PLOS Biology, PLOS One. Proceedings of the National Academy of Sciences, Rejuvenation Research, Scientific Reports, Synapse, The Neuroscientist, Trends in Neuroscience

GRANT REVIEWER:
2011: Alzheimer Association International Grant Program Reviewer
2012: Invited Panelist, NSF Division of Mathematical Sciences/NIGMS Review Board
2014: Action on Hearing Loss, International Grant Program Reviewer
2014: Neurological Foundation of New Zealand Grant Reviewer
2015: Health Research Council of New Zealand Grant Reviewer
2015: University of Illinois Research Board
2016: Wellcome Trust Senior Research Fellowship in Basic Biomedical Science,UK
2016: Agir Pour L'Audition Foundation, France

2016: Medical Research Council Review, UK
2016: Neural Systems, NSF (invited, could not attend)
2016: AUD Study Section, ad hoc
2017: Panelist, NSF Collaborative Research in Computational Neuroscience/Information & Intelligent Systems Division Review
2017: Neurological Foundation of New Zealand
2017: French National Research Agency (ANR)
2017: Tinnitus Review Panel for Peer Reviewed Medical Research Program (PRMRP) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP)
2017: NSF, Division of Behavioral and Cognitive Sciences-Cogneuro
2018: AUD Study Section, ad hoc
2018: Medical Research Council Review, UK
2018: Czech Science Foundation
2019: ZDC1 SRB-X (67) - NIDCD Hearing and Balance Fellowship Review, ad hoc NIH
2019: ZDC1 SRB-Y (56) - NIDCD Hearing and Balance Fellowship Review, ad hoc NIH
2019: NSF EPSCoR Research Fellows Program, ad hoc reviewer
2019: NIH Special Emphasis Panel (Alzheimer Disease – asked – unable to serve)
2019: Action on Hearing Loss
2020: NIH program project review
2021: AUD Study Section, ad hoc
2021: University of Michigan's Claude Pepper Older Americans Independence Center Pilot Grant
2021: Royal National Institute for Deaf People (RNID) Discovery research grant reviewer
2022: LRP NIDCD Review Panelist
2022: Invited member, AUD Study Section, CSR, (term = 2022-2026)
2022: RNID Discovery Research Grant
2023: La Caixa Research Foundation

CLINICAL RESEARCH:

2006 Principal Investigator, "Development of an Aphasia Patient Database," University of Chicago. IRB #14851B.
2008 Sub-Investigator, "Phase 3 clinical trial of bapineuzumab (AAB-001) for the treatment of mild to moderate Alzheimer's disease." Wyeth and Elan.
2008 Study Director, "Safety and Efficacy Study of ABT-XXX in Adults With Mild to Moderate Alzheimer's Disease." Abbott Laboratories.
2008 Study Director, "A Study of the Long-Term Safety of ABT-XXX for Subjects With Mild-to-Moderate Alzheimer's Disease Who Participated in the M06-876 Study." Abbott Laboratories.
2009 Study Director, "A Safety and Tolerability Study of ABT-XXX in Elderly." Abbott Laboratories.
2009 Study Director, "Pharmacokinetic and Exploratory Biomarker Study of ABT-XXX In Healthy Volunteers." Abbott Laboratories.
2009 Study Director, "Pharmacokinetic and Tolerability Study of ABT-XXX, Dosed Twice Daily, In Healthy Volunteers." Abbott Laboratories.
2010 Study Director, "Exploratory CSF biomarker study In Healthy Volunteers." Abbott Laboratories.
2010 Medical Monitor, "Safety and Efficacy Study for Cognitive Deficits in Adult Subjects With Schizophrenia." Abbott Laboratories.
2012 Physician Investigator (K. Federmeier, PI), "Electrophysiological Signals to Predict Age-Related Cognitive Decline." Carle-UIUC collaboration.
2012 Physician Investigator (A. Barbey, PI), "Nutritional Intake, Cognitive Function, and Measures of Brain Aging." Carle-UIUC collaboration.
2012 Physician Investigator (R. Mudar, PI), "Neural Markers of Strategic Learning in Individuals with Subject Memory Impairment." Carle-UIUC collaboration.

ACADEMIC SERVICE:

Research Committee, UIUC College of Medicine, 2010-
Seminar Committee, Department of Molecular and Integrative Physiology, UIUC, 2011-. (Chair 2015-)

Admissions Committee, Neuroscience Program, UIUC, 2011-2012.
Medical Student Research Award Committee, UIUC, 2011-2013.
Search Committee, Division of Biomedical Sciences Research Specialist, UIUC. 2012.
Steering Committee, Medical Scholars Program, UIUC, 2012-2014.
Search Committee, Molecular and Integrative Physiology New Faculty, UIUC. 2013, 2014, 2018, 2019
Academic Distinction Committee, Molecular and Cellular Biology, UIUC. 2013-2016.
Co-Organizer, Brain Awareness Day, at Orpheum Theater Children's Museum, UIUC, 2014-2015.
Executive Committee, Neuroscience Program, UIUC, 2014-2016, 2019.
Seminar Committee, Neuroscience Program, UIUC, 2014-2016.
Alzheimer's Association Research Engagement Committee, 2016
Search Committee, Carle Illinois College of Medicine, for Director, Biomedical Science and Engineering and Associate Dean for Research, 2017
MCB Strategic Advisory Committee, 2017-2020
MCB Distinction Committee, 2017-
IACUC Committee, 2018-
Molecular and Integrative Physiology Executive Committee, 2018-
Research Integrity Office Investigation Committee, 2019
Bob Bilger Award Committee, 2019-.
Promotion and Tenure Committee, MCB 2019-2022
Promotion and Tenure Committee, CIMED Biomedical and Translational Sciences 2021-2022

RESEARCH MENTORING:

Current Trainees in the Llano Laboratory:
Dr. Baher Ibrahim (Post-doctoral researcher)
Dr. Nathiya Vaithiyalingam Chandra Sekaran (Post-doctoral researcher)
Gang Xiao (Ph.D. student, MCB)
Kaley Graves (AUD student, Speech and Hearing Science)

Laboratory Alumni:

Dr. Adam Willis (Postdoct. researcher 2011-2012):	Currently a neurointensivist at San Antonio Military Medical Center
Dr. Renee Sadowski (Postdoct. researcher 2014-2016):	Currently a Senior Scientist at AbbVie Pharmaceuticals
Dr. Kush Paul (Research scientist 2016-2018):	Currently a scientist at Bruker Technologies
Dr. Christopher Lee (Postdoct. researcher 2016-2018):	Currently a post-doctoral researcher in Dr. Douglas Oliver's laboratory, UConn
Dr. Bernard Slater (Ph.D., Neuroscience, 2016):	Currently a post-doctoral researcher in Dr. Richard Mooney's Laboratory, Duke
Dr. Alexandria Lesicko (Ph.D., Neuroscience, 2018):	Currently a post-doctoral researcher in Dr. Maria Geffen's laboratory, UPenn
Dr. Kevin Stebbings (Ph.D., Neuroscience, 2018):	Currently a post-doctoral researcher
Dr. Georgiy Yudintsev (Ph.D., Neuroscience, 2019):	Currently a post-doctoral researcher in Dr. Natalia de Marco's laboratory, Cornell
Dr. Jeffrey Brown (Postdoct. Researcher 2016-2018)	Currently a post-doctoral researcher in Dr. William Frost's laboratory, RFUMS
Mili Patel (Laboratory technician):	Currently a graduate student in Neuroscience at UCSF
Henry Choi (Laboratory technician)	Currently a graduate student in Neuroscience at University of Rochester

Graduate Student Training Committees (year of first exam listed):
Shane Crandall (Neuroscience, UIUC, Final Defense): 2011
Lin Feng (Pharmacology, SIU-COM, Final Defense): 2012
Sam Irving (Molecular and Integrative Physiology, UIUC, Qualifying Exam): 2012
Jenessa Seymour (Neuroscience, UIUC, Qualifying Exam): 2013

Chris Boven (Neuroscience, UIUC, Qualifying Exam): 2013
Sara Schmidt (Neuroscience, UIUC, Qualifying Exam): 2013
Lily Chau (Neuroscience, UIUC, Final Defense): 2013
Suren Bandara (Neuroscience, UIUC, Final Defense): 2014
Amogh Belagodu (Neuroscience, UIUC, Qualifying Exam, Prelim Exam, Final Defense): 2014
Mariam Bonyadi (Neuroscience, UIUC, Diagnostic, Qualifying Exam, Final Defense): 2014
Lydia Nguyen (Neuroscience, UIUC, Diagnostic, Qualifying, Prelim): 2014
Richard Oliver Bido Medina (Neuroscience, UIUC, Diagnostic, Qualifying, Final Defense): 2014
Alex Asilador (Neuroscience, UIUC, Diagnostic): 2015
Sarah Sottile (Pharmacology, SIU-COM, Qualifying Exam, Prelim Exam, Final Defense): 2015
Mickeal Key (Neuroscience, UIUC, Diagnostic, Qualifying): 2015
Richard Sanders (Comparative and World Literature, UIUC, Prelim Exam): 2016
Carlos Dostal (Neuroscience, UIUC, Diagnostic, Qualifying Exam, Prelim Exam, Final Defense): 2017
Elizabeth Davis (Neuroscience, UIUC, Diagnostic, Qualifying Exam, Final Defense): 2017
Ryan Loh (Psychology, UIUC, Prelim Exam, Final Defense): 2017
Sean Collins (Psychology, UIUC, Prelim Exam, Final Defense): 2017
Brian Baculis (Neuroscience, UIUC, Diagnostic, Qualifying): 2017
Liran Zeigelman (Neuroscience, UIUC, Diagnostic, Qualifying): 2018
Jennifer Walters (Neuroscience, UIUC, Diagnostic, Qualifying): 2019
Robbie Ingram (Neuroscience, UIUC, Diagnostic, Qualifying): 2019
Katiria Soto-Diaz (Neuroscience, UIUC, Diagnostic, Qualifying): 2020
Alex Armstrong (Neuroscience, UIUC, Diagnostic): 2021
Simon Lizarazo (Molecular/Integrative Physiology, UIUC, Qualifying): 2021
Temirlan Shilikbay (Cellular and Developmental Biology, UIUC, Prelim): 2021

<u>Formal undergraduate laboratory research mentoring (for UIUC credit, alphabetical):</u>
Adam Abushamaa (MCB). Nisaa Aleem (Interdisciplinary Health Sciences), Bethany Bucci (MCB), Karthic Chandran (MCB), Henry Choi (MCB), Macey Coppinger (MCB, *Senior Thesis*), William Dai (MCB), Meena Deshpande (MCB), Austin Douglas (MCB), Joe Edwards (MCB), Michaela Fisch (MCB), Jairong Fu (MCB), Dan Gonzalez (MCB), Ekaterina Gribkova (Mathematics, *Senior Thesis*), Syed Haider (MCB), Nhan Huynh (MCB, *Senior Thesis*), Lina Issa (MCB), Nikita Jain (Bioengineering), Vanessa Kalinowska (MCB, *Senior Thesis*), Grace Ledogar (MCB), Alexandria Lesicko (MCB, *Senior Thesis*), Brandon Li (MCB), Junyu Li (MCB), Jeremy Louie (Bioengineering), Katie Maigler (MCB), Diana Masolak (MCB, *Senior Thesis*), Kathy Mirza (MCB), Patrick Mulligan (MCB), Kathleen Murphy (Physics), Devika Nair (MCB), Kavyakrishna Nair (MCB, *Senior Thesis*), Kaitlyn Ortgiesen (MCB), Mili Patel (MCB, *Senior Thesis*), Vraj Patel (MCB), Scott Pierce (Integrative Biology, *Senior Thesis*), Masumi Prasad (Psychology), Aditya Ravindra (MCB, *Senior Thesis*), Robin Rice (MCB), Elizabeth Rivera-Cruz (MCB), Shruti Shah (MCB), Yoshitaka Shinagawa (Bioengineering), Craig Soares (MCB), Stacy Sons (MCB, *Senior Thesis*), Kate Srikant (Psychology), Gehad Taha (MCB, *Senior Thesis*), Danica Vendiola (MCB, *Senior Thesis*), Luye Yang (MCB, *Senior Thesis*), Georgiy Yudintsev (MCB, *Senior Thesis*), Omar Zaki (MCB), Kendra Zwonitzer (MCB, *Senior Thesis*)

Curriculum Vitae

Erik Russell Nelson, Ph.D.

Era of Hope Scholar, Department of Defense

2020-2021 I.C. Gunsalus Scholar, College of Liberal Arts and Sciences

Associate Professor of Integrative and Molecular Physiology
University of Illinois Cancer Center
University of Illinois at Urbana-Champaign
Burrill Hall 523 (MC-114)
407 S. Goodwin Ave, Urbana, IL, 61801
Office: (217) 244-5477; Lab: (217) 300-1418
E-mail: enels@illinois.edu ; Website: https://mcb.illinois.edu/faculty/profile/enels/
ORCiD: 0000-0002-8887-1905

Summary:

I am an endocrinologist with specific expertise in nuclear receptor pharmacology. I am an Era of Hope Scholar of the Department of Defense Breast Cancer Research Program, and the 2020-2021 Gunsalus Scholar of the College of Liberal Arts and Sciences at the University of Illinois. Throughout my career, I have made significant contributions to the fields of reproductive physiology, pharmacology, bone biology and cancer biology. I have a strong track-record of productivity as evidenced by my publication record. I have a history of translational studies; Our work provided the justification for the development of Elacestrant (ORSERDU), an orally available Selective Estrogen Receptor Degrader, that has recently received FDA approval for the treatment of metastatic breast cancer.

As a postdoctoral associate under the mentorship of Dr. Donald McDonnell I specialized in pharmacology and cancer biology. Funded by a NIH K99/R00 award, I received additional training in the tumor microenvironment from Dr. Xiao-Fang Wang, *in vivo* 'window chamber' imaging of tumors from Dr. Mark Dewhirst, and myeloid-immune cell biology from Dr. Michael Dee Gunn.

Patients with metastatic breast and ovarian cancer continue to have a very poor prognosis. For this reason, I have chosen to integrate my expertise in physiology, endocrinology and *in vivo* models to pursue translational breast and ovarian cancer research. The ***overarching goal*** of my research is to develop novel chemo-preventative, -therapeutic and lifestyle strategies aimed at reducing cancer incidence and mortality. I was lead author on a seminal study which found that a cholesterol metabolite (27-hydroxycholesterol; 27HC) was the biochemical link between obesity and breast tumor growth (*Science*, 2013). Our group currently has a specific focus on determining the mechanisms by which cholesterol homeostasis and metabolism influence breast and ovarian cancer metastasis, with the goal of developing novel therapeutic strategies to prevent or treat this stage of disease. This research is of incredible importance, given the high prevalence of hypercholesterolemia and that the majority (>90%) of breast cancer associated mortality is due to metastatic disease. As an independent investigator, we have found that 27HC dramatically increases breast cancer metastasis through its actions on host myeloid-immune cells (*Nature Communications*, 2017). *We are now focused on using endocrine, metabolic/dietary and pharmacologic approaches to "re-educate" tumor associated myeloid cells to be anti-cancer, with specific emphasis on cholesterol homeostasis and the metastatic microenvironment.*

Overarching Research Focus:

Mechanisms by which cholesterol homeostasis and endocrine factors influence cancer progression.

Education and Training:

2008-2014 **Post-Doctoral Associate**
Pharmacology and Cancer Biology, Duke University School of Medicine. Durham, NC, USA.
Concentration: Pharmacology and pathophysiology of nuclear receptors and their ligands with a specific focus on the mechanisms by which hypercholesterolemia contributes to disease.
Mentor: Donald P. McDonnell, PhD.

2002-2008 **Doctor of Philosophy**
Biological Sciences, University of Calgary, Calgary, Alberta, Canada.
Concentrations: Comparative Endocrinology, Reproductive Physiology.
Thesis Title: "Characterization, hormonal regulation and functional significance of nuclear receptors in goldfish."
Mentor: Hamid R. Habibi, PhD.

1998-2002 **Bachelors of Science**
Biological Sciences, University of Calgary, Calgary, Alberta, Canada.
Major in Zoology, Minor in Chemistry.

Academic Appointments:

2014-2020 **Assistant Professor of Molecular and Integrative Physiology,**
University of Illinois at Urbana-Champaign

2020- **Associate Professor of Molecular and Integrative Physiology,**
University of Illinois at Urbana-Champaign

2014- **Research Faculty Member of the Cancer Center at Illinois**
University of Illinois at Urbana-Champaign. Formerly termed the Cancer Community at Illinois.

2015- **Associate Research Faculty Member of the University of Illinois Cancer Center**
College of Medicine, University of Illinois at Chicago

2015- **Assistant/Associate Professor of the Division of Nutritional Sciences**
University of Illinois at Urbana-Champaign

2016- **Member of the Carl R. Woese Institute for Genomic Biology.**
Theme: Comparative Genomics of Reproduction. 2018: Reassigned to Anticancer Discovery from Pets to People theme. University of Illinois at Urbana-Champaign

2016-2018 **Steering Committee Member of the Cancer Community at Illinois**
University of Illinois at Urbana-Champaign. Now the Cancer Center at Illinois.

2016-2017 **Interim Director, Physiology Curriculum Thread, Carle Illinois College of Medicine**
University of Illinois at Urbana-Champaign

2021-2026 **Affiliate Member of the Personalized Nutrition Initiative.**
University of Illinois at Urbana-Champaign

2021- **Affiliate Faculty of Beckman Institute for Advanced Science and Technology**
University of Illinois at Urbana-Champaign

2023- **Program Director, Cancer Center at Illinois** (Program: Cancer Discovery Platforms Bridging the Engineering-Biology Continuum). University of Illinois at Urbana-Champaign

Honors and Awards:

Honors and Awards of Erik Nelson:

1998 Government of Alberta Alexander Rutherford Scholarship.

1998-2002 University of Calgary Undergraduate Merit Awards (two individual awards).

2002 University of Calgary Dean's List for Academic Excellence.

2003 University of Calgary Graduate Fee Scholarship.

2004 Sharon Wilkins Teaching Excellence Award (top 2 teaching assistants in Biological Sciences).

2004 Government of Alberta Graduate Student Scholarship.

2004 University of Calgary Graduate Research Assistantship.

2005 University of Calgary Research Travel Grant.

2006 Canadian Society of Zoology Hoar Award Finalist (top 8 oral abstracts).

2007 University of Calgary Open Scholarship Competition - Nominated by Biological Sciences (top 11 applicants).

2007 University of Calgary Graduate Research Scholarship.

2007 Endocrine Society Travel Grant Award.

2007 Attendee of Endocrine Society's Fellows & Students Day Workshop in addition to monetary award.

2008 Best Poster Award – 6th International Symposium on Fish Endocrinology.

2008 Sharon Wilkins Teaching Excellence Award – Nominated, top 9 teaching assistants in Biological Sciences.

2008 Government of Alberta Queen Elizabeth II Graduate Scholarship.

2009 Department of Defense Breast Cancer Research Program Postdoctoral Fellowship Award.

2010 Keystone Symposia Scholarship (Outstanding Abstract), Nuclear Receptors: Signalling, Gene Regulation and Cancer.

2010 Best Poster Award – Duke University Medical Center Department of Pharmacology and Cancer Biology Annual Retreat.

2011 The Endocrine Society Outstanding Abstract Award. ENDO2011, the annual Endocrine Society Meeting.

2011 Robert J. Fitzgerald Scholar Award: Outstanding publication in the Department of Pharmacology and Cancer Biology, Duke University Medical Center.

2012 The Endocrine Society Award for Outstanding Paper in Endocrinology for 2011.

2013 Robert J. Fitzgerald Academic Achievement Award. Department of Pharmacology and Cancer Biology, Duke University School of Medicine.

2013 National Cancer Institute of the National Institutes of Health K99/R00 Pathway to Independence Award.

2015 Hormones and Cancer recognition for 2015 Notable Reviewer, as determined by the Editor-in-Chief.

2016 List of Teachers Ranked Excellent By Their Students (MCB 529, Topics in Health and Disease).

2016 Chemosphere Certificate of Excellence in Reviewing.

2017 List of Teachers Ranked Excellent By Their Students (MCB 529, Topics in Health and Disease).

2017 State of the Art Lecture, International Congress of Comparative Endocrinology.

2018 Plenary Lecture, Tissue Microenvironment (TiME) Day. University of Illinois at Urbana Champaign.

2018 List of Teachers Ranked Excellent By Their Students (MCB 529, Topics in Health and Disease).

2018 Steroid Biochemistry and Molecular Biology Outstanding Contribution in Reviewing.

2018 Selected by the NIH Center for Scientific Review (CSR) to participate in the Early Career Reviewer (ECR) program.

2018 Department of Defense Breast Cancer Research Program, Era of Hope Award Finalist (top two of nation, neither finalist receiving award)

2020 Elected to the editorial board of *Endocrinology*.

2020 List of Teachers Ranked Excellent By Their Students (MCB 529, Topics in Health and Disease).

2020 Inducted into the Cancer Center at Illinois Leadership Program

2020 Named the 2020-2021 I.C. *Gunsalus Scholar* at the University of Illinois.

2021 Named an *Era of Hope Scholar*, Department of Defense Breast Cancer Research Program.

2021 ENDO2021 – Co-chair for “Rising Stars Power Talks”

2021 ENDO2021 – Chair of “Steroid Receptors in Development and Disease”

2021 & 2022 Moderator for panel discussion on successful strategies and working with advocates, Department of Defense (DoD) Grant Seeking Workshop, Interdisciplinary Health Sciences Institute, University of Illinois

2021 List of Teachers Ranked Excellent By Their Students (MCB 529, Topics in Health and Disease).

2022 ENDO2022 – Chair of “Nuclear Receptors in Immunometabolism: It’s Not Just Macrophages!”

2022 Invited to the National Academy of Medicine Emerging Leaders Forum

2022 List of Teachers Ranked Excellent By Their Students (MCB 402, Physiology)

2022 Ad hoc reviewer for Department of Veteran Affairs Merit Awards [ONCA panel]

2022 Recipient of James E. and Maxine S. Heath Award for Excellence in Teaching. Department of Molecular and Integrative Physiology, University of Illinois.

2023 Invited reviewer for DOD Breast Cancer Research Program Innovator Award

2023 Invited Member of an Expert Committee, Canada Foundation for Innovation's (CFI) 2023 Innovation Fund competition

2023 List of Teachers Ranked Excellent By Their Students (MCB 466, Pharmacology)

2023 Selected as Emerging Research Leader, University of Illinois.

2024 Invited speaker at LINKS (Leading Innovative Networking and Knowledge Sharing), organized by the Department of Defense Breast Cancer Research Program.

Ongoing *Reviewer for several agencies and foundations including the NCI, DOD and NIH.*

Honors and Awards of Trainees:

2015 School of Molecular and Cellular Biology Summer Undergraduate Research Opportunities Program. Recipient: Ashabari Mukherjee.

2015 School of Molecular and Cellular Biology Undergraduate Thesis with High Distinction. Recipient: Ashabari Mukherjee.

2016 Susan G. Komen Postdoctoral Fellowship. Awarded to Amy E. Baek. Three-year salary support.

2017 School of Molecular and Cellular Biology Summer Undergraduate Research Opportunities Program. Recipient: Hannah McDowell.

2017 Carle-University of Illinois Cancer Scholars for Translational and Applied Research (C*STAR). Awarded to Sisi He. Three-year stipend.

2017 ResearcHStart award. Recipient: Joy Chen.

2017 University of Illinois James Scholar Preble Research Award. Recipient: Samuel Cler, for his proposal entitled “Determining the Role of Cholesterol and Its Metabolites in Breast Cancer Metastasis to Bone.”

2018 University of Illinois James Scholar Preble Research Award. Recipient: Samuel Cler, for his proposal entitled “Determining the Role of Cholesterol and Its Metabolites in Breast Cancer Metastasis to Bone.”

2018 Endocrine Society Summer Research Fellowship Award. Recipient: Samuel Cler, for his proposal entitled “Determining the Role of Cholesterol and Its Metabolites in Breast Cancer Metastasis to Bone.”

2018 School of Molecular and Cellular Biology Summer Undergraduate Research Fellow. Recipient: Samuel Cler.

2018 Endocrine Society Outstanding Abstract Award for ENDO2018. Recipient: Sisi He, for her abstract entitled “The Impact of Cholesterol and Its Metabolites on the Ovarian Tumor Microenvironment and Cancer Progression.”

2018 Endocrine Society Outstanding Abstract Award for ENDO2018. Recipient: Sayyed Hamed Shahoei, for his abstract entitled “The Nuclear Receptor Small Heterodimer Partner (SHP) Modulates Macrophage Function within the Tumor Microenvironment to Decrease Breast Cancer Progression.”

2018 Endocrine Society’s EndoCareers Early Career Forum. Workshop in addition to monetary award. Recipient: Sisi He.

2018 Endocrine Society’s EndoCareers Early Career Forum. Workshop in addition to monetary award. Recipient: Sayyed Hamed Shahoei.

2018 AACR-Bristol Myers Squibb Oncology Scholar-in-Training Award. Recipient: Liqian Ma, for her abstract entitled “Mechanisms by which 27-hydroxycholesterol promotes breast cancer metastasis.”

2018 AACR Scholar-in-Training Award. Recipient: Sisi He, for her abstract entitled “Host CYP27A1 expression is essential for ovarian cancer progression.”

2018 Department of Molecular and Integrative Physiology Howard S. Ducoff Award for Outstanding Senior Thesis. Recipient: Hannah McDowell for her senior undergraduate thesis.

2018 School of Molecular and Cellular Biology High Distinction for Research. Recipient: Hannah McDowell for her senior undergraduate thesis.

2018 Illinois Scholars Undergraduate Research Program. Inductee: Joy Chen for her work on 27-hydroxycholesterol and tumor dormancy.

2018 Top Abstract Award, Great Lakes Nuclear Receptor Conference 2018. Recipient: Sayyed Hamed Shahoei.

2018 Embassy of France in the United States, 2018-2019 STEM Chateaubriand Fellowship. Recipient: Sayyed Hamed Shahoei. Covers Mr. Shahoei as a visiting Scientist in a lab of Inserm for 9 months.

2019 Endocrine Society’s EndoCareers Early Career Forum. Workshop in addition to monetary award. Recipient: Liqian Ma.

2019 Endocrine Society Abstract Selected for Guided Poster Presentation. Recipient: Samuel Cler for his abstract entitled “ERRα Modulates Genes Of Importance To Macrophage Biology And Breast Cancer Progression.”

2019 Endocrine Society Abstract Selected for Guided Poster Presentation. Recipient: Liqian Ma for her abstract entitled “27-Hydroxycholesterol Acts on Myeloid Cells to Inhibit T Cell Expansion.”

2019 Endocrine Society Outstanding Abstract Award for ENDO2019. Recipient: Liqian Ma for her abstract entitled “27-hydroxycholesterol acts on myeloid cells to inhibit T cell expansion.”

2019 AACR-Bristol Myers Squibb Oncology Scholar-in-Training Award. Recipient: Cheng Chen, for her abstract entitled “Consumption of oil derived from frying bacon increases breast cancer metastasis,” presented at the annual AACR conference.

2019 School of Molecular and Cellular Biology Summer Undergraduate Research Fellow. Recipient: Varsha Vembar.

2019 School of Molecular and Cellular Biology Summer Undergraduate Research Fellow. Recipient: Ashley Mathews.

2019 College of Liberal Arts and Sciences, Bronze Tablet Award. Recipient: Samuel Cler.

2019 Midwest Tumor Microenvironment Meeting Abstract Selected for Poster-Blitz Presentation. Recipient: Joy J. Chen for her abstract entitled "A cholesterol metabolite promotes re-emergence of breast cancer cells from dormancy."

2019 AACR-Bristol Myers Squibb Oncology Scholar-in-Training Award. Recipient: Sisi He, for her abstract entitled "The impact of cholesterol and its metabolites on ovarian tumor microenvironment and cancer progression," presented at the AACR Tumor Immunology and Immunotherapy Conference.

2019 Outstanding Graduate Student Award in the Department of Molecular and Integrative Physiology, University of Illinois. Recipient: Sisi He. Awarded for research excellence and exemplary service to the department.

2020 AACR-Margaret Foti Foundation Scholar-in-Training Award. Recipient: Sisi He.

2020 University of Illinois Bronze Tablet Award & James Scholar Award. Recipient: Ashley Mathews.

2020 Merck Summer Internship. Recipient: Liqian Ma

2020 Appointment to Chemical – Biology Interface T32 Training Program. Recipient: Hashni Vidana Gamage.

2020 Julie and David Mead Endowed Graduate Student Fellowship. Recipient: Liqian Ma.

2020 Clare Booth Luce Undergraduate Research Award. Recipient: Joy J. Chen.

2020 Katherine Neuhoff Twyman Breast Cancer Scholarship. Recipient: Joy J. Chen.

2020 Liqian Ma selected to present at highlight session at AACR Virtual Special Conference Tumor Immunology and Immunotherapy, October 19-20, 2020. "27-Hydroxycholesterol acts on myeloid immune cells to induce T cell dysfunction, promoting breast cancer progression"

2021 Adam T. Nelson travel awards – graduate college and MIP

2021 Shruti Bendre: "2021 Research Experience for Graduate and Medical Students (REGMS) award", the Endocrine Society

2021 Adam Nelson: NIH Predoctoral Traineeship (T32) in Endocrine, Developmental & Reproductive Toxicology

2021 Anasuya Das Gupta, Virtual Travel Award and Invitation to Speak at FASEB/Steroid Hormones and Receptors in Health and Disease, May 2021

2021 Anasuya Das Gupta selected to present at highlight session at FASEB/RRSH Meeting: The Steroid Hormones and Receptors in Health and Disease (Virtual) Conference, May 25-27, 2021. "Mechanisms by which 27-Hydroxycholesterol modulates Extracellular Vesicle biogenesis."

2021 Adam Nelczyk selected as winner of Research Live. Hosted by the Faculty of Graduate Students, University of Illinois at Urbana-Champaign.

2022 Natalia Krawczynska, recipient of the Postdoctoral Fellows Program at the Beckman Institute for Advanced Science and Technology. Full salary plus $25,000 research budget, 3 year term.

2022 Tiffany Nguyen, recipient of SURF award (Summer Undergraduate Research Fellow) from the School of MCB, University of Illinois at Urbana-Champaign. $4,000 plus $500 to PI's ICR account.

2022 Natalia Krawczynska, recipient of Top Poster Award, International Society for Extracellular Vesicles Meeting.

2023 Hashni Epa Vidana Gamage, recipient of Cancer Scholars for Translational and Applied Research (C*STAR) award. Covers stipend and associated costs with access to clinical resources at Carle Cancer Center and Clinic.

2023 Hashni Epa Vidana Gamage, recipient of Mara E. Lieberman Memorial Travel Grant. Covers $500 of travel expenses to attend ENDO 2023 in Chicago IL, June 2023.

2023 Claire Schane, recipient of the Endocrine Society Early Career Forum Award in conjunction with ENDO 2023 in Chicago, IL. This travel award is sponsored by the Endocrine Society in the amount of $400 and includes complimentary registration to the Early Career Forum and ENDO 2023.

2023 Anasuya Das Gupta, recipient of the The Endocrine Society Outstanding Abstract Award in conjunction with ENDO 2023 in Chicago, IL. This travel award is sponsored by the Endocrine Society in the amount of $500.

2023 Anasuya Das Gupta, recipient of The Endocrine Society Presidential Poster Award, conjunction with ENDO 2023 in Chicago, IL.

2023 Hashni Epa Vidana Gamage, internship at Moderna (July-Dec.)

2023 Claire Schane, NIH Predoctoral Traineeship (T32) in Tissue Microenvironment (TiME). Two year appointment

Research Grant Awards:

ACTIVE

BC221269 (Spinella) 07/01/2023-06/30/26 0.5 calendar months
DOD BCRP $500,000 total direct costs
G0S2 as a Master Regulator of the Local Estrogenic Environment During Breast Cancer Progression and Antiestrogen Therapy
The goal of this proposal is to elucidate the role of G0S2 in regulating estrogen within the tumor microenvironment of breast cancers.
Role: Co-I

R21CA270872 (Hua Wang) 4/01/2023– 3/31/2024 0.25 calendar months
NIH-NCI $168,894 annual direct costs
Metabolic tagging of tumor exosomes for developing enhanced exosome vaccine
The goal of this proposal is to determine whether azido-labeled cancer cells can secrete azido-labeled exosomes, and whether these exosomes can be used as cancer vaccines.
Role: Co-I

1 R01 CA258746-01A1 (Hergenrother) 4/1/2022-3/31/2028 0.5 calendar months
NIH-NCI $720,290
A Novel Therapeutic Strategy for Ovarian Cancer
The goal of this proposal is to develop and evaluate new derivatives of the small molecule ErSO, for the treatment of ovarian cancer.
Role: Co-I

LC210430 (Shapiro) 05/2022 – 04/2024 no contributed effort
DOD, Lung Cancer Research Program $350,000 annual direct costs
Targeting Advanced Lung Cancer Using Lethal Hyperactivation of the Unfolded Protein Response to Induce Tumor Cell Death and Immune cell Activation.
The goal of this proposal is to test the efficacy of ErSO on models of lung cancer.

Role: Co-I

Vision 20/20 (Madak-Erdogan) 30/09/21 – 29/09/23 no contributed effort
$22,500 total direct
Assessing impact of local glucose metabolism on CD4+ T cell viability and immune responses to liver metastasis
The goal of this proposal is to evaluate the metabolic modulation of tumor growth and metastasis within the liver, with an emphasis on the microenvironment.
Role: Co-I

BC200206 (Nelson) 03/2021 – 02/2025 4 calendar months
DOD BCRP Era of Hope Award $750,000 annual direct costs
Leveraging Cholesterol Homeostasis for the Prevention and Treatment of Metastatic Breast Cancer
The goal of this proposal is to develop strategies targeting the cholesterol metabolic axis for the prevention and treatment of metastatic breast cancer.
Role: PI

1R01EB032249 (Smith) 9/1/2021 – 8/31/2025 0.3 calendar months effort
NIBIB $394,265 annual direct costs
Hyperplexed Quantum Dots for Multidimensional Cell Classification in Intact Tissue
Goal: To generate quantum dots for cell/tissue quantification and characterization in 3D.
Role: Co-I

Cancer Center at Illinois Leadership Program 05/2021 – 2024 [NCE]
Cancer Center at Illinois $20,000 total direct costs
Establishing a Cancer Survivorship Program
The goal of this proposal is to establish a Cancer Survivorship Program, where the unique needs of cancer survivors are highlighted and addressed. Research in this area is promoted, and community outreach and interactions are developed.
Role: PI

R01 CA234025 (Nelson ER) 03/01/2019 – 02/28/2024 2.6 calendar months
NIH-NCI $228,330 annual direct costs
Impact of cholesterol and its metabolites on breast cancer progression
This proposal seeks to elucidate the mechanisms by which the cholesterol metabolite, 27-hydroxychoelsterol promotes breast cancer colonization of distal sites
Role: PI

1R01GM132458 (Kumar P) 2020 – 2024 0.375 calendar months
NIH-NIGMS ~$200,000 annual direct costs
Characterization of nuclear-retained RNA-mediated gene regulatory mechanisms
The goal of this proposal is to evaluate and characterize the mechanisms by which long non-coding RNAs modulate gene regulation, with a focus on breast cancer.
Role: Co-I

R01 CA241618-01 (Boppart, Tu) 08/01/2019 – 07/31/2023 0.375 calendar months
NIH-NCI ~$261,500 annual direct costs
Imaging tumor microenvironment by Optical Fiber-Tethered Simultaneous Lifetime-resolved Autofluorescence-Multiharmonic (OFT-SLAM) microscopy
This proposal will develop OFT-SLAM microscopy and evaluate its use in different disease contexts.
Role: Co-I

713063 (Nelson ER) 01/01/21-12/30/23 [NCE] 1 calendar month
American Institute of Cancer Research $75,000 annual direct costs

Determining the impact of different preparation techniques of foods high in cholesterol on breast cancer progression

The goal of this proposal is to determine whether frying or curing preparation techniques prior to consumption alter breast cancer progression.

Role: PI

Seed Funding Program (Nelson, Shapiro, Cheng) 2020-2023 [NCE] no contributed effort
Cancer Center at Illinois $250,000 total direct costs

Using Anticancer Drug-induced Immune Cell Activation to Target Ovarian Cancer for Eradication

The goal of this proposal is to utilize patient derived tissue to evaluate the effect of a new small molecule on immune cell activation.

Role: Co-PI

Seed Funding Program (Zhang K, Nelson) 2022-2024 no contributed effort
Cancer Center at Illinois $75,000 total direct costs

Optogenetic modulation of the tumor microenvironment to improve cancer immunotherapy

Role: Co-PI

CCIL Bridge Grant (Wang H, Nelson) 2022-2024 no contributed effort
Cancer Center at Illinois $25,000 total direct costs

Metabolic Tagging of Tumor Exosomes for Developing Enhanced Exosome Vaccines

Role: Co-PI

Startup Funds 2014 – indefinite
University of Illinois $800,000 total direct costs

These funds can be spent at the discretion of Dr. Nelson.

I.C. Gunsalus Scholar Fund 2020 – indefinite
College of Liberal Arts and Sciences, UIUC $10,000 total direct costs

These funds can be spent at the discretion of Dr. Nelson.

Completed:

Seed Funding Program (Nelson, Prasanth, Dobrucki, Kalsotra) 05/01/19–04/30/21 (NCE for 1 year) no contributed effort
Cancer Center at Illinois (UIUC) $125,000 annual direct costs

Characterization of Oncogenic Noncoding RNAs in Breast Cancer Progression and Metastasis

This proposal seeks to evaluate the role and mechanism of lncRNAs in breast cancer progression.

Role: Co-PI

SRI Phase 1 Award Notification (Smith) 2020-2021 no contributed effort
Center for Translational Bioengineering in Large Animal Models
University of Illinois Grainger College of Engineering $100,000 total direct costs

The goal of this proposal is to establish correlations between models – from in vitro through mice to pigs and humans.

Role: Co-I

Vision 20/20 (Nelson, Helferich) 01/01/2020 – 12/31/2021 no contributed effort
UIUC Div. Nutritional Sciences $10,000 annual direct costs

Mechanisms by which fat derived from frying bacon promotes breast cancer progression

The goal of this study is to perform RNA-seq on the metastatic lungs from mice fed a control diet versus a diet enriched with fat from pan-frying of bacon.

Role: Co-PI

CCIL (Nelson, Smith) 05/2019 – 04/2021 (NCE for 1 year) no contributed effort
Cancer Center at Illinois $127,500 total direct
Cancer Immunotherapies for Precision Medicine in the State of Obesity
The goal of this study is to evaluate a nanocarrier for drug delivery to macrophages in adipose, and how that impacts the response of breast cancer to immune-therapy.
Role: Co-PI

R01 DK112251 (Smith, Andrew) 9/19/2016 –8/31/2021 0.375 calendar months
NIDDK NIH $1,733,932 total direct costs
Targeted Drug Delivery to Adipose Tissue Macrophages in Obesity
In this grant, we will develop novel nano-particle formulations to deliver anti-inflammatory drugs directly to adipose associated macrophages, with the goal of developing novel anti-diabetic therapeutics.
Role: Co-I

BC171214 (Nelson ER) 09/01/18 – 08/30/2021 1.5 calendar months
US DOD BCRP Breakthrough Award, Level 1 $375,000 total direct costs
Small Heterodimer Partner plays an immunomodulatory role to impact breast cancer progression
This proposal seeks to determine the impact of SHP on breast cancer progression.
Role: PI

METAvivor (Nelson ER) 01//2019-12/2020
METAvivor $200,000 annual direct costs
Targeting an immune-suppressive cholesterol metabolite in the treatment metastatic breast cancer
Role: PI

579732 (Nelson ER) 01/01/19-05/31/21
American Institute of Cancer Research $75,000 annual direct costs
The impact of a cholesterol metabolite on breast cancer dormancy and recurrence
Role: PI

Vision 20/20 Award (Swanson, K) 2018-2020
USDA Hatch Funds, Division of Nutritional Science
Characterizing Cholecystectomy: Metabolism, Gastrointestinal Health, and Dietary Fiber Treatment.
Role: Co-I

C*STAR Graduate Scholarship (He, S) 2017-2019
Carle-University of Illinois Cancer Scholars for Translational and Applied Research
The Impact of Cholesterol on Ovarian Tumor Microenvironment and Cancer Progression
Role: Lead Mentor

Eugene Washington Engagement Award (Nelson, Madak-Erdogan) 2017-2019
Cancer Research Advocacy Group (CRAG) Patient-Centered Outcomes Research Institute
Award Number 377624 2016-2019

Susan G. Komen, Postdoctoral Fellowship (Mentee: Baek)
Elucidating the mechanisms by which a cholesterol metabolite promotes metastasis.
Role: Lead Mentor

Arnold O. Beckman Research Award (Nelson, Helferich, Engeseth) 2016-2018
Thermally Abused Frying Oils and Secondary Breast Cancer Metastasis.
Role: Co-PI

R00CA172357-03 (Nelson) 2014-2017
NCI/NIH (Transition to Independence R00 Grant)

27-hydroxycholesterol as a link between obesity and breast cancer pathogenesis
Role: PI

IIR13264868 (McDonnell) 2013-2017
Susan G. Komen Foundation Investigator-Initiated Research Grant
CaMKK2: A Druggable Target that Regulates Macrophage Function in Breast Cancer.
Role: Co-author

Scottish Universities Life Sciences Alliance (Gibson) 2016
PostDoctoral Exchange Scheme
The impact of the cholesterol metabolite 27-hydroxycholesterol on the pathogenesis of endometriosis.
Role: Lead Mentor

BC123334 (McDonnell) 2013-2015
DOD BCRP Idea Expansion Award
Mechanisms behind Hypercholesterolemia-Associated Breast Cancer Risk and Progression.
Role: Co-Author

K99CA172357 (Nelson) 2013-2014
NCI/NIH (Transition to Independence K99 Grant)
27-hydroxycholesterol as a link between obesity and breast cancer pathogenesis.
Role: PI

Pilot Study Award (Jones) 2013
Duke Cancer Prevention, Detection and Control Research
Elucidation of Molecular Mechanisms of Aerobic Training-Mediated Inhibition of Breast Cancer Progression
Role: Co-Author

Pilot Project (McDonnell, Chao) 2013-2014
Duke Cancer Institute.
CaMKK2: a druggable target that regulates macrophage function in breast cancer.
Role: Co-Author

Core Facility Voucher (Nelson, Jones) 2013
Duke Cancer Institute
Elucidation of Molecular Mechanisms of Aerobic Training-Mediated Inhibition of Breast Cancer Progression.
Role: Co-PI

Idea Award (McDonnell) 2010-2012
DOD BCRP
The Impact of 27-Hydroxycholesterol, a Macrophage-Produced Estrogen Receptor and Liver X Receptor Agonist, on Breast Cancer Pathophysiology.
Role: Co-Author

Postdoctoral Award (Nelson) 2009-2012
DOD BCRP
The Impact of 27-Hydroxycholesterol, a Macrophage-Synthesized Estrogen Receptor Agonist, on Breast Cancer Pathophysiology.
Role: PI

Refereed Publications (73 total, >5,000 citations, H-index of 36 i10 index of 60)**:**

Complete List of Peer Reviewed Publications:
https://www.ncbi.nlm.nih.gov/myncbi/erik.nelson.1/bibliography/public/

1. **Nelson ER**, and Habibi HR. (2006). Molecular Characterization and Sex-Related Seasonal Expression of Thyroid Receptor Subtypes in Goldfish. *Molecular and Cellular Endocrinology*, 253(1-2): 83-95. **PMID: 16777315**.
2. Choi CY, An KW, **Nelson ER** and Habibi HR. (2007). Cadmium affects the expression of metallothionein (MT) and glutathione peroxidise (GPX) mRNA in goldfish, *Carassius auratus*. *Comparative Biochemistry and Physiology, part C*, 145: 595-600. **PMID: 17369103**.
3. **Nelson ER,** Wiehler WB, Cole WC and Habibi HR. (2007). Homologous Regulation of Estrogen Receptor Subtypes in Goldfish (*Carassius auratus*). *Molecular Reproduction and Development*, 74:1105-1112. **PMID: 17342729**.
4. An KW, **Nelson ER**, Jo PG, Habibi HR, Shin HS, and Choi CY. (2008). Characterization of estrogen receptor β2 and expression of the estrogen receptor subtypes α, β1, and β2 in the protandrous black porgy (*Acanthopagrus schlegeli*) during the sex change process. *Comparative Biochemistry and Physiology, part B*, 150(3):284-91. **PMID: 18455458**.
5. Jeffries KM, **Nelson ER**, Jackson LJ, and Habibi HR. (2008). Basin-wide impacts of compounds with estrogen-like activity on longnose dace (*Rhinichthys cataractae*) in two prairie rivers of Alberta, Canada. *Environmental Toxicology and Chemistry*, 27(10): 2042-52. **PMID: 18380523**.
6. An KW, **Nelson ER**, Habibi HR, Choi CY. (2008). Molecular characterization and expression of three GnRH forms mRNA during gonad sex change process, and effect of GnRHa on GTH subunits mRNA in the protandrous black porgy (*Acanthopagrus schlegeli*). *General and Comparative Endocrinology*, 159(1):38-45. **PMID: 18713632**.
7. **Nelson ER,** and Habibi, HR. (2008). Seasonal-related homologous regulation of goldfish liver estrogen receptor subtypes. *CYBIUM, International Journal of Ichthyology*, 32(2, ISPRF): 248-249. https://sfi-cybium.fr/en/node/900.
8. **Nelson ER** and Habibi HR. (2008). Functional significance of a truncated thyroid receptor subtype lacking a hormone-binding domain in goldfish. *Endocrinology*, 149(9):4702-09. **PMID: 18511506**. Featured by Faculty 1000 Medicine.
9. Moussavi M, **Nelson ER** and Habibi HR. (2009). Seasonal regulation of vitellogenin by growth hormone in the goldfish liver. *General and Comparative Endocrinology*, 161(1): 79-82. **PMID: 19138687**.
10. **Nelson ER** and Habibi HR. (2009). Thyroid receptor subtypes: structure and function in fish. *General and Comparative Endocrinology*, 161(1): 90-96. **PMID: 18840444**.
11. An KW, An MI, **Nelson ER**, Habibi HR, and Choi CY. (2010). Gender-related expression of TRα and TRβ in the protandrous black porgy, Acanthopagrus schlegeli, during sex change processes. *General and Comparative Endocrinology*, 165(1): 11-18. **PMID: 19481082**.
12. DuSell CD, **Nelson ER**, Wittmann BM, Fretz JA, Kazmin D, Thomas RS, Pike JW, McDonnell DP. (2010). Regulation of aryl hydrocarbon receptor function by Selective Estrogen Receptor Modulators. *Molecular Endocrinology*, 24(1): 33-46. **PMID: 19901195; PMCID: PMC2802893**. Selected for Cover Story. Featured in Jan. 2010 *Endocrine News*.
13. **Nelson ER** and Habibi HR. (2010). Functional significance of the estrogen receptor subtypes in the liver of goldfish. *Endocrinology*, 151(4): 1668-76. **PMID: 20194729**.
14. DuSell CD, **Nelson ER,** Wang X, Abdo J, Mödder UI, Umetani M, Gesty-Palmer D, Javitt NB, Khosla S, McDonnell DP. (2010). The Endogenous Selective Estrogen Receptor Modulator 27-hydroxycholesterol is

a Negative Regulator of Bone Homeostasis. *Endocrinology*, 151(8): 3675-85. **PMID: 20501668; PMCID: PMC2940523**. Featured by *Nature Reviews Endocrinology* and *MDLinx*.

15. **Nelson ER,** Allan ER, Pang FY, Habibi HR. (2010). Thyroid hormone and reproduction: regulation of estrogen receptors in goldfish gonads. *Molecular Reproduction and Development*, 77(9):784-94. **PMID: 20722048**.

16. **Nelson E.R.**, Allan E.R.O., Pang F.Y., and Habibi H.R. (2011). Auto-Regulation of thyroid hormone receptors in the goldfish ovary and testis. *General and Comparative Endocrinology*, 172: 50-55. PMID: 21187097.

17. Michalek RD, Gerriets VA, Nichols AG, Inoue M, Kazmin D, Chang CY, Dwyer MA, **Nelson ER**, Pollizzi KN, Ilkayeva O, Giguere V, Zuercher WJ, Powell JD, Shinohara ML, McDonnell DP, Rathmell JC. (2011). Estrogen Related Receptor-α is a Metabolic Regulator of Effector T cell Activation and Differentiation. *Proceedings of the National Academy of Sciences of the United States of America*, 108(45): 18348-53. **PMID: 22042850; PMCID: PMC3215012**. Featured by Faculty 1000 Medicine.

18. **Nelson ER**, DuSell CD, Wang X, Howe MK, Evans G, Michalek RD, Rathmell JC, Khosla S, Gesty-Palmer D, and McDonnell DP. (2011). The oxysterol, 27-hydroxycholesterol, links cholesterol metabolism to bone homeostasis through its actions on the estrogen and liver X receptors. *Endocrinology*, 152(12): 4691-705. **PMID: 21933863; PMCID: PMC3230052**. Featured by: *DukeHealth.org, Duke Chronicle, Consumer's Digest, Daily Rx, US Corporate Wellness, UWire*, and *Stone Hearth News.* Received The Endocrine Society Award for Outstanding Paper.

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Book Chapters:

Wardell SE, McDonnell DP, **Nelson ER.** Regulation of Bone Cell Function by Estrogens. In R. Marcus, D. Feldman, D. Dempster, M. Luckey & J. Cauley (Ed.s), *Osteoporosis, 4th edition*. ISBN: 978-0-12-415853-5. Release date: June, 2013.

Nelson ER. Detection of Endogenous Selective Estrogen Receptor Modulators such as 27-Hydroxycholesterol. In K. Eyster (Ed.), *Estrogen Receptors: Methods and Protocols*; *Methods in Molecular Biology, vol. 1366*. ISBN 978-1-4939-3126-2. Release date: Jan, 2016.

Invited Presentations:

Invited Institutional Seminars

Nelson ER, and Habibi HR. (Nov. 2007). Keeping it Real: Using physiology to determine functional differences between nuclear receptor subtypes in the goldfish. Invited talk at Duke University (host: Dr. D.P. McDonnell).

Nelson ER, DuSell CD, Wang X, Michalek RD, Abdo J, Moedder UL, Umetani M, Gesty-Palmer D, Javitt NB, Rathmell JC, Khosla S, and McDonnell DP. (2010). A primary metabolite of cholesterol, disturbs bone micro-architecture by partial estrogen receptor antagonism and LXR agonism. Duke School of Medicine, Basic Science Day.

Nelson ER, Howe MK, Abdo J, and McDonnell DP. (2011). The impact of 27-hydroxycholesterol, a macrophage-synthesized estrogen receptor agonist, on breast cancer pathophysiology. Duke Breast Cancer Research Forum.

Nelson ER, DuSell CD, Wang X, Michalek RD, Abdo J, Moedder UL, Umetani M, Gesty-Palmer D, Javitt NB, Rathmell JC, Khosla S, and McDonnell DP. (2011). Liver X Receptor Activation by a Primary Cholesterol Metabolite Negatively Impacts Bone. Duke Pharmacology and Cancer Biology Retreat.

Nelson ER, Howe MK, Carver, NJ, and McDonnell DP. (2012). Linking Cholesterol and its Metabolites to Breast Cancer Pathology. Duke Breast Cancer Research Forum.

Nelson ER, and McDonnell DM. (2013). Obesity, Cholesterol and Breast Cancer. Duke Cancer Biology and Solid Tumor Seminar Series.

Nelson ER. (2015). Mechanisms Underlying Obesity and Cholesterol Mediated Pathology of Breast Cancer. Molecular and Integrative Biology Seminar Series. University of Illinois at Urbana-Champaign.

Nelson ER. (2015). Mechanisms by which Obesity and Cholesterol Impact Breast Cancer Pathophysiology. Department of Physiology and Biophysics Seminar Series. University of Illinois at Chicago.

Nelson ER. (2015). Mechanisms by which Obesity and Cholesterol Impact Breast Cancer Pathophysiology. Division of Nutritional Sciences Seminar Series. University of Illinois at Urbana-Champaign.

Nelson ER. (2015). A Cholesterol Metabolite Influences the Endocrine and Immune Systems to Impact Breast Cancer Pathophysiology. Department of Biology Seminar Series. Wabash College.

Nelson ER. (Jan, 2016). Cholesterol and its metabolites act on the host microenvironment to promote breast cancer metastasis. Tumor microenvironment and Metastases Monthly Seminar Series. Indiana University School of Medicine.

Nelson E R. (March, 2016). Using *in vivo* imaging to determine the impact of cholesterol and its metabolites on cancer progression. 1st IVIS Optical-Nuclear Imaging Workshop. Beckman Institute, University of Illinois.

Nelson ER. (May, 2016). Cholesterol and its metabolites act on the host microenvironment to promote breast cancer metastasis. Committee on Molecular Metabolism and Nutrition Seminar Series. University of Chicago.

Nelson ER. (December, 2016). 27-Hydroxycholesterol is a cholesterol metabolite that promotes breast cancer metastasis by modulating the immune system. MRC Centre for Reproductive Health, Queen's Medical Research Institute, University of Edinburgh, Scotland.

Nelson ER. (July, 2017). Cholesterol – integrating the endocrine and immune systems to promote breast cancer progression. University of Illinois Cancer Center, University of Illinois at Chicago.

Nelson ER. (August, 2017). Cholesterol – integrating the endocrine and immune systems to promote breast cancer progression. University of Chicago Comprehensive Cancer Center.

Nelson ER. (October, 2017). A metabolite of cholesterol promotes breast cancer metastasis through its actions on the endocrine and immune systems. Department of Comparative Biosciences, University of Illinois School of Veterinary Medicine.

Nelson ER. (November, 2017). A metabolite of cholesterol influences the endocrine and immune systems to promote breast cancer progression. Department of Medicinal Chemistry and Molecular Pharmacology. Purdue Center for Cancer Research. Purdue University.

Nelson ER. (March, 2018). A metabolite of cholesterol influences the endocrine and immune systems to promote breast cancer progression. Obesity, Cancer and Metabolic Diseases Research Group Meeting. NY area institutions (Memorial Sloan Kettering Cancer Center, Weill Cornell Medical College, Rockefeller University, NYU etc.), hosted by Memorial Sloan Kettering Cancer Center.

Nelson ER. (May, 2018). A metabolite of cholesterol influences the endocrine and immune systems to promote breast cancer progression. Breast Cancer Research Group, University of Illinois Cancer Center, University of Illinois at Chicago.

Nelson ER. (July, 2018). Cholesterol – integrating the endocrine and immune systems to promote breast cancer progression. Summer Program Lecture Series. University of Illinois Cancer Center, University of Illinois at Chicago. Sponsored by GUIDE (GSU-UICC-Disparities-Education).

Nelson ER. (Sept, 2018). Cholesterol Metabolism, Endocrinology, Immunology and Cancer Progression. Presentation to the Anticancer Discovery from Pets to People Theme of the Carl R. Woese Institute for Genomic Biology. University of Illinois at Urbana-Champaign.

Nelson ER. (Oct, 2018). Cholesterol Metabolism, Endocrinology, Immunology and Cancer Progression. Presentation to the Illinois Scholars Undergraduate Research (ISUR) Program. University of Illinois at Urbana-Champaign.

Nelson ER. (Feb, 2019). Cholesterol homeostasis, the immune system and breast cancer progression. Simmons Cancer Institute, Southern Illinois University School of Medicine. Springfield, IL.

Nelson ER. (April, 2019). A Cholesterol Metabolite Regulates the Secretion and Cargo of EVs, Thereby Promoting Cancer Progression. Campus Innovation in Extracellular Vesicle Biology and Technology, University of Illinois at Urbana-Champaign.

Nelson ER. (Sept, 2019). *Paddling Downstream*: Impact of Cholesterol Metabolism on Cancer Progression. Molecular and Integrative Physiology Seminar Series, University of Illinois at Urbana-Champaign.

Nelson ER. (Sept, 2019). The impact of a cholesterol metabolite on breast cancer dormancy and recurrence. School of Molecular and Cellular Biology Retreat. University of Illinois at Urbana-Champaign.

Nelson ER. (Oct, 2019). Verification strategies for Extracellular Vesicles. Extracellular Vesicle Imaging and Therapy Working Group. University of Illinois at Urbana-Champaign.

Nelson ER. (Oct. 2020). Using cholesterol homeostasis to re-educate the immune system to fight cancer. Women's Malignancies Program Seminar Series, Johns Hopkins University.

Nelson ER. (12/2/2020). Cholesterol, Immunology and Cancer Progression. Cancer Center at Illinois, Program 2 Monthly Meeting, University of Illinois.

Nelson ER. (July 20, 2021). "Cholesterol homeostasis, the immune system and cancer" University of Illinois at Chicago, Breast Cancer Working Group Meeting.

Nelson ER. (August 31, 2021). “Using cholesterol biology to re-educate the immune system in cancer” University of Illinois at Urbana-Champaign, IGB Spotlight Lecture.

Nelson ER. (September, 2021). “Cholesterol and the gut microbiome.” Highlight talk to the Personalized Nutrition Initiative, University of Illinois at Urbana-Champaign.

Nelson ER. (September, 2021). “Cholesterol and the gut microbiome.” Highlight talk to the Microbes and Cancer Workshop, University of Illinois at Urbana-Champaign.

Nelson ER. (September 28, 2021). “Using cholesterol biology to re-educate the immune system in cancer” Boston University Seminar Series.

Nelson ER. (October 29, 2021). “Using cholesterol biology to re-educate the immune system in cancer” Southern Illinois University Seminar Series.

Nelson ER. (February 11, 2022). “Cholesterol metabolites hijack the endocrine and immune systems to promote the progression of breast and ovarian cancer.” Grand Rounds at OSF HealthCare.

Nelson ER. (February 18, 2022). “Leveraging cholesterol homeostasis to re-educate myeloid immune cells to be anti-cancer.” Grand Rounds at OSF HealthCare.

Nelson ER. (February 23, 2022). “Leveraging cholesterol homeostasis to re-educate myeloid immune cells to be anti-cancer.” Division of Nutritional Sciences, University of Illinois at Urbana Champaign.

Nelson ER. (November 4, 2022). “Leveraging cholesterol homeostasis to re-educate myeloid immune cells to be anti-cancer.” Department of Pathology, University of Colorado Anschutz Medical Campus.

Nelson ER. (December 7, 2022). "Oncology- perspectives from medicine, research and advocacy." CIMED Oncology Pathways Panel. Carle Illinois College of Medicine. University of Illinois at Urbana-Champaign.

Nelson ER (December 9, 2022). “Leveraging cholesterol homeostasis to re-educate myeloid immune cells to be anti-cancer.” Department of Cancer Biology, Stritch School of Medicine, Loyola University Chicago.

Nelson ER. (June, 2023). “Leveraging cholesterol homeostasis to re-educate myeloid immune cells to be anti-cancer.” Pfizer, La Jolla Campus, Oncology and Vaccine Development. La Jolla, California.

Nelson ER. (Sept. 2023). “Leveraging cholesterol homeostasis to re-educate myeloid immune cells to be anti-cancer.” Department of Genetics and Genomics, Texas A&M University, College Station.

Invited Presentations at Scientific Conferences

Nelson ER., and Habibi H.R. (June, 2008). Functional significance of thyroid receptor subtypes in goldfish. 6th International Symposium on Fish Endocrinology. Calgary, Canada. Abstract #S2-1.

Nelson ER. (October, 2016). The cholesterol metabolite 27-hydroxycholesterol increases breast cancer metastasis through its actions on immune cells. Great Lakes Nuclear Receptor Conference. Cleveland, OH.

Nelson ER. (June, 2017). A Cholesterol Metabolite Promotes Breast Cancer Progression; New Perspectives on Selective Estrogen Receptor Pharmacology. Sate of the Art Lecture on Steroid Receptor Actions and their Signaling, 18th International Congress of Comparative Endocrinology. Lake Louise, Canada.

Nelson ER. (March 2018). Cholesterol Metabolism, the Immune System and Breast Cancer Metastasis. Symposium Speaker in “At the Cross Roads: Endocrinology, Metabolism, Immunology, and Tumor Biology.” ENDO2018, the annual meeting of the Endocrine Society. Chicago, IL.

Nelson ER. (April, 2018). Cholesterol, its Metabolites and the Tumor Microenvironment. Plenary Lecture at the Tissue Microenvironment (TiME) Day. University of Illinois at Urbana-Champaign. Plenary Lecture.

Nelson ER. (April 2018). The impact of exercise on the progression of breast cancer. Symposium Speaker in “Energy Balance at the Nexus of the Host-Tumor Microenvironment Interaction.” 2018 American Association for Cancer Research Annual Meeting. Chicago, IL.

Nelson ER. (September, 2018). 27-hydroxycholesterol integrates the endocrine and immune systems to promote metastasis. Symposium of the European Network for Oxysterol Research. Balogna, Italy.

Nelson ER. (October, 2018). Cholesterol metabolism, nuclear receptors, immune cells and cancer progression. Session Speaker in "Hormone Driven Cancers." 8th Great Lakes Nuclear Receptor Conference. Minneapolis, MN.

Nelson ER. (April, 2019). A cholesterol metabolite regulates the secretion and cargo of EVs, thereby promoting in cancer progression. Extracellular Vesicle Imaging and Therapy (EVIT) Workshop; Campus Innovation in Extracellular Vesicle Biology and Technology. Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign.

Nelson ER. (Fall, 2020). Cholesterol homeostasis, nuclear receptors and cancer progression. Nuclear Receptor and Cancer Biology Think Tank. Urbana, IL. [Cancelled due to COVID-19 pandemic]

Nelson ER. (July, 2020). Cholesterol homeostasis, nuclear receptors and cancer progression. The Steroid Hormones and Receptors in Health and Disease Conference, Jointly Hosted by FASEB and the International Committee on Rapid Responses to Steroid Hormones (RRSH). West Palm Beach, FL. [Cancelled due to COVID-19 pandemic]

Nelson ER. (November, 2020). Cholesterol homeostasis, nuclear receptors and cancer progression. Dublin Steroid Cancer Meeting. Dublin, Ireland. [Postponed due to COVID-19 pandemic]

Nelson ER. (Sept, 2020). Re-educating the immune system to fight cancer. Illinois Ignite Showcase, Chicago, IL.

Nelson ER. (May, 2021). Cholesterol homeostasis, immunology and breast cancer progression. The Mammary Gland Biology Gordon Research Conference. Vermont, USA. [Cancelled due to COVID-19 pandemic]

Nelson ER. (May, 25-27, 2021). "Cholesterol homeostasis, the immune system and cancer progression." FASEB/RRSH Meeting: The Steroid Hormones and Receptors in Health and Disease Conference.

Nelson ER. (June, 2022). "Can we target cholesterol homeostasis to re-educate tumor associated myeloid cells?" Symposium speaker in "TIME Out: Emerging Approaches to Combat the Tumor Immunosuppressive Microenvironment in Endocrine-Related Cancers". ENDO2022, the annual meeting of the Endocrine Society. Atlanta, GA.

Nelson ER. (September 8-11, 2022). "Leveraging cholesterol homeostasis for the treatment of cancer." International Lymphangioleiomyomatosis (LAM) research conference. Hilton Rosemont, Chicago, IL. [Withdrawn due to COVID-19]

Nelson ER. (Oct, 2022). Leveraging Cholesterol Homeostasis to Re-educate Myeloid Immune Cells towards Anti-tumor. Dublin Steroid Cancer Meeting. Dublin, Ireland.

Nelczyk AT**,** Kadiri M, Chen C*, Schane C, Krawczynska N, Henn MA, McHenry MT, Castro DC, ChenJ, Tejeda RI, Hsiao SH, Engeseth NJ, Sweedler JV, Wendt MK, Helferich WG, **Nelson ER.** Fried cured bacon and histaminergic signaling: novel insights into the impact of diet on the dormant breast cancer microenvironment. (Nov. 2022) AICR Conference 2022. Leesburg, VA, Nov. 2022.

Nelson ER. (March 9, 2023). "NR0B2, a regulator of downstream cholesterol homeostasis re-educates myeloid immune cells to more anti-cancer". Tissue Microenvironment Day (TiME Day). University of Illinois at Urbana Champaign.

Nelson ER. (May, 2023). "Using diet to reveal new cellular and pharmacologic mechanisms regulating breast cancer progression". Gordon Research Conference: Mammary Gland Biology. Mount Snow, VT.

Nelson ER. (Oct, 2023). "Leveraging nuclear receptors involved in cholesterol homeostasis to re-educate tumor associated myeloid immune cells". Great Lakes Nuclear Receptor Conference. Roswell Park Comprehensive Cancer Center, Buffalo, NY.

Other Invited Presentations

Nelson ER. (2015). The Importance of Cancer Research and Advocacy. American Cancer Society, Relay for Life, Champaign County Survivor Dinner (attendance ~200).

Nelson ER. (2015). The importance of animal models in research. Division of Animal Resources Annual Holiday Luncheon. University of Illinois at Urbana-Champaign.

Nelson E R., and Anderson S.M. (March, 2016). Tips and Tools for the Next Steps: CV, Interviewing and Job Seminars. EndoCareers® Early Career Forum, a day-long conference hosted by the Endocrine Society, before the annual conference ENDO 2016.

Nelson ER. (April, 2016). Recent advancements in our understanding and treatment of cancer. American Cancer Society, West Central and Mid-Illinois Leadership retreat.

Nelson ER. (June, 2016). Recent advancements in our understanding and treatment of cancer. American Cancer Society, Champaign County Survivor Dinner (attendance ~200).

Nelson ER. (August, 2016). Recent advancements in our understanding and treatment of cancer. American Cancer Society, Livingston County (attendance ~500).

Nelson ER. (October, 2016). Recent advancements in cancer research. The Woman's Resources Center, Office of Inclusion and Intercultural Relations. University of Illinois at Urbana-Champaign.

Nelson ER. (February 2017). What's New in Cancer Research? American Cancer Society, Macon County Relay for Life Kick-Off (attendance ~75).

Nelson ER., and Gaddy D. (March, 2017). Tips and Tools for the Next Steps: CV, Interviewing and Job Seminars. EndoCareers® Early Career Forum, a day-long conference hosted by the Endocrine Society, before the annual conference ENDO 2017.

Nelson ER. (May 2017). Invited speaker at "Jumpstart to the Faculty Job Search". Workshop hosted by the Office of Postdoctoral Affairs at the Indiana University School of Medicine.

Nelson ER. (May 2017). Cancer Research – What's going on next door? American Cancer Society, Champaign County Relay for Life Survivorship Dinner (attendance ~200)

Nelson ER. (October 2017). Cancer Research: Where We Are and Where We are Going. American Cancer Society Relay For Life Fall Conference, Central Illinois (attendance ~75).

Nelson ER. (Feb. 2018). How Metabolites of Cholesterol Trick the Immune System into Allowing Breast and Ovarian Cancer to Grow. Power of the Alumni Conference, hosted by Leadership Illinois.

Nelson ER. and Gaddy D. (March, 2018). Tips and Tools for the Next Steps: CV, Interviewing and Job Seminars. EndoCareers® Early Career Forum, a day-long conference hosted by the Endocrine Society, before the annual conference ENDO 2018.

Nelson ER., and Zeynep Madak-Erdogan (April, 2018). Cancer Research Advocacy at the University of Illinois. Presentation at The NEXUS, Social and Behavioral Sciences and Cancer Research. Joint meeting between the Cancer Center at Illinois and the Social and Behavioral Sciences Research Initiative. University of Illinois at Urbana-Champaign.

Nelson ER. How I got here. (April 2018). Research Panel Member, Bioscience Journal Club (Molecular and Cellular Biology Undergraduate Students). University of Illinois at Urbana-Champaign.

Nelson ER. "How I got here". (April 2018). University of Illinois Cancer Center, University of Illinois at Chicago. Sponsored by GUIDE (GSU-UICC-Disparities-Education).

Nelson ER. "How I got here". (Oct. 2018) Illinois Scholars Undergraduate Research (ISUR) Program. University of Illinois at Urbana-Champaign.

Nelson ER. "Tips and Tools for the Next Steps: Dos and Don'ts during an academic interview, and the art of a successful job talk" (July 2019). University of Illinois Institute of Genomic Biology Postdoctoral Association.

Nelson ER. "Tips and Tools for the Next Steps: How to assemble an academic job application package" (June 2019). University of Illinois Institute of Genomic Biology Postdoctoral Association.

Nelson ER. (May 26, 2021). "Healthy Lifestyles After Breast Cancer Diagnosis: Metastatic Cancer Research and Its Application to Daily Life" Wisconsin Breast Cancer Coalition (WBCC) Education Workshop, May 2021.

Nelson ER. (June 5, 2021). "Know Your Options: Career Paths Within Clinical Endocrinology and Research" Endocrine Society's Early Career Forum. May 2021.

Nelson ER. "How I got here". (Sept. 2021). American Society for Biochemistry and Molecular Biology, University of Illinois Chapter.

Nelson ER. "Breast Cancer – what you need to know". (Oct. 2021). Presentation for the Code Red student group. University of Illinois Chapter.

Nelson ER. and Fishbein L. (June, 2022). Tips and Tools for the Next Steps: CV, Interviewing and Job Seminars. EndoCareers® Early Career Forum, a day-long conference hosted by the Endocrine Society, before the annual conference ENDO 2022.

Conference Proceedings, Abstracts and Presentations:

Oral Presentations:

Nelson ER and Habibi HR. (2005). Molecular Cloning and Seasonal Variation in Expression of Thyroid Receptors in Goldfish. Proceedings from the 15th International Congress of Comparative Endocrinology. Abstract #1.2.

Nelson ER and Habibi HR. (2005). Estrogenic Regulation of Estrogen Receptor Subtypes in Goldfish. Proceedings from the 15th International Congress of Comparative Endocrinology. Abstract #10.8.

Nelson ER and Habibi HR. (2006). Goldfish Thyroid Receptors: Cloning, seasonal expression and regulation by gonadal steroids. Prairie Universities Biological Symposium (oral presentation).

Nelson ER, Wiehler WB, Cole WC and Habibi HR. (2006). The Gonadal Steroids (estrogen, testosterone and 11-ketotestosterone) Regulate the Goldfish Estrogen Receptor Subtypes. Canadian Society of Zoology, Abstract pg. 12. Hoar Award Finalist for best oral presentation.

Nelson ER and Habibi HR. (2007). Novel thyroid hormone receptor subtypes: structure and function in goldfish hepatocytes. The Endocrine Society, Abstract #338. Travel Grant Award.

Nelson ER, Wang X, Howe MK, DuSell CD, Evans G, Michalek RD, Rathmell JC, Gesty-Palmer D, Khosla S, and McDonnell DP. (2011). Liver X Receptor activation by a primary cholesterol metabolite negatively impacts bone. ENDO2011, The Endocrine Society. Outstanding Abstract Award.

Nelson ER, Wardell SE, Howe MK, Carver N, Umetani M, and McDonnell DP. The cholesterol metabolite, 27-hydroxycholesterol, increases breast cancer tumor growth and metastasis. American Association for Cancer Research Special Conference on Tumor Invasion and Metastasis. Abstract PR3.

Nelson ER, Wardell SE, Howe MK, Carver N, Umetani M and McDonnell DP (2013). 27-hydroxycholesterol, a macrophage synthesized cholesterol metabolite, as a link between hypercholesterolemia and breast cancer pathophysiology. ENDO2013, The Endocrine Society. Abstract OR16-1.

Baek SE, and **Nelson ER.** (2015). Effects of the cholesterol metabolite, 27-hydroxycholesterol, on t cells and metastasis. 7th Annual Illinois Symposium on Reproductive Sciences. Abstract T12.

Nelson ER. (2015). 27-Hydroxycholesterol promotes breast cancer metastasis. 3rd Congress on Steroid Research. Abstract O5.2.

He S, Baek AE, Burdette JE and **Nelson ER.** (2016). A cholesterol metabolite is implicated in the pathophysiology of ovarian cancer. University of Illinois Molecular and Integrative Physiology Annual Retreat. Top Oral Abstract.

Nelson ER. (2016). 27-Hydroxycholesterol, an ER and LXR modulator, increases breast cancer metastasis through its actions on the host. 2016 Jensen Symposium on Breast Cancer. Cincinnati Cancer Symposium Series.

Baek AE and **Nelson ER.*** (2017). Cholesterol promotes breast cancer metastasis through the actions of its metabolite, 27-hydroxycholesterol. ENDO2017, The Endocrine Society. Abstract OR41-5. * Presented by Erik Nelson.

Shahoei SH and **Nelson ER.** (2017). Determining the Role of Small Heterodimer Partner (SHP) in Breast Cancer Progression. University of Illinois Molecular and Integrative Physiology Annual Retreat.

Shahoei SH, Anakk S, Kemper JK and **Nelson ER.** (2018). The Nuclear Receptor Small Heterodimer Partner (SHP) Modulates Macrophage Function within the Tumor Microenvironment to Decrease Breast Cancer Progression. ENDO2018, The Endocrine Society.

He S, Baek AE, Ma L, Burdette J and **Nelson ER.** (2018). The Impact of Cholesterol and Its Metabolites on the Ovarian Tumor Microenvironment and Cancer Progression. ENDO2018, The Endocrine Society.

Chen J and **Nelson ER.** (2018). 27-Hydroxycholesterol Promotes Breast Cancer Recurrence. Illinois Scholars Undergraduate Research Expo, University of Illinois at Urbana-Champaign.

Vardanyan A, He S, and **Nelson ER.** (2018). The Effect of Cholesterol and Its Metabolites on the Ovarian Tumor Proliferation and Cell Migration. Illinois Scholars Undergraduate Research Expo, University of Illinois at Urbana-Champaign.

Baek AE, He S, McDowell HB and **Nelson ER.** (2018). The Cholesterol Metabolite 27-Hydroxycholesterol promotes breast cancer progression by affecting immune responses. The American Association for Cancer Research Annual Meeting 2018. Abstract # 6926.

He S, Baek AE, Ma L, Burdette J and **Nelson ER.** (2018). Host CYP27A1 expression is essential for ovarian cancer progression. C*STAR Annual Program Reception. University of Illinois at Urbana-Champaign.

Baek AE, You S, McDowell HB, Boppart SA and **Nelson ER.** (2018). Cholesterol metabolite promotes breast cancer progression via extracellular vesicles. Keystone Symposium on Exosomes/Microvesicles: Heterogeneity, Biogenesis, Function and Therapeutic Developments.

Shahoei SH, **Nelson ER.** (2018). Small Heterodimer Partner Lowers Breast Cancer Progression through Its Immunomodulatory Role in Macrophages, Blocking Regulatory T Cell Responses. Great Lakes Nuclear Receptor Conference. Top Abstract Award.

Alexander C, Cross T-WL, Ly LK, Ridlon J, **Nelson ER,** and Swanson KS. (2019). Cholecystectomy alters gastrointestinal health indices and exacerbates post-menopausal metabolic dysfunction in a mouse model consuming a high fat diet. Digestive Disease Week. Abstract # 3135803.

Duraki D, Boudreau M, Wang L, Mao C, Tang B, Ma L, Roy EJ, Fan TM, Park BH, **Nelson ER**, Hergenrother PJ and Shapiro DJ. (2020). Lethal ERα-dependent Hyperactivation of the Unfolded Protein Response Induces Complete Regression without Recurrence of Primary and Metastatic Breast Cancer. ENDO2020, the annual meeting of the Endocrine Society. [Cancelled due to COVID-19 pandemic]

Shahoei SH, Nelson AT, Henn M, Mathews AE, Chen JJ., Vembar V, Vardanyan A, Ma L, Wang Y, Apetoh L and **Nelson ER.** (2020). Small Heterodimer Partner modulates antigen presenting myeloid cells to impair regulatory T cell expansion, promoting anti-tumor immunity in models of breast cancer. ENDO2020, the annual meeting of the Endocrine Society. [Cancelled due to COVID-19 pandemic]

Duraki D, Boudreau M, Wang L, Mao C, Tang B, Ma L, Roy EJ, Fan TM, Park BH, **Nelson ER**, Hergenrother PJ and Shapiro DJ. (2020). ERα-Dependent Lethal Hyperactivation of the Anticipatory Unfolded Protein Response Induces Complete Regression Without Recurrence of Advanced Breast Cancer. ENDO2021, the annual meeting of the Endocrine Society. Abstract 4544

Vidana Gamage HE, Shahoei SH, Nguyen T, Rivas OR, Nguyen T, Tiwari S, Wang Y, Ma L, Apetoh L, **Nelson ER**. NR0B2 re-educates myeloid cells within the tumor microenvironment: potential novel strategy for breast

cancer immunotherapy. MWTME2022, the annual Midwest Tumor Microenvironment Meeting, Kansas, KS. May 2022. Oral Presentation.

Bendre S, Krawczynska N, Singaram I, Cho W, **Nelson ER**. Role of ABCA1 in Myeloid Cell Function and Breast Cancer Progression. ENDO2022, the annual meeting of the Endocrine Society, Atlanta, GA, June 2022.

Bendre S, Krawczynska N, Bhogale S, Weisser E, Han S, K. C. Rajendra, Das Gupta A, Wang Y, Schane C, Nelczyk AT, Gamage HEV, Hajyousif B, Sinha S, Van Bortle K, Tajkorshid E, Wonhwa C, **Nelson ER**. The Role of Cholesterol Transporter ABCA1 in Macrophages and Its Subsequent Modulation of the Tumor Microenvironment. IGB Fellows Symposium, Urbana, IL, 2023

Vidana Gamage HE, Shahoei SH, Albright S, Nguyen T, Farmer RE, Weisser E, Ovidio Bautista Rivas, Claire P. Schane, Yu Wang, Adam Nelczyk, Liqian Ma, Srishti Tiwari, Gupta AD, Bendre S, Apetoh L, Hergenrother P, **Nelson ER**. Myeloid cell intrinsic NR0B2 inhibits regulatory T cell expansion within the tumor microenvironment: potential novel strategy for breast cancer immunotherapy. ENDO2023, the annual meeting of Endocrine Society, Chicago, IL. June 2023. Oral Presentation

Poster Presentations:

Nelson ER, and Habibi HR. (2003). Homologous Regulation of the Estrogen Receptor alpha, beta-I and beta-II gene expression by Estrogen, in Goldfish. Autonomic Neuroscience: Basic and Clinical 2003 Special Issue. Abstract pg. 23.

Nelson ER, and Habibi HR. (2004). Molecular Cloning and Tissue distribution of the Goldfish Thyroid Receptors. Signalling in Normal and Cancer Cells Conference Abstracts. Abstract # 92.

Palermo F, Mosconi G, **Nelson E**, Polzonetti-Magni AM, Habibi HR. (2004). Effects of 2,4-dichlorophenoxyacetic Acid on estrogen receptors subtypes gene expression in *Carassius auratus*. Abstract in Upsala Journal of Medical Sciences 2004 Supplement.

Nelson ER and Habibi HR. (2004). Regulation of estrogen receptors (alpha, beta-I and beta-II) by estradiol and testosterone in the goldfish liver and gonads. Biology of Reproduction 2004 Special Issue. Abstract # 108.

Jeffries KM, Jackson.., **Nelson ER** and Habibi HR. (2005). Longnose dace effectively identify environmental stress in the Oldman River. Presented at: Alberta Ingenuity Centre for Water Research 2nd Annual Researcher's Conference and Canadian Water Network Researcher's Retreat.

Moussavi M, Pang F, **Nelson ER**, and Habibi HR. (2006). Growth hormone regulation of vitellogenin gene expression in the goldfish liver. Prairie Universities Biological Symposium.

Nelson ER, Wiehler WB, Cole WC and Habibi HR. (2006). Regulation of the Goldfish Estrogen Receptor Subtypes by the Gonadal Steroids (estrogens and androgens). Seventh Conference for Signalling in Normal and Cancer Cells, Abstract #82.

Jun WH, **Nelson ER**, Moussavi M, and Habibi HR. (2006). Temperature shock effect on stress-related genes expression in goldfish. Canadian Society of Zoology, Abstract pg. 151.

Walker RL, Oliphant BJ, **Nelson ER**, Shi X, Dashtban M, Wong S-L, and Habibi HR. (2006). Effect of orally administered recombinant carp growth hormone on the expression of Sodium/potassium ATPase alpha, Beta subunit expression in the goldfish intestine. Canadian Society of Zoology, Abstract pg. 144.

Moussavi M, Pang F., **Nelson ER,** and Habibi HR. (2006). Growth hormone regulation of vitellogenin gene expression in the goldfish liver. Canadian Society of Zoology, Abstract pg 141.

Jeffries KM Jackson LJ, **Nelson ER** and Habibi HR. (2006). Longnose dace, Rhinichthys cataractae, vitellogenin mRNA suggest widespread estrogenic chemical exposure in the Oldman River, Alberta. Canadian Society of Zoology, Abstract pg 50.

Nelson ER, and Habibi HR. (2007). Regulation of goldfish (*Carassius auratus*) estrogen receptor subtypes and androgen receptor by gonadal steroids. 8th International Symposium on Fish Reproduction, Abstract.

Kromrey N, **Nelson ER**, Shi X, Habibi HR, Hontela A. (2007). The effects of waste water treatment plant effluent and agricultural runoff on the reproductive status of Fathead Minnow, Pimephales promelas,in Southern Alberta. Aquatic Toxicity Workshop, Abstract.

Habibi HR, Jeffries KM, **Nelson ER**, and Jackson LJ. (2008). Risk assessment for endocrine disrupting chemical mixtures. International Conference of Comparative Physiology, Biochemistry and Toxicology & 6th Chinese Comparative Physiology Conference.

Kromrey N, **Nelson ER**, Shi X, Habibi HR, Hontela A. (2008). Use of physiological markers in fathead minnow, *Pimephales promelas*, in assessment of reproductive effects of waste water treatment plant effluent. Emerging Contaminants in Alberta's Environment: Workshop and Symposium.

Jackson LJ, Jeffries, KM, Habibi, HR and **Nelson ER.** (2008). Longnose dace indicate sites of exposure to endocrine disrupting compounds. Emerging Contaminants in Alberta's Environment: Workshop and Symposium.

Nelson ER and Habibi HR. (2008). Goldfish estrogen receptor subtypes play specific roles in their transcriptional control of estrogen responsive genes. Keystone Symposia: Nuclear Receptors, Steroid Sisters, Abstract #232.

Pang FYM, **Nelson ER**, Chang JP, and Habibi HR. (2008). Effect of sex steroids on the expression of genes involved in gonadal development in the goldfish ovary and testis. 6th International Symposium on fish Endocrinology, Abstract #P79.

An KW, **Nelson ER**, Jo PG, Habibi HR and Choi CY. (2008). Characterization of estrogen receptor β2 and expression of the estrogen receptor subtypes α, β1, and β2 in the protandrous black porgy (*Acanthopagrus schlegeli*) during the sex change process. 6th International Symposium on fish Endocrinology, Abstract #P70.

Jeffries KM, Jackson LJ, **Nelson ER** and Habibi HR. (2008). Longnose dace effectively identify environmental stress in the Oldman river, Alberta (Canada). 6th International Symposium on fish Endocrinology, Abstract #P72.

Kromrey N, **Nelson ER**, Shi X, Habibi HR, Hontela A. (2008). The effects of waste water treatment plant effluent and agricultural runoff on the reproductive status of Fathead Minnow, *Pimephales promelas*. 6th International Symposium on fish Endocrinology, Abstract #P85. Best Poster Award.

Nelson ER, Allan ERO, Pang FYM, and Habibi HR. (2008). Thyroid hormone regulation of gonadal estrogen-mediated function in the goldfish. 6th International Symposium on fish Endocrinology, Abstract #P63.

Habibi HR, Jeffries KM, **Nelson ER**, and Jackson LJ. (2008). Endocrine Disrupting Chemicals Risk Assessment in the Southern Alberta Rivers. Western Canada Water and Wastewater Association 60th Anniversary Conference.

Nelson ER and Habibi HR. (2008). A Novel Thyroid receptor lacking a hormone binding domain modulates the induction of a deiodinase by the full length thyroid receptors in the goldfish hepatocytes. European Congress of Comparative Endocrinology.

Dusell CD, **Nelson ER**, Umetani M, Shaul P, Mangelsdorf D, and McDonnell DP. (2009). 27-Hydroxycholesterol, an endogenous molecule with SERM-like activity. Estrogens, SERMs and TSECs, Wyeth Investigators Meeting.

Habibi HR, **Nelson ER**, Allan E, Edwards B, Weljie A. (2009). New insights in thyroid hormone function and receptor subtypes in goldfish. State of the Art Lecture, International Congress of Comparative Endocrinology.

Nelson ER, DuSell CD, Wang X, Michalek RD, Abdo J, Moedder UL, Umetani M, Gesty-Palmer D, Javitt NB, Rathmell JC, Khosla S, and McDonnell DP. (2010). 27-Hydroxycholesterol, an endogenous SERM and LXR agonist, negatively impacts bone formation in mice. Keystone Symposia: Nuclear Receptors in Development, Physiology and Disease. Outstanding Abstract Award.

Habibi HR, **Nelson ER**, and Allan ERO. (2010) Thyroid hormone and reproduction in goldfish. 25th Conference of the European Comparative Endocrinologists

Bentley CD, **Nelson ER**, Wittmann BM, Fretz JA, Kazmin D, Thomas RS, Pike JW, McDonnell DP. (2010) The aryl hydrocarbon receptor as a mediator of SERM signaling. Dioxin 2010.

Habibi HR, **Nelson ER**, Allan ERO and Pang FY. (2011). Thyroid Hormone Control of Reproduction in goldfish. North American Society of Comparative Endocrinology.

Wang X, Liao S, **Nelson ER**, Schmalzigaug R, Spurney RF, Guilak F, Premont RT, and Gesty-Palmer D. (2011). The Cytoskeletal Regulatory Scaffold Protein GIT2 Modulates Osteoblastogenesis. ENDO2011, The Endocrine Society.

Dwyer MA & **Nelson ER**, Wang X, Getsy-Palmer D, and McDonnell DP. (2011). The Role of the Estrogen-Related Receptor α in Bone Development and Physiology. ENDO2011, The Endocrine Society.

Nelson ER, Howe MK, Abdo J, and McDonnell DP. (2011). The impact of 27-hydroxycholesterol, a macrophage-produced estrogen receptor and liver X receptor agonist, on breast cancer pathophysiology. US Department of Defense, Era of Hope Conference.

Nelson ER, Howe MK, Abdo J, and McDonnell DP. (2011). 27-hydroxycholesterol, an endogenous selective estrogen receptor modulator, increases breast cancer tumor growth. US Department of Defense, Era of Hope Conference.

Wardell SE, **Nelson ER**, Kazmin D, Chao CA, and McDonnell DP. SERM Bazedoxifene inhibits estrogen and tamoxifen dependent tumor growth and may have utility in breast cancer treatment. Keystone Symposia Nuclear Receptor Matrix: Reloaded. Abstract 347.

Nelson ER, Howe MK, Carver N, and McDonnell DP. (2012). A primary metabolite of cholesterol impacts breast cancer pathophysiology via its actions on the estrogen receptors and liver X receptors. Keystone Symposia: Nuclear Receptor Matrix Reloaded. Abstract 248.

Glass O, Inman BA, Courneya KS, Mackey JR, **Nelson ER**, Hartman Z, and Jones LW. (2013). Exercise Alters Breast Cancer Phenotype Through Distinct Reductions in Host-Derived Proinflammatory Growth Factor American Association for Cancer Research and Japanese Cancer Association Joint Conference: Breakthroughs in Basic and Translational Cancer Research.

Nelson ER, Wardell SE, Howe MK, Carver N, Umetani M, and McDonnell DP. The cholesterol metabolite, 27-hydroxycholesterol, increases breast cancer tumor growth and metastasis. American Association for Cancer Research Special Conference on Tumor Invasion and Metastasis. Abstract B50.

Wardell SE, **Nelson ER**, Chao CA, and McDonnell DP. (2013). The SERM Bazedoxifene inhibits 17-β-estradiol and tamoxifen dependent tumor growth and may have utility in breast cancer prevention and treatment. ENDO2013, The Endocrine Society.

Wright TM, Wardell SE, **Nelson ER**, and McDonnell DP. (2013). The role of the proto-oncogene AGR2 in endocrine resistant breast cancer. American Association for Cancer Research Special Conference on Molecular Targets and Cancer Therapeutics.

Alfaqih MA, **Nelson ER**, Safi R, Jasper J, Chang CY, Freedland SJ, and McDonnell DP. (2014). The cholesterol / 27-hydroxycholesterol axis is a novel therapeutic target in castrate resistant prostate cancer. American Association for Cancer Research Annual Meeting.

Malek G, Choudhary M, Meade E, **Nelson ER**, and McDonnell DP. (2014). Liver X Receptor signaling pathways and age-related macular degeneration. The Association for Research in Vision and Ophthalmology Annual Meeting.

Pomatto V, Cottone E, Palermo FA, **Nelson ER**, Mosconi G, Dati C, and Bovolin P. (2014). Plasticizers present in food packaging significantly affect lipid metabolism. 27th Conference of European Comparative Endocrinologists.

Nelson ER, Wardell SE, and McDonnell DP. (2014). The cholesterol metabolite, 27-hydroxycholesterol, promotes breast cancer metastasis. American Association for Cancer Research Special Conference on Tumor Immunology and Immunotherapy. Abstract A82.

Nelson ER, Wardell SE, and McDonnell DP. (2015). Mechanisms by which Cholesterol Promotes Breast Cancer Metastasis. ENDO2015, The Endocrine Society.

Nelson ER, Li S, Kennedy M, Payne S, Pizzo SV, McDonnell DP, and Bachelder RE. (2015) Chemo-residual triple-negative breast tumor cells exhibit increased metastatic potential. 5th World Congress on Cell Science & Stem Cell Research.

Mukherjee A, He S, Krueger K, and **Nelson ER.** (2015). The role of Notch-dependent differentiation of tumor associated macrophages in mediating the metastatic effects of 27-hydroxycholesterol. Illinois Scholars Undergraduate Research Expo, University of Illinois at Urbana-Champaign. Selected as a finalist for most outstanding presentation.

He S, and **Nelson ER.** (2015). A metabolite of cholesterol is implicated in the pathophysiology of ovarian cancer. 7th Annual Illinois Symposium on Reproductive Sciences. Abstract P24.

Mukherjee A, He S, Krueger K, and **Nelson ER.** (2015). 27-Hydroxycholesterol increases the expression of interleukin-6 in mammary cancer associated macrophages in a Notch dependent manner. 7th Annual Illinois Symposium on Reproductive Sciences. Abstract P61.

Shahoei SH, Perez-Pinera P, Kemper JK, Anakk S, and **Nelson ER.** (2015). Investigating the role of small heterodimer partner (SHP) in breast cancer pathology. 7th Annual Illinois Symposium on Reproductive Sciences. Abstract P23.

Baek AE, and **Nelson ER.** (2015). A cholesterol metabolite acts on the host to increase breast cancer metastasis. American Association for Cancer Research Special Conference on Tumor Metastasis.

Zheng X, Andruska ND, Lambrecht M, He S, **Nelson ER**, Hergenrother P, and Shapiro DJ. (2016). An ERα Biomodulator Hyperactivates the Unfolded Protein Response, Inactivates MDR1 and Restores Sensitivity of Ovarian Cancer Cells to Taxanes. ENDO2016, The Endocrine Society.

Baek AE and **Nelson ER.** (2016). Effects of the Cholesterol Metabolite, 27-Hydroxychoesterol on Immune Cells and Metastasis. Keystone Symposium on Cancer Pathophysiology: Integrating the Host and Tumor Environments. Selected for Poster Preview Session.

Mukherjee A, He S, Krueger K, and **Nelson ER.** (2016). The cholesterol metabolite, 27-hydroxycholesterol, induces Interleukin 6 secretion in breast tumor associated macrophages. Illinois Scholars Undergraduate Research Expo, University of Illinois at Urbana-Champaign.

Baek AE and **Nelson ER.** (2016). Effects of the cholesterol metabolite, 27-Hydroxycholesterol on immune cells and metastasis. University of Illinois Molecular and Integrative Physiology Annual Retreat.

Shahoei SH, Mukherjee A, Kemper JK, Anakk S and **Nelson ER.** (2016). Investigating the role of small heterodimer partner (SHP) in breast cancer pathology. University of Illinois Molecular and Integrative Physiology Annual Retreat.

He S, Baek AE, Burdette JE and **Nelson ER.** (2016). A cholesterol metabolite is implicated in the pathophysiology of ovarian cancer. Midwest Ovarian Cancer Coalition Workshop. Selected for Speed Poster Presentation.

Liu T-W, **Nelson ER**, Loman B, and Swanson KS. (2016). Diet differentially impacts adiposity and the cecal microbiota of ovariectomized versus intact mice. The International Human Microbiome Consortium.

Nelson ER. (2016). 27-Hydroxycholesterol, an ER and LXR modulator, increases breast cancer metastasis through its actions on the host. 2016 Jensen Symposium on Breast Cancer. Cincinnati Cancer Symposium Series.

Shahoei SH, Phillips H, and **Nelson ER.** (2016). The Effects of Cholesterol and its Metabolites on the Metastasis of Breast Cancer to Bone. 2016 Jensen Symposium on Breast Cancer. Cincinnati Cancer Symposium Series.

Liu T-W, **Nelson ER**, Wallig MA, Bhatt AP, Pellock SJ, Lin C-Y, Redinbo MR, and Swanson KS. (2017). Diet Differentially Impacts Gastrointestinal Integrity, Fecal β-glucuronidase Activity, and Longitudinal Fecal Microbial Communities of C57BL/6J mice in Response to Ovariectomy-Induced Obesity. Experimental Biology 2017.

He S, Baek AE, and **Nelson ER.** (2017). A cholesterol metabolite is implicated in the pathophysiology of ovarian cancer. University of Illinois Molecular and Integrative Physiology Annual Retreat.

He S, Baek AE, and **Nelson ER.** (2017). A cholesterol metabolite is implicated in the pathophysiology of ovarian cancer. Tissue and Microenvironment (TiMe) Training Day Symposium, University of Illinois at Urbana-Champaign.

He, S., Baek A.E., and **Nelson E.R.** (2017). A cholesterol metabolite is implicated in the pathophysiology of ovarian cancer. Northwestern Black Graduate Student Association - 20th Annual Research Conference and Symposium, Northwestern University.

Ma L, Baek AE and **Nelson ER.** (2017). Mechanisms by which 27-hydroxycholesterol promotes breast cancer metastasis. Life Sciences Symposium, Notre Dame University.

Shahoei SH, Anakk S, Kemper J, and **Nelson ER.** (2017). Determining the Role of Small Heterodimer Partner (SHP) in Breast Cancer Progression. Life Sciences Symposium, Notre Dame University.

He S, Baek AE, Burdette J and **Nelson ER.** (2017). The Impact of Cholesterol and Its Metabolites on the Ovarian Tumor Microenvironment and Cancer Progression. Life Sciences Symposium, Notre Dame University. Selected for Speed Poster Presentation.

McDowell H, Baek AE, and **Nelson ER.** (2018). A cholesterol metabolite promotes breast cancer progression via neutrophil associated exosomes. Illinois Scholars Undergraduate Research Expo, University of Illinois at Urbana-Champaign.

Ma L, Baek AE and **Nelson ER.** (2018). Mechanisms by which 27-hydroxycholesterol promotes breast cancer metastasis. The American Association for Cancer Research Annual Meeting 2018.

He S, Baek AE, Ma L, Burdette J, and **Nelson ER.** (2018). Host CYP27A1 expression is essential for ovarian cancer progression. The American Association for Cancer Research Annual Meeting 2018.

Wang L, Duraki D, Mao C, **Nelson ER**, and Shapiro DJ. (2018). Mechanisms of Metastasis and Therapy Resistance in Breast Cancers Containing Activating ERα Mutations Seen in Metastatic Breast Cancer. Tissue Microenvironment (TiME) Day. University of Illinois at Urbana-Champaign.

Shahoei SH, Anakk S, Kemper JK and **Nelson ER.** (2018). The Nuclear Receptor Small Heterodimer Partner (SHP) Modulates Macrophage Function within the Tumor Microenvironment to Decrease Breast Cancer Progression. Tissue Microenvironment (TiME) Day. University of Illinois at Urbana-Champaign.

Ma L, Baek AE, and **Nelson ER.** (2018). Mechanisms by which 27-hydroxycholesterol promotes breast cancer metastasis. Tissue Microenvironment (TiME) Day. University of Illinois at Urbana-Champaign.

He S, Baek AE, Ma L, Burdette J, and **Nelson ER.** (2018). Host CYP27A1 expression is essential for ovarian cancer progression. Tissue Microenvironment (TiME) Day. University of Illinois at Urbana-Champaign.

He S, Baek AE, Ma L, Burdette J, and **Nelson ER.** (2018). Host CYP27A1 expression is essential for ovarian cancer progression. C*STAR Annual Program Reception. University of Illinois at Urbana-Champaign.

Alexander C, Cross T-WL, Vieson M, **Nelson ER**, and Swanson KS. (2018). Development of a Novel Model of Cholecystectomy in Intact and Ovariectomized Mice and the Impact on Parameters of Metabolism and Gastrointestinal Health – a Pilot Study. Nutrition 2018, The American Society for Nutrition's Annual Meeting.

Alexander C, Cross T-WL, Ly LK, Ridlon J, **Nelson ER,** and Swanson KS. (2018). Cholecystectomy Alters Cecal and Fecal Microbiota in a Mouse-Model Consuming a High-Fat Diet: A Pilot Study. 7th Conference on Beneficial Microbes.

He S, Baek AE, Ma L, Burdette J, and **Nelson ER.** (2018). Host CYP27A1 expression is essential for ovarian cancer progression. National Institute of Biomedical Imaging and Bioengineering Training Grantees Meeting.

Nelson ER. (2018). A cholesterol metabolite induces an immune suppressive environment to promote breast cancer metastasis. The Fifth Annual Metastatic Breast Cancer Conference.

Cler S, Shahoei SH, and **Nelson ER.** (2019). ERRα modulates genes of importance to macrophage biology and breast cancer progression. ENDO2019, The Endocrine Society. Selected for Guided Poster Session.

Ma L, Baek AE, and **Nelson ER.** (2019). 27-hydroxycholesterol acts on myeloid cells to inhibit T cell expansion. ENDO2019, The Endocrine Society. Selected for Guided Poster Session. Outstanding Abstract Award. Selected for Presidential Poster Competition.

Chen C, Chen JJ, Ma L, Helferich WG, and **Nelson ER.** (2019). Consumption of oil derived from frying bacon increases breast cancer metastasis. The American Association for Cancer Research Annual Meeting 2018. Recipient of AACR-Bristol Myers Squibb Oncology Scholar-in-Training Award.

Vembar V, He S, Ma L, Baek AE, Vardanyan A, Chen JJ, Nelson AT, Burdette JE, and **Nelson ER.** (2019). Host CYP27A1 expression is essential for ovarian cancer progression. Illinois Scholars Undergraduate Research Expo.

Vardanyan A, He S, Ma L, Baek AE, Vembar V, Chen JJ, Nelson AT, Burdette JE, and **Nelson ER.** (2019). Cyp27a1 is essential for ovarian cancer growth and is a preferred target for therapies. Illinois Scholars Undergraduate Research Expo.

Chen JJ and **Nelson ER**. (2019). 27- Hydroxycholesterol Promotes Breast Cancer Recurrence. Illinois Scholars Undergraduate Research Expo, University of Illinois at Urbana-Champaign.

Huang L, Xu L, Ahmed M, Thompson B, McDonald J, **Nelson ER**, McDonnell DP, Mineo C, and Shaul PW. (2019). Macrophage-derived 27-hydroxycholesterol promotes atherosclerosis by activating endothelial inflammation via ERα, Septin 11, and Jnk kinase. American Heart Association Annual Meeting.

Wang Y, Torvik VI, and **Nelson ER.** (2019). Literature-Based Discovery Of Known And Potential New Mechanisms For Relating The Status Of Cholesterol To The Progression Of Breast Cancer. 5th Annual Midwest Tumor Microenvironment Meeting.

Chen JJ, Ma L, Wendt MK, and **Nelson ER.** (2019). A cholesterol metabolite promotes re-emergence of breast cancer cells from dormancy. 5th Annual Midwest Tumor Microenvironment Meeting. Selected for Poster-Blitz Speaker Presentation.

Prabhu S, Cross T-WL, Deng H, Shahoei SH, Konopka CJ, Dobrucki LW, **Nelson ER**, Wallig MA, Smith AM, and Swanson KS. (2019). Nanoconjugates Target Adipose Tissue Macrophages and Ameliorate Metabolic Dysfunction in DIO Mice. Obesity Week, ASMBS and The Obesity Society's Annual Meeting.

Chen JJ, Ma L, Wendt MK, and **Nelson ER.** (2019). A cholesterol metabolite promotes re-emergence of breast cancer cells from dormancy. ResearcHStart Symposium, University of Chicago.

Ma L, Han C, Wang L, Baek AE, Shapiro DJ, Nanjappa SG and **Nelson ER.** (2019). 27-hydroxycholesterol acts on myeloid cells to inhibit both T cell expansion and cytotoxic activity. School of Molecular and Cellular Biology Retreat, University of Illinois.

Wang Y, Torvik VI, and **Nelson ER.** (2019). Literature-Based Discovery of Known and Potential New Mechanisms for Relating the Status of Cholesterol to the Progression of Breast Cancer. School of Molecular and Cellular Biology Retreat, University of Illinois.

He S, Ma L, Baek AE, Vardanyan A, Vembar V, Chen JJ, Nelson AT, Burdette JE and **Nelson ER.** (2019). Host CYP27A1 expression is essential for ovarian cancer progression. School of Molecular and Cellular Biology Retreat, University of Illinois.

Nelson AT, Ma L, and **Nelson ER.** (2019) Determining the role of the nuclear receptor TLX in breast cancer progression. School of Molecular and Cellular Biology Retreat, University of Illinois.

Gibson DA, **Nelson ER**, Baek AE, Collins F, Esnal-Zufiaurre A, and Saunders PTK. (2019). The impact of the cholesterol metabolite 27-hydroxycholesterol on the pathogenesis of endometriosis. Symposium of the European Network for Oxysterol Research. Edinburgh, Scotland.

Chen JJ, Ma L, Raetzman LT, Wendt MK, and **Nelson ER.** (2019). A cholesterol metabolite promotes re-emergence of breast cancer cells from dormancy. Biomedical Engineering Society Annual Meting. Philadelphia. Abstract #3815

Shahoei SH, Nelson AT, Henn M, Mathews AE, Chen JJ, Vembar V, Ma L, Apetoh L, and **Nelson ER.** (2019). Macrophage expressed Small Heterodimer Partner impairs expansion of regulatory T cells and enhances immune checkpoint inhibition. AACR Tumor Immunology and Immunotherapy Meeting.

Ma L, Han C Wang L, Baek AE, Shapiro DJ, Nanjappa SG and **Nelson ER.** (2019). 27-hydroxycholesterol acts on myeloid cells to inhibit both T cell expansion and cytotoxic activity. AACR Tumor Immunology and Immunotherapy Meeting.

He S, Ma L, Cheng G, Barnick B, Spain M, Kimball R, Baek AE, Burdette J, and **Nelson ER.** (2019). The impact of cholesterol and its metabolites on ovarian tumor microenvironment and cancer progression. AACR Tumor Immunology and Immunotherapy Meeting. Recipient of AACR-Bristol Myers Squibb Oncology Scholar-in-Training Award.

Nelson ER, Shahoei SH, Nelson AT, Henn M, Mathews AE, Chen JJ, Vembar V, Ma L, and Apetoh L. (2019). The Small Heterodimer Partner in macrophages reduces expansion of regulatory T cells and enhances immune checkpoint inhibition in breast cancer. San Antonio Breast Cancer Symposium.

Ren P, Tiede C, Fanning SW, Greene GL, **Nelson ER,** Tomlinson DC, and Selvin PR. (2020). A aptamer against the Estrogen Receptor measured by fluorescence inside a cell and treated with SERMs. Annual Meeting of the Biophysical Society.

Shahoei SH, Nelson AT, Henn M, Mathews AE, Chen JJ, Vembar V, Vardanyan A, Ma L, Wang Y, Apetoh L, and **Nelson ER.** (2020). Small Heterodimer Partner (SHP) Lowers Breast Cancer Progression through Myeloid Cells, Lowering Regulatory T Cell Responses. EACR-AACR Tumor Microenvironment Meeting. Portugal.

He S, Ma L, Cheng G, Barnick B, Spain M, Kimball R, Baek AE, Burdette, and **Nelson ER.** (2020). The impact of cholesterol and its metabolites on ovarian tumor microenvironment and cancer progression. AACR Annual Meeting. [postponed due to COVID-19]

Hutchinson SA, Websdale A, Lianto P, Roberg-Larsen H, Wastall LM, Williams B, Rose A, Henn MA, Chen JJ, Ma L, **Nelson ER**, Sharma N, Hughes TA, and Thorne JL. (2020). Liver x receptor links elevated cholesterol to chemotherapy resistance in triple negative breast cancer. American Society of Clinical Oncology annual meeting. [virtual due to COVID-19]

Websdale A, Hutchinson SA, Lianto P, Roberg-Larsen H, Wastall LM, Williams B, Rose A, Henn MA, Chen JJ, Ma L, **Nelson ER**, Sharma N, Hughes TA, and Thorne JL. (2020). 24-hydroxycholesterol promotes chemoresistance through enhanced expression of P-glycoprotein. The British Association for Cancer Research.

Ma L, Wang L, Nelson AT, Han C, He S, Henn MA, Menon K, Chen JJ, Baek AE, Vardanyan A, Shahoei SH, Park S, Shapiro DJ, Nanjappa SG, **Nelson ER**. (2020). 27-Hydroxycholesterol acts on myeloid immune cells to induce T cell dysfunction, promoting breast cancer progression. AACR Virtual Special Conference Tumor Immunology and Immunotherapy. Abstract PR006.

Nelson AT, Wang Y, Ma L, He S, Henn M, Shahoei SH, Saleh T, Carpenter V, Gewirtz D, Spinella MJ, **Nelson, ER.** (2021). Functional Characterization of the Orphan Nuclear Receptor TLX in Triple Negative Breast Cancer. ENDO2021. Abstract 7577

Das Gupta A, Krawczynska N, Baek AE, Dvoretskiy SV, You S, Park J, Deng YH, Sorrells JE, Smith BP, Ma L, Nelson AT, McDowell HB, Mukherjee A, Henn M, Madak-Erdogan Z, Kong H, Boppart SA, Boppart M, and **Nelson ER**. (2021) **"**Mechanisms by which 27-Hydroxycholesterol modulates Extracellular Vesicle biogenesis." FASEB/RRSH Meeting: The Steroid Hormones and Receptors in Health and Disease (Virtual) Conference, May 25-27, 2021

Kang Y, Applegate CC, Deng H, Gonzalez Medina N, **Nelson ER**, Smith AM, and Swanson KS. (2021). A Targeted Nanomedicine Approach for a PPAR Agonist Improves Metabolism in Diet-Induced Obese Mice. Obesity Week 2021.

Applegate CC, Deng H, Fayyaz M, Kang Y, **Nelson ER**, Smith AM, and Swanson KS. (2021). Sex- and strain-specific responses to a PPAR agonist nanomedicine targeting adipose inflammation. Individualizing Medicine: Advancing Care Through Genomics.

Kang Y, Applegate CC, Deng H, Gonzalez Medina N, **Nelson ER**, Smith AM, and Swanson KS. (2021). A Targeted Nanomedicine Approach for a PPAR Agonist Improves Metabolism in Diet-Induced Obese (DIO) Mice. *Symposium: Inter-Individual Differences in Nutrition Responses,* Personalized Nutrition Initiative at Illinois.

Applegate CC, Deng H, Muhammad F, Kang Y, Wallig MA, **Nelson ER**, Smith AM, and Swanson KS. (2021). Sex- and Strain-Specific Responses to a PPAR Agonist Nanomedicine Targeting Adipose Inflammation. *Symposium: Inter-Individual Differences in Nutrition Responses,* Personalized Nutrition Initiative at Illinois.

Nelczyk AT**,** Kadiri M, Chen C, Schane C, Krawczynska N, Henn MA, McHenry MT, Castro DC, Chen J, Tejeda RI, Hsiao SH, Engeseth NJ, Sweedler JV, Wendt MK, Helferich WG, Nelson ER. Fried cured bacon and histaminergic signaling: novel insights into the impact of diet on the dormant breast cancer microenvironment. American Institute for Cancer Research Conference, October 2022, Leesburg, VA.

Krawczynska N, Das Gupta A, Lim K, Bendre S, Wang Y, Gamage HEV, Nelson ER. 27-hydroxycholesterol neutrophils small extracellular vesicles promote breast cancer progression. ISEVxTech EV Technology & Methods Summit, November 2022, Honolulu, HI.

Das Gupta A, Krawczynska N, Gamage HEV, Kim H, Park J, Sorrells JE, Boppart SA, **Nelson ER**. 27-Hydroxycholesterol acts on myeloid immune cells to enhance the secretion of cancer promoting extracellular vesicles by impairing lysosomal integrity. AACR Annual Meeting 2023, Orlando, Florida. Abstract 1258.

Vidana Gamage HE, Shahoei SH, Nguyen T, Farmer RE, Albright S, Weisser E, Ovidio Bautista Rivas, Claire P. Schane, Yu Wang, Adam Nelczyk, Liqian Ma, Srishti Tiwari, Gupta AD, Bendre S, Apetoh L, Hergenrother P, **Nelson ER**. NR0B2 re-educates myeloid cells within the tumor microenvironment: Potential novel strategy for breast cancer immunotherapy. AACR2023, the annual meeting of American Association for Cancer Research, Orlando, FL. April 2023. Poster presentation.

Das Gupta A, Krawczynska N, Gamage HEV, Kim H, Park J, Sorrells JE, Boppart SA, Nelson ER. The cholesterol metabolite, 27-hydroxycholesterol impairs lysosomal function, leading to increased secretion of cancer promoting extracellular vesicles. ISEV Annual Meeting 2023, Seattle, Washington. Abstract/poster no PF03.01.

Krawczynska N, Das Gupta A, Lim K, Ostrander J, **Nelson ER**. Small extracellular vesicles from neutrophils treated with 27-hydroxycholesterol promote epithelial to mesenchymal transition (EMT) and stemness in breast cancer cells. ISEV2023, May 2023, Seattle, WA.

Schane CP, Nelczyk AT, Chen C, Gamage HEV, McHenry MT, Kadiri M, Bendre S, Krawczynska N, Weisser E, Hsiao SH, Engeseth NJ, Sweedler JV, Wendt MK, Fan T, Helferich WG, **Nelson ER.** Cured, Fried Bacon and its Impact on the Reemergence from Breast Cancer Dormancy. 8th Annual Midwest Tumor Microenvironment Meeting at Purdue University, West Lafayette, IN. May 2023. * Selected for Oral Rapid Fire

Bendre S, Krawczynska N, Bhogale S, Weisser E, Han S, K. C. Rajendra, Das Gupta A, Wang Y, Schane C, Nelczyk AT, Gamage HEV, Hajyousif B, Sinha S, Van Bortle K, Tajkorshid E, Wonhwa C, **Nelson ER**. The Role of Cholesterol Transporter ABCA1 in Macrophages and Its Subsequent Modulation of the Tumor Microenvironment. 8th Annual Midwest Tumor Microenvironment Meeting 2023, West Lafayette, IN. * Selected for Oral Rapid Fire

Wang, Y., Duong, B., Tjoanda, E., Krawczynska, N., Bendre, S.V., Gamage, H. E. V., Nelczyk, A. T., Das Gupta, A., **Nelson, E. R.** (May 2023). The role of Liver Receptor Homolog 1 (LRH-1) in regulating breast cancer progression by modulating the immune response. Poster session presented at the Eighth Midwest Tumor Microenvironment Meeting (TME), West Lafayette, IN. * Selected for Oral Rapid Fire

Das Gupta A, Krawczynska N, Gamage HEV, Kim H, Park J, Sorrells JE, Boppart SA, Nelson ER. The Cholesterol Metabolite, 27-Hydroxycholesterol, Enhances the Secretion of Cancer Promoting Extracellular Vesicles by Impairing Lysosomal Integrity. ENDO Annual Meeting 2023, Chicago, Illinois. Poster no: THU-482. * Selected for Oral Rapid Fire

Schane CP, Nelczyk AT, Chen C, Gamage HEV, Kadiri M, McHenry MT, Bendre S, Krawczynska N, Henn MA, Castro DC, Chen J, Tejeda RI, Hsiao SH, Engeseth NJ, Sweedler JV, Wendt MK, Fan T, Helferich

WG, **Nelson ER.** The Impact of Cured, Fried Bacon on the Reemergence from Breast Cancer Dormancy. Endocrine Society Meeting (ENDO2023), Chicago, IL June 2023.

Wang, Y., Duong, B., Krawczynska, N., Bendre, S.V., Tjoanda, E., Gamage, H. E. V., Nelczyk, A. T., Das Gupta, A., **Nelson, E. R**. (June 2023). The role of Liver Receptor Homolog 1 (LRH-1) in regulating breast cancer progression by modulating the immune response. ENDO 2023, The Annual Endocrine Society Meeting.

Bendre S, Krawczynska N, Bhogale S, Singaram I, Das Gupta A, Nelczyk AT, Gamage HEV Han S, Tajkorshid E, Sinha S, Cho W**, Nelson ER**. The Role of Cholesterol Transporter ABCA1 in Macrophages and Its Subsequent Modulation of the Tumor Microenvironment. ENDO2023, The annual meeting of the Endocrine Society, Chicago, IL, June 2023.

Patents Issued or Pending:

McDonnell DP and **Nelson ER.** (2013). Use of CYP27A1 inhibitors, statin, or LXR antagonists alone or in combination with conventional therapy for the treatment of breast cancer. WO2015065505 A1, publication date: May, 2015.

Wardell SE, **Nelson ER**, and McDonnell DP. (2014). Method of Treating Cancer Using Selective Estrogen Receptor Modulators. CA2652783 C, publication date: July, 2015. US Patents Awarded. *Licensed*

- **US 9,421,264** (August 23, 2016) Method of treating cancer using selective estrogen receptor modulators. Wardell, SE, Nelson, ER and McDonnell, DP.
- **US10,071,066** (September 11, 2018) Method of treating cancer using selective estrogen receptor modulators. Wardell, SW, Nelson, ER and McDonnell, DP.
- **US15,129,197** (August 23, 2019) Method of treating cancer using selective estrogen receptor modulators. Wardell, SE, Nelson, ER and McDonnell, DP.
- **US10,420,734** (September 24, 2019) Method of treating cancer using selective estrogen receptor modulators. Wardell, SE, Nelson, ER and McDonnell, DP.

Racioppi L, **Nelson ER**, Huang W, Chao N, McDonnell DP. (2018). CAMKK2 inhibitor compositions and methods of using the same. WO2018027223A1, publication date: 2018-02-08.

Nelson ER and Shahoei SH. (2019). Methods of modulating regulatory T cells. Provisional filed March 28, 2019, and converted in 2020.

Nelson ER, Hergenrother JP et al (2022). Novel NR0B2 ligands for the treatment of cancer and autoimmune disease. Provisional filed in 2023. Filed for conversion in August, 2023.

Invention Disclosures:

Wardell SE, McDonnell DP, and **Nelson ER.** (2012). TamRC xenograft tumor model. Filed at Duke University.

Wardell SE, McDonnell DP, and **Nelson ER.** (2012). TamR3 xenograft tumor model. Filed at Duke University.

McDonnell DP and **Nelson ER.** (2012). Combined Statin and conventional osteoporosis therapy for the treatment if post-menopausal osteoporosis. Filed at Duke University.

Nelson ER, Smith AM, and He S. (2017). Use of dextran conjugated small molecule inhibitors of HMG-CoA reductase or CYP27A1 to treat ovarian cancer. Filed at the University of Illinois.

Nelson ER, Shahoei SH. (2018). Modulation of Small Heterodimer Partner for the treatment of Cancer and Autoimmune Disease. Filed at the University of Illinois.

Nelson ER, Hergenrother JP et al (2022). Novel NR0B2 ligands for the treatment of cancer and autoimmune disease. Filed at the University of Illinois.

Nelson ER, Bendre S (2023). ABCA1 as a target for immune therapy and cancer. Filed at the University of Illinois.

Professional Society Membership:

- Member of the American Association for Cancer Research
- Member of the Endocrine Society.
- Member of the American Physiological Society
- Member of the American Association for the Advancement of Science
- Senior Scientist Member of the Metastasis Research Society

Service Summary:

Scientific Journal Review:

Ad hoc reviewer for:

American Journal of Pathology, ACS Chemical Biology, Biomedical Central, Breast Cancer Research, Cancer Research, British Journal of Cancer, Cancer Chemotherapy and Pharmacology, Cancer Genetics, Cancer Immunology and Immunotherapy, Cancer Letters, Cancer Research, Cells, Cell Cycle, Cell Reports, Chemosphere, Comparative Biochemistry and Physiology, Current Medicinal Chemistry, eLife, Endocrinology, Endocrine Related Cancer, Gene, European Journal of Pharmacology, Expert Review of Anticancer Therapy, General and Comparative Endocrinology, HELIYON, Hormones and Cancer, Journal of Clinical Investigation, Journal of Comparative Physiology, Journal of Molecular Medicine, Journal of Steroid Biochemistry and Molecular Biology, Marine Biology, Molecular Carcinogenesis, Molecular and Cellular Biology, Molecular and Cellular Endocrinology, Molecular Endocrinology, Nature Communications, Nature Partner Journal Breast Cancer, Nature Metabolism, Nature Partner Journal Cell Death and Disease, Nutrition, Oncogene, Oncotarget, Plos One, Proceedings of the National Academy of Sciences, Protoplasma, Science, Scientific Reports, Steroids.

Editorial Board for:

Endocrinology

National and International Scientific Grant Proposal Review:

2014 Susan G. Komen Foundation. Invited reviewer for pre-application review of Career Catalyst Research Grants.
2015 Susan G. Komen Foundation. Invited reviewer for Career Catalyst Research Grants.
2015 French National Research Agency. Ad Hoc Reviewer.
2015 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2.
2015 Susan G. Komen Foundation. Invited reviewer for pre-application review of Postdoctoral Fellowship Awards.
2016 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2.
2016 Deutsche Forschungsgemeinschaft (German Research Foundation). Ad Hoc Reviewer.

2016 Susan G. Komen Foundation. Invited reviewer for pre-application review of Postdoctoral Fellowship Awards.
2016 National Cancer Institute of France (INCa), French Ministry of Health. Ad Hoc Reviewer.
2017 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2.
2017 Susan G. Komen Foundation. Invited reviewer for full-application review of Postdoctoral Fellowship Awards
2017 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2 (Autumn Submission).
2017 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2 (Spring Submission).
2017 Breast Cancer Now, the United Kingdom's largest breast cancer charity. Ad hoc Reviewer.
2018 The French National Research Agency. External Reviewer.
2018 Cancer Research Whales. Ad Hoc Reviewer.
2018 California Breast Cancer Research Program. Invited reviewer of IDEA and Translational Research Awards.
2018 National Cancer Institute of the National Institutes of Health. Reviewer on Special Emphasis Panel 2018/10 ZCA1 SRB-A (O1) R: Clinical and Translational Exploratory/Developmental Studies.
2018 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2 (Spring Submission).
2018 Reviewer for NIH Special Emphasis Panel: ZRG1 OBT-K (55): Workforce Diversity in Basic Cancer Research.
2019 METAvivor. Invited reviewer for Research Award preapplications.
2019 California Breast Cancer Research Program. Invited reviewer of IDEA and Translational Research Awards.
2019 The French National Research Agency. External Reviewer.
2019 American Institute of Cancer Research Grant Review Panel.
2020 California Breast Cancer Research Program. Invited reviewer of IDEA and Translational Research Awards
2020 METAvivor. Invited reviewer for Postdoctoral Research Award preapplications.
2020 National Cancer Institute of France (INCa), French Ministry of Health. Ad Hoc Reviewer.
2020 METAvivor. Invited reviewer for Postdoctoral Research Award full applications.
2020 Department of Defense Ovarian Cancer Research Program. Invited reviewer for Expansion awards.
2021 Department of Defense Rare Cancers Research Program. Invited reviewer for Concept awards.
2021 California Breast Cancer Research Program. Invited reviewer of IDEA and Translational Research Awards
2021 METAvivor. Invited reviewer for Research Award preapplications.
2021 National Cancer Institute Clinical and Translational Panel [ZCA1 SRB-F O2 S]
2021 METAvivor. Invited reviewer for Translational Research Award full applications (Stage IV MBC).
2021 METAvivor. Invited reviewer for Early Career Investigator Awards
2021 Combat Critical Care (CCC) peer review panel of the Medical Research and Development Command MRDC) for the DoD Congressionally Directed Medical Research Programs (CDMRP)
2021 American Institute of Cancer Research Grant Review Panel.
2021 Department of Defense Rare Cancers Research Program. Invited reviewer for Concept awards.
2021 Department of Defense Breast Cancer Review Panel. Invited reviewer of Breakthrough Award Levels 1 and 2 (Fall Submission).
2022 Susan G. Komen Foundation. Invited reviewer for peer review of Career Catalyst Research Grants – Redefining Metastatic Breast Cancer. January 19, 2022
2022 Health Research Board. Invited Reviewer for Investigator Led Projects.
2022 Irish Research Council. Invited Reviewer for Laureate Awards
2022 METAvivor. Invited reviewer for Research Award preapplications.
2022 METAvivor. Invited reviewer for Research Award full applications.
2022 Ad hoc reviewer for Department of Veteran Affairs Merit Awards [ONCA panel]
2022 Invited reviewer for French National Research Agency

2022 Invited reviewer for University of Sharjah, United Arab Emirates
2023 Invited reviewer for DOD Breast Cancer Research Program Innovator Award
2023 Invited Member of an Expert Committee, Canada Foundation for Innovation's (CFI) 2023 Innovation Fund competition
2023 METAvivor. Invited reviewer for Research Award preapplications.
2023 Invited reviewer for the French National Cancer Institute
2023 Chair, American Institute for Cancer Research Grant Review
2023 METAvivor. Invited reviewer for Early Career Awards, Research Awards and Translational Awards
2023 Department of Defense Ovarian Cancer Research Program. Invited reviewer for Pilot Awards
2023 Invited reviewer for the French National Cancer Institute (Different call for 2023)
2023 Ad hoc reviewer for Department of Veteran Affairs Merit Awards [ONCA panel]

Institutional Scientific Grant Proposal Review:

2015, 2021 Ad Hoc Reviewer Campus Research Board; Office of the Vice Chancellor for Research.
2015- Standing Reviewer “Travel Award”. Department of Molecular and Integrative Physiology
2016-2019 Standing Reviewer “Margin of Excellence Award”. Division of Nutritional Sciences.
2017-current Ad Hoc Reviewer Campus Research Board; Office of the Vice Chancellor for Research.
2020,21,22 Ad Hoc Reviewer “Margin of Excellence Award”. Division of Nutritional Sciences.

Scientific Conference Review:

2015 Abstracts Award review for 7th Annual Illinois Symposium on Reproductive Sciences.
2016,17 Best Poster Award review for University of Illinois Undergraduate Research Symposium.
2016 Ad hoc reviewer of abstracts for the Endocrine Society’s annual meeting, ENDO 2016.
2016 Best Poster Award review for Molecular and Integrative Physiology annual retreat, University of Illinois.
2017 Best Poster Award review for Molecular and Integrative Physiology annual retreat, University of Illinois.
2017 Ad hoc reviewer of abstracts for the Endocrine Society’s annual meeting, ENDO 2017.
2019 Reviewer for Poster Presentations at Annual Division of Nutritional Sciences Day.
2020 Reviewer of abstracts for the Endocrine Society’s annual meeting, ENDO 2021
2021 Reviewer of abstracts for the Endocrine Society’s annual meeting, ENDO 2022
2023 Reviewer of abstracts for the Endocrine Society’s annual meeting, ENDO 2023

Chair or Organizing Committee of Meetings:

2018 Member of Scientific Program Committee: Obesity and Energy Balance, American Association for Cancer Research Annual Meeting. Chicago, IL.
2019 Program Co-Lead. Cancer Research Advocacy Day. Hosted by the Cancer Research Advocacy Group, Champaign, IL
2021 Scientific Planning Committee. American Institute of Cancer Research Annual Symposium.
2023-2028 Member on Annual Meeting Steering Committee for the Endocrine Society
2023 Team Lead on Nuclear Receptors and Coregulators Theme
2024 Team Lead on Tumor Biology and Neoplasia
2023 Program Lead. Cancer Survivorship Summit, hosted by the Cancer Research Advocacy Group and Cancer Center at Illinois.

Chair or Organizing Committee of Sessions at Professional Society Meetings:

2016 Chair: Bench to Bedside – Metastasis and Tumor Progression: Cells Doing What They Shouldn’t (Basic-Translational). Endocrine Society’s annual meeting, ENDO 2016.
2016 Chair: Nuclear Receptors and Steroid Hormone Action (Basic-Translational) Endocrine Society’s annual meeting, ENDO 2016.

2016 Chair: Animal Models of Ovarian Cancer, Midwest Ovarian Cancer Coalition Workshop, 2016.
2020 Scientific Planning Committee. American Institute of Cancer Research Annual Symposium. [Cancelled/Postponed due to COVID19 Pandemic]
2021 Co-Chair of ENDO2021 Rising Stars Symposium
2021 Chair of ENDO2021 Steroid Receptors in Development and Disease
2022 Chair of ENDO2022 Nuclear Receptors in Immunometabolism: It's Not Just Macrophages!
2022 Chair of ENDO2022 Novel Mechanisms of Reproductive Hormone Action

Scientific Society Service:
2020 – 2023: Member, Trainee & Career Development Core Committee, The Endocrine Society.
2020 – current: Editorial Board Member for *Endocrinology*
2021 Scientific Planning Committee. American Institute of Cancer Research Annual Symposium.
2023 – 2026: The Endocrine Society Annual Meeting Steering Committee [ENDO 2023 – ENDO 2026]

University of Illinois Committee Work

2015 **Member of Training in Research, Applications, and Innovation Committee: TRAIN.** Goal: to develop a self-sustaining training program in modern biological/engineering research for undergraduate students.

2015-2020 **Co-Chair: Molecular and Integrative Physiology Retreat Committee**.
Goal: to organize the annual departmental retreat.

2015-present **Co-Chair: Graduate Program Enhancement Committee.**
Goal: to enhance the educational and training experience of graduate students within the Department of Molecular and Integrative Physiology.

2015-present **Co-Chair: Cancer Research Advocacy Group, Cancer Community at Illinois.**
Goal: To create an environment to bridge the gap between cancer survivors, researchers and clinicians, in order to advocate for patient-centered, translational cancer research.

2016-2018 **Elected Steering Committee Member of the Cancer Community at Illinois**

2016 **Visek Lecture Committee, Division of Nutritional Sciences.**

2016-2017 **Interim Director, Physiology Curriculum Thread, Carle Illinois College of Medicine**
University of Illinois at Urbana-Champaign

2016, 2017 **Search Committee for tenure-track assistant or associate professor in physiology, Department of Comparative Biosciences.**
College of Veterinary Medicine, University of Illinois at Urbana-Champaign.

2017-present **Member: School of Molecular and Cellular Biology Communications Committee.**
Goal: To highlight accomplishments of MCB members on different media platforms, both locally, nationally and internationally.

2017 **Search Committee for open-rank tenure-track position in immunology.** School of Molecular and Cellular Biology, College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign.

2018 **Search Committee for visiting research scientist in the Department of Bioengineering.**
University of Illinois at Urbana-Champaign

2018 **Search Committee for Assistant Director, Division of Animal Resources.**
University of Illinois at Urbana-Champaign.

2018 **Search Committee for open-rank tenure-track position in immunology.** School of Molecular and Cellular Biology, College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign.

2020 **Search Committee for Assistant Director, Division of Animal Resources.**

University of Illinois at Urbana-Champaign.

2020-present **Chair, Cancer Center at Illinois Membership Committee.**
Goal: To ensure that the Cancer Center at Illinois maintains a strong cancer focus, is responsive to the dynamic scientific and institutional landscape, fosters collaboration, and enables new scientific opportunities.

2020-present **Member, MCB Strategic Advisory Committee.** School of Molecular and Cellular Biology, University of Illinois.

2020 **Search Committee for open-rank tenure-track position in cancer biology.** School of Molecular and Cellular Biology, College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign.

2022-present **Member, University of Illinois Institutional Animal Care and Use Committee** (IACUC)

2022 **Search Committee for open-rank tenure-track position in RNA biology.** School of Molecular and Cellular Biology, College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign.

2022-present **Member, College of Liberal Arts and Sciences Awards Committee.** University of Illinois at Urbana-Champaign.

2022 **Search Committee for Associate Director for Graduate Studies,** School of Molecular and Cellular Biology, University of Illinois at Urbana-Champaign.

2023-present **Scientific Board of BEAT Cancer Initiative** (Collaboration between Cancer Center at Illinois and OSF HealthCare.

2023-present **Program Director, Cancer Center at Illinois** (Program: Cancer Discovery Platforms Bridging the Engineering-Biology Continuum). University of Illinois at Urbana-Champaign

2023 **Advisory Committee for Institute of Genomic Biology Annual Retreat**.

2023 **Search Committee for Assistant Professor of Immunophysiology.** Department of Animal Sciences, College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign.

Teaching and Outreach

Supervision / Mentorship:

Postdoctoral Associates:

1. Amy E. Baek. (May 2015 – Nov. 2018). Ph.D. Received from University of Michigan. Recipient of Susan G. Komen Postdoctoral Fellowship (August, 2016). Transitioned to Research-track assistant professor of bioengineering, UIUC. Current Position: Associate Editor for *Science Signaling*
2. Natalia Krawczynzka (Jan. 2019 – Present). Received Beckman Postdoctoral Scholar Award (2022-2025).

Graduate Student Thesis Advisor:

1. Sisi He (Dec. 2014 - 2020). PhD Student. Molecular and Integrative Physiology. First position out of lab: Senior Scientist at NGM Biopharmaceuticals (2020-2023). Currently Senior Scientist at HiFiBio Therapeutics (2023-current)
2. Sayyed Hamed Shahoei (Jan. 2015 - 2020). PhD. Student. Molecular and Integrative Physiology. Currently a postdoctoral associate at Memorial Sloan-Kettering Cancer Center.

3. Liqian Ma (Dec. 2016 – 2021). PhD Student. Molecular and Integrative Physiology. First position out of lab: Tempus in Chicago, IL. Current position: Senior Scientist II, Computational Biology at AbbVie Inc.
4. Amber (Yu) Wang (Jan. 2018 – 2019). Masters Student. School of Information Science. Co-Advisor with Dr. Vetle Ingvald Torvik.
5. Adam Nelson (Dec. 2018 – Dec. 2022). Name change to Adam Nelczyk. PhD Student. Molecular and Integrative Physiology.
6. Hashni Epa Vidana Gamage (Dec. 2019 – Present). PhD Student. Molecular and Integrative Physiology.
7. Anasuya Das Gupta (Dec. 2019 – Present). PhD Student. Molecular and Integrative Physiology.
8. Shruti Bendre (Dec. 2020 – Present). PhD Student. Molecular and Integrative Physiology.
9. Amber (Yu) Wang (Dec. 2020 – Present). PhD Student. Molecular and Integrative Physiology.
10. Claire Schane (Dec. 2021 – Present). PhD Student. Molecular and Integrative Physiology.
11. Lara Kockaya (Dec. 2022 – Present). PhD Student. Molecular and Integrative Physiology.
12. Yifan Fei (Dec. 2022 – Present). PhD Student. Molecular and Integrative Physiology.

Graduate Student Thesis Committee Member:

1. Xiaobin Zheng (2014 - 2016). Biochemistry. Advisor: David Shapiro. Completed PhD.
2. Kirsten Eckstrum (2015 – 2017). Molecular and Integrative Physiology. Advisor: Lori Raetzman. Completed PhD.
3. Liqun Yu (2015 – 2019). Biochemistry. Advisor: David Shapiro. Current: Postdoctoral Associate at Baylor College of Medicine.
4. Hanna Erickson (2015 – 2019). Molecular and Integrative Physiology. Advisor: Sayeepriyadarshini Anakk.
5. Omid Gholamalamdari (2015 – 2017). Cell and Developmental Biology. Advisor: K.V. Prasanth. (transferred advisors)
6. Ji Eun Kim (2016 –2021). Biochemistry. Advisor: David Shapiro.
7. Bingtao Tang (2017 – 2020). Molecular and Integrative Physiology. Advisor: Edward Roy.
8. Alexander Celeste (2017 – 2020). Division of Nutritional Sciences. Advisor: Kelly Swanson.
9. Tauseef Bashir Shaw (2018 – 2021). Molecular and Integrative Physiology. Advisor: CheMyong Jay Ko.
10. Andrea Corbet (2018 – 2023). Comparative Biosciences, Veterinary Medicine. Advisor: Michael Spinella.
11. Sixian You (2018 – 2019). Bioengineering. Advisor: Stephen Boppart.
12. Ramonasadat Haji Seyed Javadi (2018 – 2019). Molecular and Integrative Physiology. Advisor: Romana A. Nowak. (withdrew from program)
13. Lauren Carnevale (2018 – 2020). Biochemistry. Advisor: Aditi Das.
14. Lawrence Wang (2018 – present, currently in medical school). Biochemistry. Advisor: David Shapiro.
15. Darjan Duraki (2018 – 2021). Biochemistry. Advisor: David Shapiro.
16. Ji Eun Kim (2018 – 2021). Biochemistry. Advisor: David Shapiro.
17. Ashley Warfield Oyirifi (2018 – 2020, currently on leave). Food Science and Human Health. Advisor: William Helferich.
18. Jessica Saw (2018 – 2020). Molecular and Integrative Physiology. Advisors: Johnathon Sweedler and Bruce Fouke.
19. Angela E. Dean (2019 – present). Division of Nutritional Sciences. Advisor: Sayeepriyadarshini Anakk.
20. Ivan Pinos Cabezas (2019 –2022). Division of Nutritional Sciences. Advisor: Jaume Amengual.
21. Hao Sun (2019 – 2022). Molecular and Integrative Physiology. Advisor: Jongsook Kemper.
22. Xiaodin Lin (2019 – present). Biochemistry. Advisor: Susan Martinis.
23. Ye Tian (2019 – present). Comparative Biosciences, Veterinary Medicine. Advisor: Bo Wang.
24. Giyeong (Issac) Kim (2019 – present). Biochemistry. Advisor: Susan Martinis.
25. Santanu Ghosh (2019 – 2022). Biochemistry. Advisor: David Shapiro.
26. Qiuyan Ma (2019 – 2022). Molecular and Integrative Physiology. Advisor: Milan Bagchi.
27. James T. Nguyen (2019 – present). Molecular and Integrative Physiology. Advisor: Sayeepriyadarshini Anakk.

28. Qianying Zuo (2019-2022). Department of Food Sciences and Human Nutrition. Advisor: Zeynep Madak-Erdogan.
29. Jaishree Sharma (2019 – present). Department of Pathobiology, College of Veterinary Medicine. Advisor: Som Nanjappa.
30. Xiyu Ge (2019 – present). Molecular and Integrative Physiology. Advisor: Lori Raetzman.
31. Daphne Eagleman (2019 – 2021). Molecular and Integrative Physiology. Advisor: Nien-Pei Tsai.
32. Yiffei Kang (2019 – present). Division of Nutritional Sciences. Advisor: Kelly Swanson.
33. Teak-Jung (TJ) Oh (2021-present). Department of Biochemistry. Advisor: Dr. Kai Zhang.
34. Wei Lu (2022-present). Department of Comparative Biosciences. Advisor: Dr. Bo Wang.
35. Zhiming Zhao (2022-present). Department of Comparative Biosciences. Advisor: Dr. Bo Wang.
36. Ruicheng Shi (2022-present). Department of Comparative Biosciences. Advisor: Dr. Bo Wang.
37. Ryan Shaw (2022-present). Molecular and Integrative Physiology. Advisor: Sayeepriyadarshini Anakk.
38. Ayça Mogol (2022-present). Department of Food Sciences and Human Nutrition. Advisor: Zeynep Madak-Erdogan.
39. Qinan Hu (2022-present). Department of Comparative Biosciences. Advisor: Huanyu Qiao.
40. Nitish Arun Kulkarni (2023-present). Department of Pathobiology, College of Veterinary Medicine. Advisor: Som Nanjappa.
41. Rimsha Bhatta (2023-pressent). Department of Bioengineering. Advisor: Hua Wang.

Ad Hoc PhD Qualifying Exam Administer:

April, 2015. Molecular and Integrative Physiology.
March, 2019. Molecular and Integrative Physiology
April, 2019. Pin Ren, Physics, Advisor: Paul Selvin.

Undergraduate Students:

1. Ashabari Mukherjee (now Sprenger) (2014 – 2016). MCB290 and MCB492 thesis student. *Recipient of the 2015 MCB Summer Research Opportunities Program* and *Undergraduate Thesis with High Distinction*.
2. Megan L. Robin (2014 – 2015).
3. Mary Kate Feldner (2014 – 2015).
4. Hanna McDowell (2015 – 2018). MCB290 student (2015-2017). MCB 492 Thesis student. *Recipient of: the 2017 MCB Summer Research Opportunities Program, School of Molecular and Cellular Biology High Distinction for Research, and Department of Molecular and Integrative Physiology Howard S. Ducoff Award for Outstanding Senior Thesis.* Currently in Master of Biotechnology program at Northwestern.
5. Abdalah Ismail (2016). MCB290 student.
6. Carly N. Hofreiter (2016 – 2017). MCB290 student.
7. Madeline Henn (2017 - 2019). MCB 290 student (fall 2017, spring 2018)
8. Samuel Cler (2017 – Dec. 2018). MCB 290 student (fall 2017, spring 2018). *Recipient of Endocrine Society 2018 Summer Research Fellowship Award*. Recipient of *School of Molecular and Cellular Biology Summer Undergraduate Research Fellowship* (2018), *Recipient of James Scholar Preble Research Award* (Fall 2017, Spring 2018 and Summer 2018).
9. Anna Vardanyan (2018 – 2019). MCB 290 student (spring 2018)
10. Joy Chen (2018 – 2021). BIOE 297 student (spring 2018). *UIUC Cancer Scholar*, *Illinois Scholars Undergraduate Research (ISUR) Program*.
11. Varsha Vembar (2018 – 2020)
12. Ashley Mathews (2019 – 2020)
13. Chaeyeon Han (2019 – 2020)
14. Karan Menon (2019 – 2020)
15. Srishti Tiwari (2019 – 2022)
16. Michael McHenry (2020 – 2023)
17. Tiffany Ngyuen (2020 – 2023)
18. Mohammed Kadiri (2021 – 2023)

19. Evelyn S Tjoanda (2021 – 2023)
20. Simon Han (2022 – present)
21. Hannah Kim (2022 – present)
22. Bryan Duong (2022 – present)
23. Matt Szlembarski (2022 – present)
24. Basel Hajyousif (2022 – present)
25. Isela Villasenor (2023 – present)
26. Alyssa Michelle Rosenfeld (2023 – 2023)

High School Students:

1. Joy Chen (2017 Summer). *Recipient of ResearcHStart award.*

Technicians:

1. Matthew K. Howe (2009 – 2011). Currently Postdoctoral Associate at the National Institute of Allergy and Infectious Diseases (NIAID), Bethesda, MD.
2. Nicole J. Carver (2011 – 2012). Currently Quality Control Agent, Quintiles Pharmaceutical Company, Raleigh, NC.
3. Ruchita Pillai (2012-2014). Completed Masters Degree, School of Public Health, John Hopkins University, Baltimore, MD.
4. Kathryn Krueger (Klein) (2014 – 2015). Subsequently received MD from University of Pittsburgh. Residency in Neurology (Indiana School of Medicine).
5. Jun Soo (Dan) Park (2015-2016). Currently pursuing Dental School.
6. Priyanka Gokulnath (2016-2016). Currently PhD student at University of Naples, Italy.
7. Savannah Hipkins (2016 – 2017).
8. Madeline Henn (2019 – 2021).
9. Anna Vardanyan (2019 – 2020).
10. Amber (Yu) Wang (2019 – 2020).
11. Bautista Rivas, Rafael Ovidio (2021-2022)
12. Erin Weisser (2022 – Present)

Primary courses Developed and Taught

2007 *Biology 233: Introduction to Plants and Animals*. [University of Calgary]
Session instructor
Lesson planned and delivered animal biology lectures for introductory Biology course

2016 – 2021 *MCB 529: Topics in Health and Disease.* [University of Illinois]
Co-developed and co-taught with Dr. Nien-Pei Tsai
This course explores recent advances and current challenges in the fields of health and disease. Critical assessment of journal articles and introduction to modern experimental techniques feature prominently. The format of this course is largely guided-discussion, but it is interspersed with lectures and student presentations. Perhaps unique to this course, is the fact that topics are chosen based on the requests of the students.
2 credit hours.
Awarded List of Teachers Ranked Excellent By Their Students four of five years offered (2016, 2017, 2018, 2020).

2017-2019 Co-Advisor, Development of Senior Level Physiology Laboratory Course. [University of Illinois]
Leadership role in the development of a new senior level laboratory course in physiology. University of Illinois at Urbana-Champaign.

2020 Course development and coordinator for Osher Lifelong Learning Institute:
The Genome and Health

8 part series delivered to member-centered community of adult learners

2016 – now *MCB 402: Systems and Integrative Physiology*. [University of Illinois]
Co-taught with Dr. Nien-Pei Tsai
Examines human systems physiology. Topics covered include the nervous and endocrine systems, muscle physiology, cardiac physiology, respiratory physiology, blood and immune homeostasis, renal physiology, and gastrointestinal physiology and energy homeostasis. Special emphasis is on homeostatic control and integration of body systems in both health and disease.
Redeveloped and modernized from previous iterations delivered before 2016.
Grew enrolment from 44 in 2016 to 172 in 2021.
Consistently positive feedback from students.
Case studies and interactive sessions are interwoven into standard lectures.
3 credit hours.
Awarded List of Teachers Ranked Excellent By Their Students (2022).

2022 – now MCB466: *Pharmacology.* [University of Illinois]
Co-developed and co-taught with Dr. Nien-Pei Tsai
Introduction to fundamental principles of pharmacology that provides a comprehensive understanding of the principles and concepts applied to modern pharmacology, including pharmacokinetics, pharmacodynamics, neuropharmacology, toxicology, drug development and clinical trials, and drugs targeting various diseases. Emphasis is placed on the mechanisms of action. The course will cover several classes of drugs, including anti-infective agents, autonomic/central nervous system modulators, neuropharmacology, anti-cancer therapeutics and drugs targeting the major organ systems of the body.
Course is delivered In an active learning style with case studies and discussion interspersed throughout,
3 credit hours

Guest Lectures in University Courses

2004 Instructor, Biological Sciences, University of Calgary.
Produced and delivered lectures for Endocrinology and Signal Transduction in a senior undergraduate physiology course (Zoology 461).

2004-2005 Instructor, Biological Sciences, University of Calgary.
Guest-lectured in a cellular biology undergraduate course covering Signal Transduction material (Biology 331).

2015, 16, 17 Mock Study Section Reviewer, University of Illinois,
Participated in a mock study section for a senior level cancer nano-technology bioengineering course (BIOE 479).

2017 Instructor, T32 Tissue Microenvironment Training Program, University of Illinois.
Developed and delivered two lectures to graduate students enrolled in the T32 training program. Lectures on “Cancer Metabolism” and “Endocrine and Paracrine Regulation of the Tissue Microenvironment.”

2018 Instructor, T32 Developmental and Reproductive Toxicology, University of Illinois.
Developed and delivered a lecture for graduate students enrolled in Comparative Biosciences 516. Lecture covered material on “Mammary Gland Development and Cancer.”

2019 Instructor, Introduction to BioEngineering, University of Illinois.

Delivered lecture on grand challenges facing cancer biology and treatment to this introductory undergraduate course (BIOE 120).

2021, 2023 Instructor, Cancer Biology
Developed and delivered a lecture for MCB 400, Cancer Biology. Lecture covered breast cancer, hormone receptors and therapy. University of Illinois at Urbana-Champaign.

2022 Instructor, Tissue Microenvironment Training Grant
Developed and delivered a lecture for covering breast cancer, hormone receptors and therapy. University of Illinois at Urbana-Champaign

Other Outreach

2003-2008 **Mentor, Biological Sciences, University of Calgary.**
Trained and supervised several undergraduate project students, graduate students, post-doctoral associates and visiting scientists.

2003 **Leader, University of Calgary.**
Volunteered at University of Calgary Open House, taking electro-cardiograms of participants.

2003 **Instructor, St. Francis Senior High School.**
Presented special lecture to a grade 12 biology classes with an emphasis on chemicals that disrupt our hormone system.

2004 **Mentor, Biological Sciences, University of Calgary.**
Introduced a High School Student to “A day in the life of a Molecular Biologist,” including job-shadowing and hands on experiments.

2004-2006 **Instructor, Let’s Talk Science.**
Volunteered as an instructor and supervisor for a national outreach program aimed at introducing High School students to molecular biology laboratory techniques through hands on experience.

2004-2007 **Teaching Assistant Mentor, Biological Sciences, University of Calgary.**
Mentored, Lectured and discussed teaching methods at the Biological Sciences Teaching Assistant Workshops.

2002-2008 **Teaching Assistant, Biological Sciences, University of Calgary.**
Lesson planned, supervised, and taught laboratory sections in undergraduate Human Physiology (Zoology 361/363, ~70 students per semester) or Animal Physiology (Zoology 461/463, ~40 students per semester) courses.

2009-2013 **Judge, Duke School Science Olympiad.**
Volunteer judge and scorekeeper for this annual event.

2009-2013 **Mentor, Duke University.**
Trained, supervised and mentored several technicians, graduate students and post-doctoral associates.

2015-2016 **Science Fair Judge, Next Generation School.**
Lead judge in an intramural science fair at a regional primary and middle school.

2015 **Roundtable Discussion Leader**.

Lead a discussion about obesity, cholesterol and breast cancer to a group of senior undergraduate and graduate students, after I delivered a departmental seminar on my latest research.

2015 **Roundtable Discussion Leader**.
Lead a discussion about breast cancer, endocrinology and careers in science to a group of graduate students and postdoctoral associates in the Department of Physiology and Biophysics at the University of Illinois at Chicago.

2015 **Roundtable Discussion Leader**.
Lead a discussion about obesity, cholesterol and breast cancer to a group of senior undergraduate students at Wabash College.

2016 **Platform Party: Reader for Bachelor's Recipients.**
School of Molecular and Cellular Biology Convocation.

2016 **Roundtable Discussion Leader**.
Lead a discussion about breast cancer, endocrinology and careers in science to a group of graduate students and postdoctoral associates in the Molecular Metabolism and Nutrition Program at the University of Chicago.

2016 **Workshop on Breast and Cervical Health.**
An interactive session where students can engage in a dialogue around breast and cervical cancer health issues. The Woman's Resources Center, Office of Inclusion and Intercultural Relations. University of Illinois at Urbana-Champaign.

2017 **Invited Presenter at "Jumpstart to the Faculty Job Search"**
Workshop hosted by the Office of Postdoctoral Affairs at the Indiana University School of Medicine.

2018 **Facilitator, McBees Journal Club**
Lead discussion on a recent manuscript of my choosing to the MCB Graduate Student Association (McBees). University of Illinois at Urbana-Champaign.

2018 **Research Panel Member, Bioscience Journal Club**
Led discussion on our research, faculty life and what it is to be a scientist to a group of undergraduate students. University of Illinois at Urbana-Champaign.

2018 **Participant on MCB Undergraduate Research Video**
Interviewed and involved lab members for the generation of a promotional video highlighting undergraduate research in MCB.

2018 **MCB Undergraduate New Student Welcome Event**
Interacted with the incoming class of MCB undergraduates, describing research within the department of Molecular and Integrative Physiology.

2019 **Faculty Leader, EndoCareers Early Career Forum**
Delivered workshop entitled "Practical Tips to Consider for Early Career Scientists: Funding Basic/Clinical/Tracnslational Research," and interacted with participants throughout the EndoCareers® Early Career Forum, a day-long conference hosted by the Endocrine Society, before the annual conference (ENDO2019).

2019 **Faculty Leader, Institute for Genomic Biology Postdoctoral Association Workshop on Faculty Job Search**

Delivered workshops on the academic job search: Session 1: Tips and Tools for the Next Steps: How to assemble an academic job application package Session 2: Tips and Tools for the Next Steps: Dos and Don’ts during an academic interview, and the art of a successful job talk.

2016-2023 **Faculty Leader, EndoCareers Early Career Forum**
Delivered workshop entitled “Tips and Tools for the Next Steps: CV, Interviewing and Job Seminars.” And interacted with participants throughout the EndoCareers® Early Career Forum, a day-long conference hosted by the Endocrine Society, before the annual conference (ENDO 2016, ENDO 2017, ENDO2018 and ENDO2019. COVID-related cancelation for ENDO2020. ENDO2021 was virtual, and program was spread out over 3 Saturdays in June 2021).

2020-2023 **Trainee and Career Development Core Committee, The Endocrine Society**
Develop and deliver programing for trainees in the field of Endocrinology.

Curriculum Vitae

LORI RAETZMAN

University of Illinois at Urbana Champaign
Department of Molecular and Integrative Physiology
Neuroscience Program
Interdisciplinary Environmental Toxicology Program
Affiliate, Institute for Genomic Biology
524 Burrill Hall
407 S. Goodwin Avenue
Urbana, Illinois 61801
phone: (217) 244-6233
fax: (217) 333-1133
e-mail: raetzman@illinois.edu

EDUCATION

2000	Ph.D., Neurosciences, Case Western Reserve University, Cleveland, OH Dr. Ruth E. Siegel, advisor
1994	B.A., Psychobiology (*Summa Cum Laude*), Ripon College, Ripon, WI

POSTDOCTORAL TRAINING AND PROFESSIONAL EMPLOYMENT

2000	Postdoctoral research fellow, Pharmacology/Endocrinology, Case Western Reserve University, Drs John Nilson and Ruth Keri, advisors
2000-2004	Postdoctoral research fellow, Human Genetics, University of Michigan Dr. Sally A. Camper, advisor
2003	Microinjection training class, Transgenic Animal Model Core, University of Michigan
2004-2005	Research Investigator, Human Genetics, University of Michigan Dr. Sally A. Camper, advisor
2005-2012	Assistant Professor, Molecular and Integrative Physiology and Neuroscience Program, University of Illinois at Urbana Champaign
2012-	Associate Professor, Molecular and Integrative Physiology and Neuroscience Program, University of Illinois at Urbana Champaign
2016-	Affiliate, Institute for Genomic Biology, University of Illinois at Urbana Champaign

SCIENTIFIC ACTIVITIES

Grant Review

2002-2003	Ad hoc reviewer NSF
2011	Lalor Foundation postdoctoral fellowship selection committee
2015	NIH MCE study section Ad Hoc member
2015	Ad hoc grant reviewer, Fondation pour la Recherche Médicale, France
2016	Ad hoc grant reviewer, Medical Research Council, UK

2017 NIH Study Section, Developmental Biology Subcommittee Ad Hoc
2018 NIH Study Section, NICHD Special Emphasis Panel, P50 review
2019 Ad hoc grant review: MRC, UK; National Science Foundation; Research Board, University of Illinois

Journal Review and Editorial Boards

2005 Ad hoc reviewer for Frontiers in Bioscience
2008 Ad hoc reviewer for Expert Review of Endocrinology and Metabolism, Biology of Reproduction
2009 Ad hoc reviewer for Pediatric Endocrine Reviews, PLOS One, General and Comparative Endocrinology
2009-2013 Editorial Board, Biology of Reproduction
2012-2016 Editorial Board, Molecular Endocrinology
2013-2017 Editorial Board, Endocrinology
2017-now Editorial Board, Biology of Reproduction
2018-2020 Associate Editor, Reproduction
2019-now Editorial Board, Toxicological Sciences
2022-now Editorial Board, Molecular and Cellular Endocrinology

Scientific Societies

2001-2005 Member, Society for Developmental Biology
2001-now Member, The Endocrine Society
2008-now Member, Society for the Study of Reproduction (SSR)
2005 Ad hoc abstract reviewer for the Society for the Study of Reproduction
2009, 2010 Session Chair, SSR annual meeting
2014, 2016 Session Chair, SSR annual meeting
2009-2012, 2016 Program Committee for SSR annual meeting
2009-now FASEB Training Subcommittee, SSR representative
2011-2016 Women in Endocrinology, communications committee; **Chair** 2014-16
2012-2020 Trainee and Career Development Core Committee, Endocrine Society; **Chair** 2016-2020
2013-2016 Awards committee, SSR
2013-2015 Endocrine Press Task Force, Endocrine Society
2014-2015 Next Generation Task Force, Endocrine Society
2014-now Member, Society of Toxicology
2014-now Member, Women in Toxicology
2015, 2017 FLARE speaker, Endocrine Society
2016 Endocrine Society Early Career Forum Speaker
2017 Session Chair, Endocrine Society annual meeting
2018-2021 Women in Endocrinology, awards committee; **Chair** 2019-2021
2018-2020 Endocrine Society Council (Governing Board)
2019-2021 Publications Committee, Society for the Study of Reproduction
2020 Endocrinology Editor in Chief Search Committee, Endocrine Society
2020-now Research Affairs Core Committee, Endocrine Society
2020 Session Chair, Endocrine Society annual meeting
2021-2022 Vice **Chair**, Training and Career Opportunities Subcommittee, FASEB

2022-now **Chair**, Training and Career Opportunities Subcommittee, FASEB
2022-2023 Vice **Chair**, Early Career Representative Engagement Task Force, FASEB
2022-now Basic Science **Chair**, Research Affairs Core Committee, Endocrine Society
2022 Session chair, Endocrine Society annual meeting, also 2023, 2024

GRANT SUPPORT

1993 Summer undergraduate research fellowship, Mayo Clinic, Rochester, MN
Dr. J. F. Poduslo, advisor
1995-1998 NIH predoctoral trainee T32NS07118 (Neurosciences)
2000-2001 NIH postdoctoral trainee T32DK07245 (Endocrinology and Metabolism)
2001-2003 NIH individual postdoctoral fellowship F32DK60306 (NRSA)
2004-2005 Michigan Gastrointestinal Peptide Research Center Pilot Feasibility Project Grant P30DK034933 (Raetzman, P.I.)
2007-2018 NIH grant R01DK076647 (Raetzman, P.I.)
2011-2013 NIH grant R21HD068989 (Hofmann, P.I., Raetzman co-I)
2011-2016 NIH grant F30DK091992 (Individual NRSA to Paven Aujla, Raetzman, mentor)
2012-2013 University of Illinois Research Board Award #12174
2013-2016 Botanical Research Center Pilot Project NIH grant P50AT006268
2015-2018 NIH grant F30DK105760 (Individual NRSA to Matthew Biehl, Raetzman, mentor)
2017-2019 University of Illinois Research Board Award #18009
2018-2020 NIH grant R21ES028963 (Flaws, P.I., Raetzman co-I)
2019-2024 NIH grant R01ES029464 (Gore, P.I., Raetzman co-I)
2018-2023 NIH grant R01NS105825 (Christian-Hinman, P.I., Raetzman co-I)
2022-2023 University of Illinois Research Board Award #22092
2022- NIH grant R01ES034112 (Raetzman co-PI, Flaws, Nowak, co-PIs)
2023- NIH grant R01HD108156 (Raetzman co-PI, Camper, Davis, Ellsworth, co-PIs)

HONORS AND AWARDS

1990-1994 Distinguished Honor Scholarship, Ripon College
1993-1994 Academic Honor societies: Phi Beta Kappa (national), The Laurel Society (Ripon College), Beta, Beta, Beta (biology), Psi Chi (psychology)
2001 Travel Grant for Endocrine Society Meeting
2003 Travel Grant for the International Mouse Genome Conference
2007 Travel Grant for Endocrine Society Meeting
2010 James Heath Award for Excellence in Teaching MIP, UIUC
2012 Anita Payne Lecture at the Society for the Study of Reproduction Annual Meeting
2013 Molecular Endocrinology Outstanding Reviewer
2015 Outstanding Advisor Award, Medical Scholars Program, UIUC
2017 Arnold O Beckman Award, University of Illinois Research Board
2018 Faculty Recognition Award, Neuroscience Program, UIUC
2019 Teaching Excellence Award, UIUC School of Molecular and Cellular Biology
2019 Service Excellence Award, UIUC School of Molecular and Cellular Biology

TEACHING ACTIVITIES

1992-1994 Educational Development Program tutor: biology, chemistry, statistics, Ripon College

1993-1994 Teaching Assistant, Ripon College, biology laboratory
2002 Guest lecturer Human Genetics 803, University of Michigan
2003 Guest lecturer Human Genetics 541, University of Michigan
2005-2011 Guest lecturer Molecular and Integrative Physiology 509, UIUC
2006-2011 Guest lecturer MCB 199C, UIUC
2007-2012 Primary instructor MCB 481, Developmental Neurobiology, UIUC
-ranked as excellent all years taught
2008 Guest lecturer MCB 413, Endocrinology, UIUC
2010 Primary instructor MCB 595/ANSCI 595, Reproductive Biology Seminar Series, UIUC
2012 Primary instructor CB 596/ENVS 596, Toxicology Seminar Series
2013-now Guest lecturer CB 454, Systems Toxicology, UIUC
2013-2015 Course Coordinator, Instructor MCB 402, Systems Physiology, UIUC
2013-now Course Coordinator, Instructor MCB 413, Endocrinology, UIUC
-ranked as excellent all years taught
2014-2016 Instructor MCB 180, Human Reproduction and Society, UIUC
-ranked as excellent all years taught
2015-now Guest lecturer, CB 514 NeuroToxicology, UIUC
2016-2021 Guest lecturer NEUR 543 Neuroscience Program Core Course, UIUC
2016-now Guest lecturer, CB 516 Developmental and Reproductive Toxicology, UIUC
2016- now Guest lecturer, Ethics in Toxicology, UIUC
2016 Primary instructor CB 596/ENVS 596, Toxicology Seminar Series
2016-2018 Instructor MCB 509, Frontiers in Physiology, UIUC
2018-now Instructor MCB 580, Ethics, UIUC
-ranked as excellent 2020, 2021, 2022

UNIVERSITY SERVICE

2005-2007 Transgenic Animal Facility planning committee, UIUC
2006-2007 Microscopy Facility planning committee, MCB, UIUC
2006-2008 Director of Graduate Studies, MIP, UIUC
2006-2018 Graduate Admissions /Graduate Program Committee, MIP/MCB, UIUC
2006-2009 MIP Departmental Retreat Coordinator, UIUC
2008-2009 MCB Imaging Facility Oversight Committee, UIUC
2008-2009 Neuroscience Program Executive Committee, UIUC
2009 Neuroscience Program Prosser Award Committee
2009, 2010 Undergrad Research Workshop Speaker, UIUC
2010-2012 Neuroscience Program Seminar Committee, UIUC
2012-2015 Medical Scholars Program Admissions Committee, UIUC
2013-2017 Promotion and Tenure Committee, MCB, UIUC
2013-2017 Courses and Curriculum Committee, MCB, UIUC
2013-now Toxicology Training Program Executive Committee, UIUC
2014-2015 Neuroscience Program Seminar Committee Chair, UIUC
2014-2015 AIDE Committee, Graduate College, UIUC
2015 Medical Scholars Program Coordinator Search Committee, UIUC
2015-now Molecular and Integrative Physiology Head Advisory Committee, MCB
2015-2018 Neuroscience Program Executive Committee, UIUC

2017-2019 Graduate College Executive Committee, UIUC
Program sub-committee chair
Diversity council member
Gonfalon carrier, Winter and Spring graduations
2017-2018 Awards Committee, LAS, UIUC
2017 Campus Award Review: Searle Scholars, Camille Dreyfus Teacher Scholar pre proposals, Moore Inventor Fellows
2018 Awards Committee, MCB, UIUC
2018-2020 Courses and Curriculum Committee, LAS, UIUC
2019-now Associate Head, MIP, UIUC
2019-2023 Director of Graduate Studies, MIP, UIUC
2019-now Distinction Committee, MCB, UIUC
2020 5 Year Review Committee, Dean of the Graduate College, UIUC
2020-2021 Faculty Senate Education Policy Committee, UIUC
2020-2021 Neuroscience Program Seminar Committee, UIUC
2020-2021 Neuroscience Program Admissions Committee, UIUC
2022 5 Year Review Committee, Director of the School of MCB, UIUC
2022-now Neuroscience Program Diversity, Equity and Inclusion Committee, UIUC
2023-now Associate Director of the Graduate Program, MCB, UIUC
2023-now Courses and Curriculum Committee ex officio, MCB, UIUC
2023-now Graduate Student Wellbeing Working Group, Graduate College, UIUC
2023-now Graduate College Mentoring Advisory Group, Graduate College, UIUC

COMMUNITY SERVICE

2002 Whitmore Lake high school career fair, Whitmore Lake, MI
2002 Hosted high school student from Pepper Pike, OH for career exploration program
2006 Brain Awareness Day Build a Neuron booth, Champaign-Urbana, IL
2007 South Side Elementary Wellness Fair- Importance of Sleep, Champaign, IL
2007-2013 Brain Awareness Day Sleepy Brain booth, Champaign-Urbana, IL
2009 Science Fair Judge, Campus Middle School for Girls, Urbana, IL
2010 SSR Outreach Day Lab Director, Milwaukee, WI
2019 Researcher Hill Day, Endocrine Society, Washington DC
2021 Virtual Researcher Hill Day, Endocrine Society, Washington DC

BIBLIOGRAPHY

Peer Reviewed Publications

1. Nadler, L.S., **Raetzman**, L.T., Dunkle, K.L., Mueller, N., and Siegel, R.E. (1996). $GABA_A$ receptor subunit expression and assembly in cultured rat cerebellar granule neurons. Dev. Brain Res. 97, 216-225.

2. **Raetzman**, L.T. and Siegel, R.E. (1999). Immature cerebellar granule neurons exhibit different developmental potentials in culture. J. Neurobiol. 38, 559-570.

3. Rieff, H.I., **Raetzman**, L.T., Siegel, R.E., and Corfas, G. (1999). Neuregulins induce neurite extension and $GABA_A$ receptor expression in cerebellar granule neurons. J. Neurosci. 19, 10757-10766.

4. Cushman, L.C., Watkins-Chow, D.E., Brinkmeier, M. L., **Raetzman**, L.T., Radak, A.L., Lloyd, R.V., and Camper, S.A. (2001). Persistent *Prop1* expression delays gonadotrope differentiation and enhances pituitary tumor susceptibility. Hum. Mol. Genetics, 10, 1-13.

5. **Raetzman**, L. T., Ward, R. D., and Camper, S.A. (2002). *Lhx4* and *Prop1* are required for cell survival and expansion of the pituitary primordium. Development, 129, 4229-4239.

6. **Raetzman**, L.T., Ross S.A., Cook S., Dunwoodie, S.L., Camper, S.A. and Thomas P.Q. (2004). Developmental regulation of Notch signaling genes in the embryonic pituitary: *Notch2* is a target of *Prop1*. Dev. Biol., 265, 329-340.

7. Xie F., **Raetzman,** L.T., and Siegel, R.E. (2004). Neuregulin induces GABA receptor beta subunit expression in cultured rat cerebellar granule neurons by activating multiple signaling pathways. J. Neurochem., 90, 1521-1529.

8. Nasonkin I.O., Ward R.D., **Raetzman** L.T., Seasholtz A.F., Saunders T.L., Gillespie P., and Camper S.A. (2004). Pituitary hypoplasia and respiratory distress syndrome in *Prop1* knockout mice. Hum. Mol. Genetics, 13, 1-9.

9. Ward R.D., **Raetzman** L.T., Suh H., Stone B., Nasonkin I. O., and Camper S.A. (2005). Role of PROP1 in pituitary gland growth. Mol. Endocrinol, 19, 698-710.

10. Vesper A., **Raetzman** L.T., and Camper S.A. (2006). Role of prophet of Pit1 (PROP1) in gonadotrope differentiation and puberty. Endocrinology, 147, 1654-63.

11. Ward R.D., Stone B.M., **Raetzman** L.T., and Camper S.A. (2006). Cell proliferation and vascularization in mouse models of pituitary hormone deficiency. Mol. Endocrinol, 20, 1378-90.

12. **Raetzman** L.T., Wheeler B.S., Ross S.A., Thomas P.Q., and Camper S.A. (2006). Persistent *Notch2* expression delays gonadotrope differentiation. Mol. Endocrinol, 20, 2898-2908.

13. **Raetzman** L.T., Cai, J.X., and Camper S.A. (2007). *Hes1* is required for pituitary growth and melanotrope specification. Dev. Biol., 304, 255-66. PMCID: PMC1913046

14. Ward R.D. Davis S.W., Cho M., Esposito C., Lyons R.H., Cheng J.-F., Rubin E.M., Rhodes S.J., **Raetzman** L.T., Smith T.P.L., and Camper S.A. (2007). Comparative genomics reveals functional transcriptional control sequences in the *Prop1* gene. Mamm. Genome,18, 521-37. PMCID: PMC1998882

15. Schultz-Norton J.R., Walt K.A., Ziegler Y.S., McLeod I.X., Yates J.R., **Raetzman** L.T., and Nardulli A.M. (2007). The DNA Repair Protein Flap Endonuclease-1 (FEN-1) Modulates estrogen-responsive gene expression. Mol. Endocrinol., 21, 1569-80.

16. Tang H., Brennan J., Karl J., Hamada Y., **Raetzman** L., and Capel B. (2008). Notch signaling maintains Leydig progenitor cells in the mouse testis. Development, 135, 3745-53.

17. Himes A.D. and **Raetzman** L.T. (2009). Premature differentiation and aberrant movement of pituitary cells lacking both *Hes1* and *Prop1.* Dev. Biol., 325, 151-161. PMCID: PMC2642967

18. Monahan P., Rybak S., and **Raetzman** L.T. (2009). The Notch target gene HES1 regulates cell cycle inhibitor expression in the developing pituitary. Endocrinol., 150, 4386-4394. PMCID: PMC2736073

19. Moran T.B., Goldberg L.B., Serviss, S., and **Raetzman** L.T. (2011). Numb deletion in POMC expressing cells impairs pituitary intermediate lobe cell adhesion, progenitor cell localization, and neuro-intermediate lobe boundary formation. Mol. Endocrinol., 25, 117-27. PMCID: PMC3033053. *Featured in Endocrine News.

20. Himes A.D., Fiddler R., and **Raetzman** L.T. (2011). N-cadherin loss in POMC expressing cells leads to pituitary disorganization. Mol. Endocrinol., 25, 482-91. PMCID: PMC3045739. *Featured on the cover.

21. Aujla P.K., Bora A., Monahan P., Sweedler J.V., and **Raetzman** L.T. (2011). The Notch effector gene Hes1 regulates migration of hypothalamic neurons, neuropeptide content and axon targeting to the pituitary. Dev. Biol. 353, 61-71. PMCID: PMC3077720.

22. Goldberg L.B., Aujla P.K., and **Raetzman** L.T. (2011). Persistent expression of activated Notch inhibits corticotrope and melanotrope differentiation and results in dysfunction of the HPA axis. Dev. Biol. 358, 23-32. PMCID: PMC3171600

23. Monahan P., Himes A.D., Parfieniuk A., and **Raetzman** L.T. (2012). P21, an important mediator of quiescence during pituitary tumor formation, is dispensable for normal pituitary development. Mech. Dev., 128, 640-52. PMCID: PMC3295866.

24. Moran T.B., Brannick K.E., and **Raetzman** L.T. (2012). Aryl hydrocarbon receptor activity modulates prolactin expression in the pituitary. Toxicol. Appl. Pharmacol., 265, 139-45. PMCID: PMC3489979.

25. Brannick K.E., Craig Z.R., Himes A.D., Peretz J.R., Wang W., Flaws J.A., and

Raetzman L.T. (2012). Prenatal exposure to low doses of bisphenol A increases pituitary proliferation and gonadotroph number in female offspring at birth. Biol. Reprod. 87, 82, 1-10. PMCID: PMC3507543.

26. Gal A., **Raetzman** L.T., and Singh K. (2012). Congenital adenohypophyseal hypoplasia associated with secondary hypothyroidism in a 2-week-old Portuguese water dog. Can. Vet. J. 53, 659-64. PMCID: PMC3354827.

27. Aujla P.K., Naratadam G.T., Xu L., and **Raetzman** L.T. (2013). Notch/Rbpjk signaling regulates progenitor maintenance and differentiation of hypothalamic arcuate neurons. Development, 140, 3511-21. PMCID: PMC3742139.

28. Nantie L.B., Himes A.D., Getz D.R., and **Raetzman** L.T. (2014). Notch signaling in postnatal pituitary expansion: proliferation, progenitors and cell specification. Mol. Endocrinol., 28, 731-44. PMCID: PMC4004773.

29. Aujla P.K., Bogdanovic V., Naratadam G.T., and **Raetzman** L.T. (2015). Persistent expression of activated Notch in the developing hypothalamus affects survival of pituitary progenitors and alters pituitary structure. Dev. Dyn., 244: 921-34. PMCID: PMC4520742.

30. Biehl M.J. and **Raetzman** L.T. (2015). Rbpj-κ mediated Notch signaling plays a critical role in development of hypothalamic Kisspeptin neurons Dev. Biol., 406:235-46. PMCID: PMC4639411.

31. Eckstrum K.S., Weis K.E., Baur N.G, Yoshihara Y., and **Raetzman** L.T. (2016). Icam5 expression exhibits sex differences in the neonatal pituitary and is regulated by estradiol and bisphenol A. Endocrinol., 157, 1408-20. PMCID: PMC4816737.

32. Kapali J., Kabat B.E., Schmidt K.L., Stallings C.E., Tippy M., Jung D.O., Edwards B.S., Nantie L.B., **Raetzman** L.T., Navratil A.M., Ellsworth B.S. (2016). Foxo1 is required for somatotrope differentiation. Endocrinol., 157, 4351-4363. PMCID: PMC5086538.

33. Weis K.E. and **Raetzman** L.T. (2016). Isoliquirtigenin exhibits anti-proliferative properties in the pituitary independent of estrogen receptor function. Toxicol. Appl. Pharmacol., 313, 204-214. PMC-in process.

34. Edwards W., Nantie L.B., and **Raetzman** L.T. (2016). Identification of a novel progenitor cell marker, grainyhead-like 2 in the developing pituitary. Dev. Dyn., 245, 1097-1106. PMCID: PMC5065389.

35. Eckstrum K.S., Edwards W., Banerjee A., Wang W., Flaws J.A., Katzenellenbogen

J.A., Kim S.H., **Raetzman** L.T. (2018). Effects of exposure to the endocrine-disrupting chemical bisphenol A during critical windows of murine pituitary development. Endocrinol., 159, 119-131. PMCID: PMC5761589.

36. Hekman J.P., Johnson J.L., Edwards W., Vladimirova A.V., Gulevich R.G., Ford A.L., Kharlamova A.V., Herbeck Y., Acland G.M., **Raetzman** L.T., Trut L.N., Kukekova A.V. (2018). Anterior pituitary transcriptome suggests differences in ACTH release in tame and aggressive foxes. G3 8, 859-873. PMCID: PMC5844307.

37. Hankosky E., Westbrook S., Haake R., Willing J., **Raetzman** L., Juraska J., Gulley J. (2018). Age- and sex-dependent effects of methamphetamine on cognitive flexibility and 5-HT2C receptor localization in the orbitofrontal cortex of Sprague-Dawley rates. Behav. Brain Res., 349:16-24. PMCID: PMC5993671.

38. Biehl M.J., Kaylan K.B., Thompson R.J., Gonzalez R.V., Weis K.E., Underhill GH, **Raetzman** LT. (2018). Cellular fate decisions in the developing female anteroventral periventricular nucleus are regulated by canonical Notch signaling. Dev Biol., 442, 87-100. PMCID: PMC6138519.

39. Kaylan K.B., Berg I.C., Biehl M.J., Brougham-Cook A., Jain I., Jamil S.M., Sargeant L.H., Cornell N.J., **Raetzman** L.T., Underhill G.H. (2018). Spatial patterning of liver progenitor cell differentiation mediated by cellular contractility and Notch signaling. Elife, pii: e38536. PMCID: PMC6342520.

40. Weis K.E. and **Raetzman** L.T. (2019). Genistein inhibits proliferation and induces senescence in neonatal mouse pituitary gland explant cultures. Toxicology, Nov 1; 427:152306. PMCID: PMC6913926.

41. Gonzalez R.V.L., Weis K.E., Gonsioroski A.V., Flaws J.A., and **Raetzman** L.T. (2021). Iodoacetic acid, as water disinfection byproduct, disrupts hypothalamic and pituitary reproductive regulatory factors and induces toxicity in the female pituitary. Toxicol Sci., Oct 27;184(1):46-56. PMID: 34453833; PMCID: PMC8557421.

42. Ge X., Weis K.E., Flaws J.A. and **Raetzman** L.T. (2022). Prenatal exposure to the phthalate DEHP impacts reproduction-related gene expression in the pituitary. Repro Tox., Mar;108:18-27. PMID: 34954075; PMCID: PMC8882145.

43. Cutia C.A., Leverton L.K., Ge X., Youssef R., **Raetzman** L.T. and Christian-Hinman C.A. (2022). Phenotypic differences based on lateralization of intrahippocampal kainic acid injection in female mice. Exp Neurol., Sep;355:114118. PMID: 35597270; PCMID in process.

44. Cutia C.A., Leverton L.K., Weis K.E., **Raetzman** L.T. and Christian-Hinman

C.A. (2023). Female-specific pituitary gonadotrope dysregulation in mice with chronic focal epilepsy. Exp Neurol., Mar 28;364:114389. PMID: 36990138; PMCID: PMC10149611.

45. Weis K.E., Thompson L.M., Streifer M., Guardado I., Flaws J.A., Gore A.C. and **Raetzman** L.T. (2023). Pre- and postnatal exposure to the polychlorinated biphenyl mixture Aroclor 1221 alters female rat pituitary gonadotropins and estrogen receptor alpha levels. Reprod Toxicol., Jun;118.108388. PMID 37127253. PMCID: PMC10228234.

46. De La Torre KM, Lee Y, Safar A, Laws MJ, Meling DD, Thompson LM, Streifer M, Weis KE, **Raetzman** LT, Gore AC, and Flaws JA. (2023). Prenatal and postnatal exposure to polychlorinated biphenyls alter follicle numbers, gene expression, and a proliferation marker in the rat ovary. Reprod Toxicol., Sep;120:108427. PMID: 37400041. PMCID: PMC10528725.

47. Ho KKY, Kaiser UB, Chanson P, Gadelha M, Wass J, Nieman L, Little A, Aghi MK, **Raetzman** L, Post K, Raverot G, Borowsky AD, Erickson D, Castaño JP, Laws ER, Zatelli MC, Sisco J, Esserman L, Yuen KCJ, Reincke M, Melmed S. (2023). Pituitary adenoma or neuroendocrine tumour: the need for an integrated prognostic classification. Nat Rev Endocrinol., Aug 17. PMID: 37592077.

48. Gonigam RL, Weis KE, Ge X, Yao B, Zhang Q, **Raetzman** LT. (2023). Characterization of Somatotrope Cell Expansion in Response to GHRH in the Neonatal Mouse Pituitary. Endocrinology, Aug 28;164(10). PMID: 37616545.

49. Santacruz-Márquez R, Safar AM, Laws MJ, Meling DD, Liu Z, Kumar TR, Nowak RA, **Raetzman** LT, Flaws JA. (2023). The effects of short-term and long-term phthalate exposures on ovarian follicle growth dynamics and hormone levels in female mice. Biol Reprod., Oct 9:ioad137. PMID: 37812459.

Review Articles

1. **Raetzman** LT, Camper SA. (2003) Beyond big and small mice: applications of mouse molecular genetics in endocrinology. TIEM, 14, 204-205. (book review).

2. Geffner ME, Demay M, **Raetzman** L, Holm I, Diamanti-Kandarakis E, Savage MO, Francis G, Rogol AD. (2008). The 88th Annual Meeting of the Endocrine Society, June 24-27, 2006, Boston MA, USA: selected pediatric presentations. Pediatr. Endocrinol. Rev., 5, 789-95.

3. Davis S.W., Castinetti F., Carvalho L.R., Ellsworth B.S., Potok M.A., Lyons R.H., Brinkmeier M.L., **Raetzman** L.T., Carninci P., Mortensen A.H., Hayashizaki Y., Arnhold I.J., Mendonça B.B., Brue T., Camper S.A. (2010). Molecular Mechanisms of pituitary organogenesis: In search of novel regulatory genes. Mol Cell Endocrinol., 323, 4-19. PMCID: PMC2909473

4. Biehl M.J. and **Raetzman** L.T. (2017). Developmental Origins of Hypothalamic Cells Controlling Reproduction. Semin. Reprod. Med., 35, 121-129.

5. Edwards W.E. and **Raetzman** L.T. (2018). Pituitary stem cell differentiation: a coordination of intrinsic and peripheral signaling. Biol Reprod. 99, 504-513.

6. Barbosa K.L., Dettogni R.S., Costa C.S., Gastal E.L., Raetzman L.T., Flaws J.A., Graceli J.B. (2021). Tributyltin and the female hypothalamic-pituitary-gonadal disruption. Toxicol Sci. Mar 28;186(2):179-189.

Chapters in books

1. Camper S., Suh H., **Raetzman** L., Douglas K., Cushman L, Nasonkin I., Burrows H., Gage P., Martin D. (2002) Pituitary Gland Development in "Mouse development patterning, morphogenesis, and organogenesis." Rossant J. and Tam P.P.L. eds. Academic Press, New York, pp. 499-518.
2. Eckstrum K.E. and **Raetzman** L.T. (2018). Gonadotropin Receptors in “Encyclopedia of Reproduction” Spencer T.E. and Flaws J.A. section eds. Elsevier.

PRESENTATIONS

Raetzman, L.T., Mayer, C., and Siegel, R.E. (1997). Immature cerebellar granule neurons in culture express $GABA_A$ receptor subunit mRNAs in mature patterns. Soc. Neurosci. Abstr. 23:1693. New Orleans, Louisiana

Raetzman, L.T., Mayer, C., and Siegel, R.E. (1997). Immature cerebellar granule neurons in culture express $GABA_A$ receptor subunit mRNAs in mature patterns. Case Western Reserve University Graduate Student Symposium, Cleveland, Ohio.

Raetzman, L.T. and Siegel, R.E. (1998). Immature cerebellar granule neurons exhibit different developmental potentials in culture. Gordon Conference on Neural Development, Rhode Island

Raetzman, L.T. and Siegel, R.E. (1999). Immature cerebellar granule neurons exhibit different developmental potentials. Case Western Reserve University Graduate Student Symposium, Cleveland, OH..

Raetzman, L.T., Cushman, L.C., Watkins-Chow, D.E., Brinkmeier, M.L., and Camper S.A. (2001). Persistent *Prop1* expression delays gonadotrope development and enhance pituitary tumor susceptibility. 21st Great Lakes Mammalian Development Meeting. Toronto, Canada.

Raetzman, L.T., Cushman, L.C., Watkins-Chow, D.E., Brinkmeier, M.L., and Camper S.A. (2001). Persistent *Prop1* expression delays gonadotrope development and enhance pituitary tumor susceptibility. 83rd Endocrine Society Meeting. Denver, Colorado

Raetzman, L. T., Ward, R. D., and Camper, S.A. (2002). *Lhx4* and *Prop1* are required for cell survival and expansion of the pituitary primordium. Dev. Biol. Meeting at University of Michigan, Ann Arbor, MI

Raetzman, L. T., Ward, R. D., and Camper, S.A. (2002). Lhx4 and Prop1 are required for cell survival and expansion of the pituitary primordium. 84th Endocrine Society Meeting, San Francisco, CA.

Raetzman, L. T., Ward, R. D., and Camper, S.A. (2002). Lhx4 and Prop1 are required for cell survival and expansion of the pituitary primordium. Soc. Dev. Biol., Madison, WI

Raetzman, L.T., Ross S.A., Cook S., Dunwoodie, S.L., Cha, K.B., Camper, S.A., and Thomas P.Q. (2003). Spatial and temporal regulation of Notch signaling genes suggest roles in pituitary development: *Notch2* is a target of *Prop1*. Dev. Biol. Meeting at University of Michigan, Ann Arbor, MI.

Raetzman, L.T., Ross S.A., Cook S., Dunwoodie, S.L., Cha, K.B., Camper, S.A.. and Thomas P.Q. (2003). Spatial and temporal regulation of Notch signaling genes suggest roles in pituitary development: *Notch2* is a target of *Prop1*. 85th Endocrine Society Meeting, Philadelphia, PA.

Raetzman, L.T., Brinkmeier M.L., Ross S.A., Carninci P., Shiraki T., Arakawa T., Kawai J., Lyons R.H., Ward R.D., Cook S., Dunwoodie S.L., Camper S.A., Thomas P.Q., and Hayashizaki Y. (2003). Bioinformatics and gene discovery approach to pituitary development: *Prop1* and Notch signaling. 17th International Mouse Genome Conference, Braunschweig, Germany.

Raetzman, L.T., Wheeler, B.S., Ross S.A., Thomas P.Q., and Camper, S.A. (2004) Developmental regulation of Notch signaling genes in the embryonic pituitary: *Prop1* deficiency affects *Notch2* expression. 24th Great Lakes Mammalian Development Meeting. Toronto, Canada.

Raetzman, L.T., Wheeler, B.S., Ross, S., Thomas, P.Q., and Camper, S.A. (2004). Misexpression of *Notch2* disrupts pituitary gland development**.** Mouse Molecular Genetics Meeting, Cold Spring Harbor, NY.

Raetzman, L.T., Cai, J.X., Kageyama, R., and Camper S.A. (2006). Hes1 is required for pituitary growth and melanotrope specification. 88th Endocrine Society Meeting, Boston, MA.

PRESENTATIONS BASED ON RESEARCH AT UIUC

Raetzman L.T., Monahan P. and Kelson A.K. (2007). Molecular determinants of pituitary cell proliferation: the role of Notch signaling. 89th Endocrine Society Meeting, Toronto, CA. (oral)

Monahan P., Rybak S., and Raetzman L.T. (2008). Pituitary development is relies on Notch signaling control of cell cycle inhibitors. Society for the Study of Reproduction Meeting, Kona, HI. (oral)

Monahan P., Rybak S., and Raetzman L.T. (2008). Pituitary development is relies on Notch signaling control of cell cycle inhibitors. Northwestern University Minisymposium on Reproductive Biology, Evanston, IL. (oral)

Himes A. and Raetzman L.T. (2008). Premature differentiation and aberrant movement of pituitary cells lacking both *Hes1* and *Prop1*. Mouse Genetics and Genomics: Development and Disease, Cold Spring Harbor, NY.

Fiddler R., Himes A., and Raetzman L.T. (2009). N-cadherin deletion in POMC expressing cells leads to pituitary disorganization and hyperplasia. Northwestern Minisymposium on Reproductive Biology, Evanston, IL.

Monahan P., and Raetzman L.T. (2009). The role of p21 in pituitary gland development. Northwestern University Minisymposium on Reproductive Biology, Evanston, IL. (oral)

Monahan P., and Raetzman L.T. (2009). The role of p21 in pituitary gland development. Society for the Study of Reproduction Meeting, Pittsburgh, PA.

Moran T.B., and Raetzman L.T. (2009). Aryl Hydrocarbon agonists modulate

proliferation and impair hormone synthesis in the pituitary. 91th Endocrine Society Meeting, Washington DC.

Moran T.B., Goldberg L., and Raetzman L.T. (2010). Numb is necessary for pituitary intermediate lobe adhesion. Midwest Developmental Biology Meeting, Cincinnati, OH.

Goldberg L., Moran T.B. and Raetzman L.T. (2010). Role of Numb in gonadotrope function. Society for the Study of Reproduction Meeting, Milwaukee, WI. (oral)

Monahan P., Himes A.D. and Raetzman L.T. (2010). Regulation of p21 is Necessary to Control Pituitary Progenitor Cell Expansion. Society for the Study of Reproduction Meeting, Milwaukee, WI. (oral)

Gal A., Raetzman L.T., and Singh K. (2010). Histopathologic and immunohistochemistry investigation of hypopituitarism in a 2-week-old Portuguese water dog. American College of Veterinary Pathologists Annual Meeting, Baltimore, MD.

Aujla P.K., Bora A., Monahan P., Sweedler J.V. and Raetzman L.T. (2010). The Notch effector gene Hes1 regulates migration of hypothalamic neurons, neuropeptide content and axon targeting to the pituitary. Society for Neuroscience Meeting, San Diego, CA.

Aujla P.K., Bora A., Monahan P., Sweedler J.V. and Raetzman L.T. (2010). The Notch effector gene Hes1 regulates migration of hypothalamic neurons, neuropeptide content and axon targeting to the pituitary. Illinois Symposium on Reproductive Sciences, Chicago, IL.

Goldberg L., Moran T.B. and Raetzman L.T. (2010). The Notch Inhibitor Numb Is Present in Gonadotropes and May Regulate LH Expression and Function. Illinois Symposium on Reproductive Sciences, Chicago, IL. (oral)

Aujla P.K., and Raetzman L.T. (2011). The Notch Signaling Pathway Regulates Hypothalamic Neuron Placement and Axon Targeting to the Pituitary. 93th Endocrine Society Meeting, Boston, MA. *Presidential Poster Award Winner

Goldberg L. and Raetzman L.T. (2011). Persistent Expression of Activated Notch Inhibits Corticotrope and Melanotrope Differentiation and Results in Dysfunction of the HPA Axis. 93th Endocrine Society Meeting, Boston, MA. (oral)

Aujla P.K. and Raetzman L.T. (2012). Notch signaling in the ventral hypothalamus affects formation of the developing arcuate nucleus. Society for Neuroscience Meeting, Boston, MA.

Goldberg Nantie L. and Raetzman L.T. (2012). Notch signaling is necessary for postnatal pituitary proliferation. Notch Signaling Gordon Conference, Lewiston, ME.

Goldberg Nantie L. and Raetzman L.T. (2013). Notch signaling in the postnatal pituitary is necessary to prevent hypopituitarism. ISRS, Chicago, IL. (oral, won best oral presentation)

Goldberg Nantie L. and Raetzman L.T. (2013). Notch signaling is necessary for postnatal pituitary proliferation. 95th Endocrine Society Meeting, Boston, MA. (oral)

Aujla P.K., Naratadam G.T., Xu L. and Raetzman L.T. (2013). Notch/Rbpjκ signaling regulates differentiation of hypothalamic arcuate neurons. RIKEN Brain Science Institute Summer Program. Wako-Shi, Japan. (oral)

Eckstrum K., Brannick K., Wang W., Flaws J. and Raetzman L.T. (2013). Postnatal pituitary proliferation: Sex differences and influence of bisphenol A. ISRS, Carbondale, IL.

Biehl M.J., Wang W., Flaws J.A. and Raetzman L.T. (2013). Intrinsic and Extrinsic Factors Modulating Development of Hypothalamic Arcuate Nucleus Neurons. ISRS, Carbondale, IL.

Eckstrum K., Brannick K., Wang W., Flaws J. and Raetzman L.T. (2014). Pituitary proliferation is affected by bisphenol A exposure but recovers upon its removal. Society of Toxicology Meeting, Phoenix, AZ.

Eckstrum K., Weis K., Baur N., Raetzman L. (2014). Few sex differences exist in the early postnatal pituitary transcriptome. ISRS, Chicago, IL. (first place poster award)

Edwards W.E., Nantie L. and Raetzman L.T. (2014). Notch signaling regulates expression of grainyhead like 2: a potential mechanism for cell fate determination in the developing mouse pituitary. ISRS, Chicago, IL.

Biehl M.J. and Raetzman L.T. (2014). Rbpj-κ dependent Notch signaling differentially modulates development of neurons of the murine arcuate nucleus. 96th Endocrine Society Meeting, Chicago, IL. (selected for poster preview talk)

Biehl M.J. and Raetzman L.T. (2014). Rbpj-κ dependent Notch signaling regulation of arcuate kisspeptin neuron development. ISRS, Chicago, IL. (oral)

Aujla, P.K., Biehl, M.J., Raetzman, L.T. (2015) Notch Signaling in the Hypothalamic Arcuate Nucleus Controls Differentiation of NPY, Pomc and Kisspeptin Neurons. Neuropsychopharmacology 40: S106-S271. American College of Neuropsychopharmacology Annual Meeting, Hollywood, FL.

Biehl M.J. and Raetzman L.T. (2015). Rbpj-κ dependent Notch signaling regulates development of the arcuate kisspeptin neurons. Endocrine Society Annual Meeting, San Diego, CA. (oral)

Eckstrum K., Weis K., Baur N., Raetzman L. (2015). Few sex differences exist in the early postnatal pituitary transcriptome. Endocrine Society Annual Meeting, San Diego, CA.

Edwards W.E., Nantie L. and Raetzman L.T. (2015). Notch signaling regulates expression of grainyhead like 2: a potential mechanism for controlling progenitor cell fate in the developing mouse pituitary. Endocrine Society Annual Meeting, San Diego, CA. (presidential poster award)

Edwards W.E., Nantie L. and Raetzman L.T. (2015). Grainyhead like 2: a novel downstream target of the Notch signaling pathway in the developing mouse pituitary. ISRS, Urbana, IL.

Biehl M.J., Kaylan K.B., Underhill G.H. and Raetzman L.T (2015). Uncovering the role of Notch signaling in early hypothalamic fate choices using primary neurospheres and microenvironment arrays. ISRS, Urbana, IL.

Eckstrum K., Weis K. and Raetzman L. (2016). Defining critical developmental windows of exposure to Bisphenol A in pituitary development and elucidating sex differences in response to chemical exposures. ISRS, Urbana, IL. (oral)

Eckstrum K., Weis K., Baur N. and Raetzman L. (2016). Few sex differences exist in the early postnatal pituitary transcriptome. Endocrine Society Annual Meeting, Boston, MA. Endocrine Society Annual Meeting, Boston, MA.

Biehl M.J., Thompson R.J. and Raetzman L.T. (2016). Rbpj-κ dependent Notch signaling regulates development of the arcuate kisspeptin neurons. Endocrine Society Annual Meeting, Boston, MA. (selected for poster preview talk)

Biehl M.J., Thompson R.J. and Raetzman L.T. (2016). The balance of neuronal subtypes within the anteroventral periventricular nucleus is dependent upon canonical Notch signaling. Society for the Study of Reproduction, San Diego, CA. (oral)

Raetzman L.T., Biehl M.J., Kaylan K.B., and Underhill G.H. (2016). Uncovering the role of Notch signaling in early hypothalamic fate choices using primary neurospheres and microenvironment arrays. Notch signaling Gordon Conference, Lewiston, ME.

Edwards W.E., Nantie L. and Raetzman L.T. (2016). Hsd11b1 and glucocorticoid signaling, a new niche for Notch. Notch signaling Gordon Conference, Lewiston, ME.

Biehl M.J., Kaylan K.B., Thompson R.J., Underhill G.H. and Raetzman L.T. (2017). Cell fate decisions in the developing hypothalamic anteroventral periventricular nucleus are regulated by canonical Notch signaling. Endocrine Society Annual Meeting, Orlando, FL. (oral)

Edwards W.E., Nantie L. and Raetzman L.T. (2018). Novel crosstalk between the Notch and glucocorticoid signaling pathways in the developing pituitary. Endocrine Society Annual Meeting, Chicago, IL. (oral presentation, outstanding abstract award)

Gonzalez, R., Biehl, M., Weis, K., Raetzman, L. (2018). Notch Signaling Influences the Balance of Proliferation and Cell Death in Hypothalamic Tanycytes. Endocrine Society Annual Meeting, Chicago, IL.

Gonzalez, R.V., Weis, K.E. and Raetzman, L.T. (2018). Gestational Diabetes Alters Development of a Critical Hypothalamic Feeding Regulation Center in Offspring. ISRS, Carbondale, IL

Gonzalez R.V.L., Weis K.E. and Raetzman L.T. (2019). Gestational Diabetes Alters Hypothalamic Development, Microglial Activation and Insulin Signaling in Offspring. Endocrine Society Annual Meeting, New Orleans, LA. (Knockout rounds, 2nd place)

Gonzalez R.V., Weis K.E., Gonsioroski A.V., Flaws J.A. and Raetzman L.T. (2019) Long-term exposure to iodoacetic acid leads to abnormal expression of key genes related to hypothalamic and pituitary control of reproductive function. ISRS, Chicago, IL.

Gonzalez R.V., Weis K.E., Gonsioroski A.V., Flaws J.A. and Raetzman, L.T. (2020). Long-term exposure to iodoacetic acid leads to abnormal expression of key genes related to hypothalamic and pituitary control of reproductive function. Accepted for the Endocrine Society Annual Meeting; cancelled due to the COVID-19 pandemic.

Gonzalez R.V., Weis K.E., Gonsioroski A.V., Flaws J. A., Raetzman L.T. (2021). Exposure to Iodoacetic Acid, a Water Disinfection Byproduct, Leads to Abnormal Expression of Key Reproductive Axis Genes in the Hypothalamus and Pituitary. Endocrine Society Annual Meeting, Virtual. (outstanding abstract award)

Ge X., Weis K.E. and Raetzman L.T. (2021). Prenatal exposure to the endocrine

disrupting chemical DEHP impacts reproduction-related gene expression in the pituitary Endocrine Society Annual Meeting, Virtual.

Ge X., Weis K.E. and Raetzman L.T. (2021). Glycoprotein hormone subunit alpha 2 (Gpha2): a pituitary stem cell-expressed hormone regulated by Notch signaling. ISRS, Urbana, IL. (oral, 1st place oral competition)

Ge X., Weis K.E. and Raetzman L.T. (2021). Glycoprotein hormone subunit alpha 2 (Gpha2): a pituitary stem cell-expressed hormone regulated by Notch signaling. Society for the Study of Reproduction, St. Louis, MO.

Weis K.E., Thompson L.M., Streifer M., Guardado I., Flaws J.A., Gore A.C. and Raetzman L.T. (2023). Pre- and Postnatal Developmental Exposure to the Polychlorinated Biphenyl (PCB) Mixture Aroclor 1221 Alters Rat Pituitary Gonadotropins and Estrogen Receptor Alpha Levels. Society of Toxicology Annual Meeting, Nashville, TN.

INVITED TALKS

2005

Biennial Reproductive Biology Retreat. Allerton Conference Center, Monticello, IL.

2006

Seminar at Indiana University Purdue University Indianapolis. April.

2007

Gland Rounds (Endocrinology Grand Rounds), Carle Foundation Hospital, Urbana, IL. May.

2008

Auditory, Sensory and Developmental Neuroscience journal club, UIUC, Urbana, IL. January.

Undergraduate Neuroscience club, UIUC, Urbana, IL. March.

2009

Auditory, Sensory and Developmental Neuroscience journal club, UIUC, Urbana, IL. January.

82nd Annual Meeting of the Japanese Endocrine Society. April.

Seminar at Southern Illinois University. May.

Seminar at University of Wisconsin, Madison. October.

Midwest Developmental Biology Meeting. May.

2010

Seminar at Washington State University. August.

3rd Meeting on Development and Function of the pituitary and hypothalamus, Oxford, England. September.

Seminar at University of Arizona. October.

Seminar at University of Michigan. December.

2011

Seminar at University of California, San Diego. March.

Frontiers in Reproduction Course. Woods Hole, MA. May.

Talk at UIUC Neuroproteomics Center on Cell-Cell Signaling advisory review committee meeting. June.

SSR Annual Meeting Minisymposia speaker. July.

4th Meeting on Development and Function of the pituitary and hypothalamus, Montreal, Canada. September.

2012

Illinois Summer Neuroscience Institute, UIUC, May.
Frontiers in Reproduction Course. Woods Hole, MA. May.
SSR Annual Meeting, Anita Payne Lecture. July.
5th Meeting on Development and Function of the pituitary and hypothalamus, Montpellier, France. September.
Postdoc career forum alumni speaker, University of Michigan. December.

2013

Frontiers in Reproduction Course. Woods Hole, MA, May.
Illinois Summer Neuroscience Institute, UIUC, May.
Endocrine Society Annual Meeting, Symposium speaker, June.
6th Meeting on Development and Function of the pituitary and hypothalamus, Ann Arbor, MI, October.
Speaker in undergraduate workshop about graduate school, UIUC, October.

2014

Seminar at Texas A&M. February.
Seminar at University of California, Riverside. May.
Illinois Summer Neuroscience Institute, UIUC, May.
Career development workshop, Endocrine Society Annual Meeting, June.
Seminar at Kansas University Medical Center, Kansas City, KS, September.

2015

Career development workshop, Endocrine Society Annual Meeting, March.
FLARE workshop, Endocrine Society, Atlanta, GA, May.

2016

International Symposium on Pituitary Gland and Related Systems, Honolulu, HI, September.
Career development workshop, Endocrine Society Annual Meeting, March.

2017

Carle Synapse talk, genomics for clinicians, August.
Seminar at Southern Illinois University, September.

2018

FLARE workshop, Endocrine Society, San Diego, CA, February.
Endocrine Society Annual Meeting, symposium speaker, March.
Endocrine Disrupting Chemicals Gordon Conference, Les Diablerets, Switzerland, June.
Society for the Study of Reproduction platform speaker, July.

2019

MCB Recruitment dinner, keynote speaker, UIUC, February.
Reproductive Biology Seminar Series, UIUC

2020

Virtual Seminar at University of Texas, Austin, November.

2021

Research Experience for Graduate and Medical Students (Endocrine Society), virtual, July.

Virtual Seminar at University of Colorado Medical Center, October.

2022

Early Career Forum, Endocrine Society Annual Meeting, June.
Research Experience for Graduate and Medical Students (Endocrine Society), virtual, July.
Toxicology Seminar UIUC, August.
Pituitary Society PANOMEN meeting, Dallas, Texas, November.

2023

BEST scholar program, research ethics talk, UIUC, April.
Pituitary Society Annual Meeting, Chicago, IL, June.
Hypothalamus-Pituitary workshop, Crete, Greece, September.
Seminar at University of Missouri, Columbia, MO, September.

TRAINING ACTIVITIES

Undergraduates

Sarina Berger- PreMed (6/96-8/96)
Suntrea Goudeau – PreMed (9/01-7/02)
Amanda Vesper - Microbiology (10/01-4/02)
Bayly Wheeler – Biomedical Engineering (1/03-6/04)
Jennifer Cai- Pre Med (6/04-8/04)

at UIUC

Ashley Kelson - MCB (1/06-5/07), Senior Thesis, awarded distinction
Michael Perz – MCB (1/06-5/08)
Sabina Rybak – MCB (1/06-5/08), Senior Thesis, awarded distinction
Nadim Kassimali– MCB (6/06-5/07)
Devika Bagchi- 8/06-12/06
Jing Lu- MCB (6/07-12/07)
Neal Shah- MCB (6/07-12/07)
Sarah Serviss- MCB (6/07-5/09), Senior Thesis, awarded distinction
Rachel Fiddler- MCB (6/08-5/10), Senior Thesis, awarded distinction
Ben Getz- MCB (9/10-5/11)
Victoria Nelson- MCB (1/11-5/11)
Agata Parfieniuk- MCB (1/09-5/12), Awarded Fulbright Fellowship
Vedran Bogdanovic- MCB (9/10-12/11)
Dan Getz- MCB (9/10-5/14), Senior Thesis, awarded highest distinction
George Naratadam- MCB (10/11-5/14), Senior Thesis, awarded high distinction
Liwen Xu- MCB (9/11-5/13)
Lucas Altenbaumer- MCB (5/13-5/14)
Nicholas Baur- MCB (1/13-5/15), MCB Summer Undergrad fellowship
Elizabeth Kehl- MCB (1/14-8/14)
Han Gil Jeong- MCB (5/14-8/14)
Robert Thompson (8/14-5/16), MCB Summer Undergrad fellowship
Ashka Shah (8/14-8/15), MCB Summer Undergrad fellowship
Michael Gonzalez (8/14-12/15), MCB Summer Undergrad fellowship
Sally Ladsaria (8/14-5/16), MCB Summer Undergrad fellowship, IB senior thesis
Luke Duda (5/16-8/16), Endocrine Society Summer Research Fellowship
Rae Shelle Mortimer (6/16-7/16), SURETox/SROP summer student
Annesha Banerjee (8/15-5/17), Chemistry honors thesis
Abby Gaffner- MCB (8/16-5/18)
Aaron Goffinet- MCB (8/16-5/19) MCB Jenner fellowship, MCB senior thesis

Richard Gonigam (8/16-5/19), MCB Summer Undergrad fellowship, MCB senior thesis
John de Graft-Johnson (6/17-7/17), SURETox/SROP summer student
Aidishka Tapia Rivera (5/19-7/19), SURETox/SROP summer student
Bella Guardado (5/21-7/21), SURETox/SROP summer student

Graduate students- current

Yinka Ojo – Molecular and Integrative Physiology, Ph.D. Candidate (12/22- now)
Awards: Toxicology Scholar, Interdisciplinary Environmental Toxicology Training Program 2023 (3 years of 50% funding, tuition waiver)

Graduate students- past

Pamela Monahan – Molecular and Integrative Physiology, Ph.D. (12/05-5/11)
Current: Lecturer, Northwestern University
Awards: Outstanding Contribution to Molecular and Integrative Physiology, 2006
Graduate College and Molecular and Integrative Physiology travel award, 2008, 2009
Larry Ewing Memorial Trainee Travel Fund Award, SSR 2010

Tyler Moran – Molecular and Integrative Physiology, M.D./Ph.D. (12/05-1/11)
Current- Assistant Professor, Baylor College of Medicine
Awards: Hazel I. Craig Fellowship, College of Medicine, University of Illinois at Urbana Champaign, 2009
Outstanding Student Publication, Molecular Endocrinology, 2012

Ashley Himes – Biology, M.S. (8/07-5/09)

Katherine Brannick- Biology M.S. (8/10-5/12)
Current- Laboratory Animal Veterinarian, University of Texas, Houston

Paven Aujla – Neuroscience Program, M.D./Ph.D. (8/09-5/13)
Current- Child Psychiatry Fellowship, University of California San Diego
Awards: NIH T32 Training Grant, Developmental Neurobiology 2010-2011
NIH predoctoral fellowship NIDDK F30 DK091992, 2011-2016
Endocrine Society Trainee Day Travel Grant, 2011
Endocrine Society Presidential Poster Competition winner, 2011
Neuroscience Program Outstanding Research Contribution Award, 2011

Leah Goldberg Nantie – Molecular and Integrative Physiology, Ph.D. (12/09-5/14)
Current- Research Scientist, MiRagen Therapeutics
Awards: NIH T32 Training Grant, Molecular and Cellular Biology, 2010-2012
Graduate College and Molecular and Integrative Physiology travel award, 2013

Matthew Biehl – Molecular and Integrative Physiology, M.D./Ph.D. (12/12-6/17)
Current- Pediatric nephrology fellowship, Washington University, St. Louis
Awards: NIH T32 ES007326 Training Grant, Interdisciplinary Environmental Toxicology 2018-2020
NIH predoctoral fellowship NIDDK F30 DK105760, 2015-2018
Outstanding Contribution to Molecular and Integrative Physiology, 2015

Kirsten Eckstrum – Molecular and Integrative Physiology, Ph.D. (12/12-5/17)
Current- Staff Scientist, FDA
Awards: NIH T32 ES007326 Training Grant, Interdisciplinary Environmental Toxicology, 2013-2015
Women in Endocrinology Young Investigator Award, 2016
Midwest Society of Toxicology Young Investigator Award, 2015
Graduate College and Molecular and Integrative Physiology travel award, 2014
First Place Poster Presentation, Illinois Symposium on Reproductive Sciences, 2014
Outstanding Contribution to Molecular and Integrative Physiology, 2017

Whitney Edwards- Molecular and Integrative Physiology, Ph.D. (12/13-8/18)
Current- Assistant Professor, UNC Chapel Hill
Awards: NIH T32 ES007326 Training Grant, Interdisciplinary Environmental Toxicology, 2015-2017
Presidential Poster Competition Award winner, Endocrine Society Annual Meeting, 2015
Carl Storm Underrepresented Minority (CSURM) Fellowship, Notch Signaling in Development, Regeneration & Disease Gordon Research Conference, 2016
Future Leaders Advancing Research in Endocrinology (FLARE) Workshop, Endocrine Society, 2016
Outstanding Abstract Award, Endocrine Society Annual Meeting, 2018
Early Career Forum Travel Award, Endocrine Society Annual Meeting, 2018
Best Poster Presentation, Molecular and Integrative Physiology departmental retreat, Spring 2018
Outstanding Contribution to Molecular and Integrative Physiology, 2018
Best Thesis in Molecular and Integrative Physiology, 2019

Rachel Gonzalez- Neuroscience Program, Ph.D. (5/17-12/21)
Current- Postdoctoral Fellow Columbia University
Awards: NIH T32 Training Grant, Interdisciplinary Environmental Toxicology 2018-2020
Endocrine Society Trainee Day Travel Grant, 2018
Women in Endocrinology Young Investigator Award, 2019
Endocrine Society Knockout Rounds, 2nd place, ENDO 2019
Future Leaders Advancing Research in Endocrinology (FLARE)

Workshop, Endocrine Society, 2019
Endocrine Society Research Talk, 1st place, ENDO 2021

Xiyu Ge – Molecular and Integrative Physiology, Ph.D. (6/18-12/22)
Awards: Endocrine Society Trainee Day Award, 2020
Illinois Symposium on Reproductive Sciences, 1st place oral presentation, 2021
Society for the Study of Reproduction, flash talk participant, 2021
Outstanding Teaching Assistant, MCB, 2022
Best Thesis in Molecular and Integrative Physiology, 2023

Research Assistants

Barbara Ahrens (2/06-2/09)
Ian Anderson (8/08-8/10)
Rebecca Jensen (2/09-8/09)
Ashley Himes (5/09-9/12)
Katherine Brannick (8/09-8/10)
Joey Moody (8/10-1/13)
Joe Campos (1/13-5/13)
Michael Gonzalez (1/14-12/15)
Elaina Plinke (5/14-8/14)
Karen Weis (2/14-present)
Richard Gonigam (1/16-5/18)

Research Fellows

Sadia Ijlaluddin, MD (8/06-5/07)

Graduate Student Committees (qual, prelim and/or thesis)

107 students in Molecular and Integrative Physiology, Neuroscience, Cell and Developmental Biology, Animal Sciences, Comparative Biosciences

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Sweeney, Patrick

eRA COMMONS USER NAME (credential, e.g., agency login): sweenp

POSITION TITLE: Assistant Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
University of Rochester, Rochester , New York	BA	05/2012	Psychology
SUNY Upstate Medical University, Syracuse, New York	PHD	03/2017	Neuroscience
University of Michigan, Ann Arbor, Michigan	Postdoctoral Fellow	08/2021	Neuroendocrinology
University of Illinois at Urbana-Champaign, Urbana, Illinois	Assistant Professor	Current	Neuroscience and Physiology

A. Personal Statement

My main research interests include neuronal regulation of feeding, energy homeostasis, reproduction, and emotional behaviors. During graduate school, I utilized optogenetic and chemogenetic approaches to manipulate neural circuits involved in feeding behavior. In particular, my studies focused on investigating how the neural circuits controlling feeding interact with neural circuits controlling emotional processes. These studies resulted in the discovery of multiple functional neural circuits that regulate feeding and were published as first authors publications in *Nature Communications*, *PNAS*, and the Journal of Neuroscience.

During my postdoctoral work I obtained additional training under the mentorship of Dr. Roger Cone at the University of Michigan. My postdoctoral work focused on deciphering the role of the neuronal melanocortin 3 receptor (MC3R) in energy homeostasis, emotion, and reproduction. We discovered that MC3R exerts a critical role in linking energy homeostasis with emotional behavior, and demonstrated that MC3R knockout mice exhibit multiple features common to human anorexia nervosa, such as sexually dimorphic feeding and anxiety phenotypes. Further, we discovered that the MC3R is required for the initiation of puberty in humans and mice. Results from these studies were published as a first author publication in *Science Translational Medicine* and as a contributing author in *Nature*. During my postdoctoral training I also developed an *in vivo* endomicroscopic imaging system for monitoring the activity of hypothalamic neurons in awake behaving mice. We discovered that paraventricular nucleus melanocortin-4 receptor neurons encode body weight “set-point” in real-time. The results of this study were published in a first author paper in *PNAS*.

In November of 2021, I established my independent research program at the University of Illinois Urbana Champaign. Current studies in our lab focus on identifying the downstream MC3R containing neurons controlling feeding and emotional behavior. We are utilizing a multidisciplinary approach including *in vivo* imaging, optogenetics, chemogenetics, and single cell RNA sequencing to identify and manipulate the specific MC3R circuits controlling emotional aspects of feeding behavior. Ultimately our research program aims to identify novel therapeutic strategies for ameliorating conditions at the intersection of metabolism and psychiatry, such as obesity, anorexia nervosa, and depression.

1. Bedenbaugh MN, Brener SC, Maldonado J, Lippert RN, **Sweeney P**, Cone RD, Simerly RB. Organization of neural systems expressing melanocortin-3 receptors in the mouse brain: Evidence for sexual dimorphism. The Journal of Comparative Neurology. 30 June 2022; 530 (16).

2. Lam B.Y.H, Williamson A, Finer S, …, **Sweeney P**, O'Rahilly S. MC3R links nutritional state to childhood growth and the timing of puberty. Nature. November 3 2021; 59.

3. **Sweeney P**, Bedenbaugh MN, Maldonado J, Pan P, Fowler K, Williams SY, Gimenez LE, Ghamari-Langroudi M, Downing G, Gui Y, Hadley CK, Joy ST, Mapp AK, Simerly RB, Cone RD. The melanocortin-3 receptor is a pharmacological target for the regulation of anorexia. Science Translational Medicine. 2021 April 21; 13 (590).

4. **Sweeney P**, Chen C, Rajapakse I, Cone RD. Network dynamics of hypothalamic feeding neurons. PNAS. 2021 April 6; 118 (14).

5. Zhang J, Chen D, **Sweeney P**, Yang Y. An excitatory ventromedial hypothalamus to paraventricular thalamus circuit that suppresses food intake. Nature Communications. 2020 Dec 10; 11.

6. Ghamari-Langroudi M, Cakir I, Lippert RN, **Sweeney P**, Litt MJ, Ellacott KLJ, Cone RD. Regulation of energy rheostasis by the melanocortin-3 receptor. Sci Adv. 2018 Aug;4(8):eaat0866. PubMed PMID: 30140740; PubMed Central PMCID: PMC6105298.

7. **Sweeney P**, Yang Y. An excitatory ventral hippocampus to lateral septum circuit that suppresses feeding. Nat Commun. 2015 Dec 15;6:10188. PubMed PMID: 26666960; PubMed Central PMCID: PMC4682174.

B. Positions and Honors

Positions and Employment

2010 - 2011	Research Technician , University of Rochester, Rochester , NY
2012 - 2017	Research Fellow, SUNY Upstate Medical University, Syracuse , NY
2017 -2021	Postdoctoral Fellow, University of Michigan, Ann Arbor , MI
2021-current	Assistant Professor, University of Illinois at Urbana-Champaign, Urbana, Illinois

Other Experience and Professional Memberships

2013 - 2014	Vice President-College of Graduate Studies, SUNY Upstate Student Government
2016 -	Member, Society for Neuroscience
2019	Member, Keystone Symposia Conference Assistant
2021-	University of Illinois Neuroscience PhD program admissions committee
2022-	Chair of the University of Illinois Molecular and Integrative Physiology seminar series
2022-	Ad hoc reviewer, Foundation for Prader-Willi Research
2022-	Ad hoc reviewer, Frontiers in Molecular Neuroscience
2022-	Ad hoc reviewer, eNeuro

Honors

2010	Summer Scholars Program, University of Rochester
2010	Schmitt Program on Integrative Brain Research, University of Rochester
2011	Summer Undergraduate Research Fellowship, SUNY Upstate Medical University
2016	Oral Presentation Award, SUNY Upstate Medical University College of Graduate Studies
2017	John Bernard Henry Endowed Scholarship Award, SUNY Upstate Medical University
2017	NRSA F32 Postdoctoral Fellowship (NICHD)
2019	Top Overall Presentation by Graduate Student or Postdoctoral Fellow, University of Michigan Life Sciences Institute Departmental Retreat

2020	NIDDK K99/R00 Pathway to Independence award
2021	Brain and Behavioral Research Foundation (BBRF) Young Investigator Grant
2021	Foundation for Prader Willi Research grant

Contribution to Science

1. **Characterization of hippocampal and lateral septal circuits controlling feeding**

   The ventral hippocampus was previously known to be involved in feeding and energy homeostasis. However, until recently, the specific cell types and neural circuits mediating the role of the hippocampus in feeding behavior remained largely unknown. During graduate school I utilized modern optogenetic and chemogenetic approaches to selectively determine the neural pathways that mediate the role of ventral hippocampus in feeding behavior. In summary, we found that ventral hippocampus suppresses feeding via interactions with the lateral septum. We further dissected neural pathways connecting neurons in the septum with the lateral hypothalamus or paraventricular hypothalamus, brain regions with a major role in homeostatic and hedonic control of feeding behavior. Together these findings provided valuable insight into neural circuit interactions between the hippocampal formation and feeding circuitry.

   a. **Sweeney P**, Li C, Yang Y. Appetite suppressive role of medial septal glutamatergic neurons. Proc Natl Acad Sci U S A. 2017 Dec 26;114(52):13816-13821. PubMed PMID: 29229861; PubMed Central PMCID: PMC5748170.
   b. **Sweeney P**, Yang Y. Neural Circuit Mechanisms Underlying Emotional Regulation of HomeostaticFeeding. Trends Endocrinol Metab. 2017 Jun;28(6):437-448. PubMed PMID: 28279562; PubMed Central PMCID: PMC5438765.
   c. **Sweeney P**, Yang Y. An Inhibitory Septum to Lateral Hypothalamus Circuit That Suppresses Feeding. J Neurosci. 2016 Nov 2;36(44):11185-11195. PubMed PMID: 27807162; PubMed Central PMCID: PMC5148238.
   d. **Sweeney P**, Yang Y. An excitatory ventral hippocampus to lateral septum circuit that suppresses feeding. Nat Commun. 2015 Dec 15;6:10188. PubMed PMID: 26666960; PubMed Central PMCID: PMC4682174.

2. **Contribution of hypothalamic astrocytes to feeding and energy homeostasis**

   Research focusing on central nervous system control of feeding behavior has primarily addressed the role of neurons and neural circuits in feeding behavior. However, the role of non-neuronal cells, such as astrocytes, in feeding behavior has remained understudied. For this reason, during graduate school I utilized optogenetic approaches to selectively manipulate astrocytes within the medial basal hypothalamus, a brain region with a major role in feeding behavior and energy homeostasis. We found that stimulation of astrocytes reduces feeding in a frequency dependent manner with higher frequency stimulation producing progressively larger reductions in feeding behavior. These findings added to the growing body of literature implicating astrocytes in central nervous system control of feeding and energy homeostasis.

   a. **Sweeney P**, Qi Y, Xu Z, Yang Y. Activation of hypothalamic astrocytes suppresses feeding withoutaltering emotional states. Glia. 2016 Dec;64(12):2263-2273. PubMed PMID: 27658520.

3. **Role of the central melanocortin system in feeding, emotion, and reproduction**

   The central melanocortin receptors (melanocortin 3 receptor and melanocortin 4 receptor) are critically involved in regulating energy homeostasis and feeding behavior. While the role of the MC4R in energy homeostasis is well established, the specific role of the MC3R in energy homeostasis has remained enigmatic. During my postdoctoral studies in the Cone lab I utilized chemogenetics and mouse behavioral assays to dissect the role of different MC3R expressing neurons in feeding behavior. These experiments revealed that MC3R expressing neurons in the arcuate nucleus of the hypothalamus stimulate feeding, while MC3R expressing neurons in the paraventricular thalamic nucleus suppress feeding. This data provided additional experimental evidence supporting a

bidirectional role for the MC3R in controlling the upper and lower bounds of energy homeostasis (energy rheostasis). We have also developed a *in vivo* imaging system for monitoring the activity of MC4R circuitry in real time in awake behaving animals (Inscopix miniaturized microscope). This approach provides a novel system for studying how the central melanocortin system impacts feeding circuitry throughout the brain.

a. **Sweeney P**, Bedenbaugh MN, Maldonado J, Pan P, Fowler K, Williams SY, Gimenez LE, Ghamari-Langroudi M, Downing G, Gui Y, Hadley CK, Joy ST, Mapp AK, Simerly RB, Cone RD. The melanocortin-3 receptor is a pharmacological target for the regulation of anorexia. Science Translational Medicine. 2021 April 21; 13 (590).

b. **Sweeney P**, Chen C, Rajapakse I, Cone RD. Network dynamics of hypothalamic feeding neurons. PNAS. 2021 April 6; 118 (14).

c. Ghamari-Langroudi M, Cakir I, Lippert RN, **Sweeney P**, Litt MJ, Ellacott KLJ, Cone RD. Regulation of energy rheostasis by the melanocortin-3 receptor. Sci Adv. 2018 Aug;4(8):eaat0866. PubMed PMID: 30140740; PubMed Central PMCID: PMC6105298.

C. Additional Information: Research Support and/or Scholastic Performance

Ongoing Support

R00DK127065, NIDDK
Sweeney, Patrick (PI) 03/01/2022-03/01/2025
MC3R inhibition as a strategy to maintain weight loss in obesity
Role: PI

Brain and Behavior Research Foundation (BBRF) Young Investigator Grant
Sweeney, Patrick (PI) 01/01/2022-01/01/2024
Melanocortin 3 receptor agonism as a preventative therapy for stress-induced anorexia, anxiety, and anhedonia
Role: PI

Foundation for Prader Willi Research
Sweeney, Patrick (PI) 08/01/2022-08/01/2023
MC3R inhibition as a therapeutic strategy for treating hyperphagia in Prader-Willi Syndrome
Role: PI

Completed Funding

1F32HD095620-01, NICHD
Sweeney, Patrick (PI) 03/01/18-08/31/2020
A role for hypothalamic melanocortin 3 receptors in integrating energy state with reproductive physiology
Role: PI

Life Sciences Institute (LSI) Cubed Funding
Sweeney, Patrick (PI) 03/01/19-03/01/20
Functional imaging of the activity patterns of orexin neurons related to breathing, and examination of how it is affected by obesity
Role: PI

Nien-Pei Tsai

Associate Professor
Department of Molecular and Integrative Physiology
University of Illinois at Urbana-Champaign

Personal information

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Education / Research training

2020 – Present	**Associate Professor (with tenure)** Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
2014 – 2020	**Assistant Professor** Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
2010 – 2014	**Postdoctoral Fellow** Department of Neuroscience, UT Southwestern Medical Center at Dallas
2006 – 2009	**Ph.D. in Pharmacology** Department of Pharmacology, University of Minnesota
2004 – 2006	**Research Specialist/Technician** Department of Pharmacology, University of Minnesota
2002 – 2004	**M.S. in Microbiology** Institute of Microbiology and Immunology, National Yang-Ming University, Taipei, Taiwan
1998 – 2002	**B.S. in Agricultural Chemistry** Department of Agricultural Chemistry, National Taiwan University, Taipei, Taiwan

Honors / Awards

2020 James and Maxine Heath Excellence in Teaching Award
2019 Arnold O. Beckman Research Award
2018 NARSAD Young Investigator Award
2016-23 List of Teachers Ranked as Excellent, University of Illinois at Urbana-Champaign
2015 NARSAD Young Investigator Award
2014 Simons Foundation Autism Initiative-Explorer Award
2013 Runner-up of Award for Excellence in Postdoctoral Research at UT Southwestern Medical Center
2011 Meritorious Award at Annual Postdoctoral Symposium at UT Southwestern Medical Center
2011 National Research Service Award (NRSA) from NICHD/NIH
2010 Dr. Marvin and Hadassah Bacaner Research Award in Pharmacology from University of Minnesota Medical School and the Minnesota Medical Foundation
2009 Graduate student travel award from Department of Pharmacology, University of Minnesota
2009 Graduate student travel award from American Society for Pharmacology and Experimental Therapeutics for Experimental Biology
2008 Veneziale-Steer Research Award from University of Minnesota and the Minnesota Medical Foundation
2008 Milne Brandenberg Award for outstanding graduate research from University of Minnesota and the Minnesota Medical Foundation

Research Grant Support

Ongoing:
NIH/NINDS R21NS130751 (6/1/2023 – 5/31/2025) (role: PI)
NIH/NIMH R01MH124827 (12/1/2020 – 10/31/2025) (role: PI)
NIH/NINDS R01NS105615 (4/1/2018 – 3/31/2024) (role: PI)
NIH/NIA R21AG071278 (3/15/2021 – 2/28/2024) (role: PI)

Alzheimer's Association Research Grant (1/1/2024 – 12/31/2026) (role: PI)
FRAXA Postdoctoral Fellowship (7/1/2023 – 6/30/2025) (role: mentor; PI: Kumar)
NIH/NINDS R21NS124980 (10/1/2021 – 2/29/2024) (role: co-I; PI: Christian-Hinman)
NIH/NINDS R21AG077694 (5/15/2022 – 4/30/2024) (role: co-I; PI: Christian-Hinman)

Completed:
NIH/NIMH R21MH122840 (6/1/2020 – 5/31/2023) (role: PI)
NIH/NIMH AD supplement (6/1/2022 – 5/31/2023) (role: PI)
UIUC Julie and David Mead Graduate Student Fellowship (7/1/2022 – 6/30/2023) (role: mentor)
NIH/NINDS R03NS120516 (8/1/2020 – 7/31/2022) (role: PI)
NIH/NINDS AD supplement (4/1/2021 – 3/31/2022) (role: PI)
NIH/NINDS Diversity supplement (4/1/2021 – 3/31/2023) (role: mentor)
Brain and Behavior Research Foundation NARSAD Young Investigator Grant (1/15/2019 – 1/14/2021) (role: PI)
American Heart Association Predoctoral Fellowship (6/1/2020 – 8/15/2020) (role: Mentor)
Arnold O. Beckman Research Award from UIUC Campus Research Board (11/1/2019 – 10/31/2020) (role: PI)
Brain and Behavior Research Foundation NARSAD Young Investigator Grant (1/15/2016 – 1/14/2018) (role: PI)
Simons Foundation Autism Initiative-Explorer Award (11/1/2014 – 10/31/2015) (role: PI)

Publications

In revision

1. Kumar V, Lee KY, Acharya A, Babik SM, Christian-Hinman CA, Rhodes JS, and **Tsai NP** (2023) Activation of mGluR7 represses protein synthesis and corrects pathological phenotypes in FXS. *EMBO Mol Med* (in revision)
2. Yook Y, Lee KY, Lizarazo S, and **Tsai NP** (2023) Hyperfunction of PSD-95 Promotes Seizure Susceptibility in Early-Stage Aβ Pathology. *EMBO Reports* (in revision)
3. Mitra A, Deats SP, Dickson PE, Zhu, Gardin J, Nieman BJ, Henkelman RM, **Tsai NP**, Chesler EJ, Zhang ZW, Kumar V (2023) Tmod2 is a regulator of cocaine responses through control of striatal and cortical excitability, and drug-induced plasticity. *J Neurosci* (in revision)

Published at UIUC

1. Lee KY, Wang H, Yook Y, Rhodes JS, Christian-Hinman CA, and **Tsai NP** (2023) Tumor Suppressor p53 modulates activity-dependent synapse strengthening, autism-like behavior and hippocampus-dependent learning. *Molecular Psychiatry (in press)*
2. Lizarazo S, Yook Y, and **Tsai NP** (2022) Amyloid beta induces Fmr1-dependent translational suppression and hyposynchrony of neural activity via phosphorylation of eIF2α and eEF2. *J Cell Physiol* 237:2929-2942
3. Lodes DE, Zhu J, and **Tsai NP** (2022) E3 Ubiquitin Ligase Nedd4-2 Exerts Neuroprotective Effects During Endoplasmic Reticulum Stress. *J Neurochem* 160:613-624
4. Liu X, Kumar V, **Tsai NP** and Auerbach BD (2022) Hyperexcitability and Homeostasis in Fragile X Syndrome. *Front Mol Neurosci* (Review) 14:805929
5. Lee KY, Zhu J, Christian-Hinman CA, Rhodes JS and **Tsai NP**. (2021) Infantile spasm-associated ubiquitin E3 ligase Nedd4-2 mediates hippocampal synaptic plasticity and learning via cofilin signaling. *EMBO Reports* 22:e52645
6. Liu DC, Lee KY, Lizarazo S, Cook JK and **Tsai NP**. (2021) ER stress-induced modulation of neural activity and seizure susceptibility are impaired in a fragile X syndrome mouse model. *Neurobiol Dis* 158, 105450
7. Eagleman DE, Zhu J, Liu DC and **Tsai NP**. (2020) Unbiased proteomic screening identified a novel role of E3 ubiquitin ligase Nedd4-2 in translational suppression during ER stress. *J Neurochem* 157:1809-1820
8. Liu DC, Soriano S, Yook Y, Lizarazo S, Eagleman DE and **Tsai NP**. (2020) Chronic activation of Gp1 mGluR leads to distinct refinement of neural network activity through non-canonical Akt and p53 signaling. *eNeuro* 0438-19.2020
9. Zhu J, and **Tsai NP**. (2020) Ubiquitination and Ubiquitin E3 Ligases in Rare Neurological Diseases with Comorbid Epilepsy (review article). *Neuroscience* 428:90-99

10. Liu DC, Eagleman DE and **Tsai NP**. (2019) Novel roles of ER stress in repressing neural activity and seizures through Mdm2- and p53-dependent protein translation. *PLoS Genetics* 15(9):e1008364

11. Zhu J, Lee KY, Jong TY and **Tsai NP**. (2019) C2-lacking Nedd4-2 represses excitatory synaptic strength through AMPAR ubiquitination-independent mechanisms. *J Neurochem* 151: 289-300

12. Lee KY, Jewett KA, Chung HJ and **Tsai NP**. (2018) Loss of Fragile X Protein FMRP Impairs Homeostatic Synaptic Downscaling through Tumor Suppressor p53 and Ubiquitin E3 Ligase Nedd4-2. *Hum Mol Genet* 27:2805-2816

13. Kim EC, Pang W, Wang S, Cavaretta JP, Lee KY, Chen C, Choi R, Procko E, **Tsai NP** and Chung HJ. (2018) Reduced axonal surface expression and phosphoinositide sensitivity in Kv7 channels disrupts their function to inhibit neuronal excitability in Kcnq2 epileptic encephalopathy. *Neurobiology of Disease* 118:76-93

14. Jewett KA, Lee KY, Soriano S, Eagleman DE and **Tsai NP**. (2018) Dysregulation and restoration of homeostatic network plasticity in fragile X syndrome mice. *Neuropharmacology* 138:182-192

15. Liu DC, Seimetz J, Lee KY, Kalsotra A, Chung HJ, Lu H and **Tsai NP** (2017) Mdm2 mediates FMRP- and Gp1 mGluR-dependent Protein Translation and Neural Network Activity. *Hum Mol Genet* 26:3895–3908

16. Baculis BC, Weiss AC, Pang W, Jeong HG, Lee JH, Liu DC, **Tsai NP** and Chung HJ. (2017) Prolonged seizure activity causes caspase dependent cleavage and dysfunction of G-protein activated inwardly rectifying potassium channels. *Sci Rep* 7:12313

17. Zhu J, Lee KY, Jewett KA, Man HY, Chung HJ, **Tsai NP**. (2017) Epilepsy-associated gene Nedd4-2 mediates neuronal activity and seizure susceptibility through AMPA receptors. *PLoS Genet* 13:e1006634

18. **Tsai NP***, Wilkerson JR, Guo W, Huber KM*. (2017) FMRP-Dependent Mdm2 Dephosphorylation is required for MEF2-Induced Synapse Elimination. *Hum Mol Genet* 26:293-304 (*co-corresponding authors)

19. **Tsai NP***, Huber KM* (2016) Protocadherins and the social brain (commentary). *Biol. Psychiatry* 81:173-174 (*co-corresponding authors)

20. Jewett KA, Christian CA, Bacos JT, Lee KY, Zhu J, **Tsai NP.** (2016) Feedback modulation of neural network synchrony and seizure susceptibility by Mdm2-p53-Nedd4-2 signaling. *Mol Brain* 9:32

21. Jewett KA, Zhu J, **Tsai NP.** (2015) The Tumor Suppressor p53 Guides GluA1 homeostasis through Nedd4-2 during chronic elevation of neuronal activity. *J Neurochem* 135:226-233

22. **Tsai NP.** (2014) Ubiquitin Proteasome System-Mediated Degradation of Synaptic Proteins: An Update from the Postsynaptic Side (review article). *Biochimica et Biophysica Acta* 1843:2838-2842

Published at UT Southwestern

1. Wilkerson JR*, **Tsai NP***, Maksimova MA, Wu H, Cabalo NP, Loerwald KW, Dictenberg JB, Gibson JR, Huber KM. (2014) A role for dendritic mGluR5-mediated local translation of Arc/Arg3.1 in MEF2-dependent synapse elimination *Cell Rep* 7:1589-1600 (*equal contribution)

2. Jakkamsetti V, **Tsai NP**, Gross C, Molinaro G, Collins KA, Nicoletti F, Wang KH, Osten P, Bassell GJ, Gibson JR, Huber KM. (2013) Experience-induced Arc/Arg3.1 primes CA1 pyramidal neurons for mGluR-dependent long-term synaptic depression. *Neuron* 80:72-79

3. **Tsai NP***, Wilkerson, JR*, Guo, W, Maksimova, MA, DeMartino, GN, Cowan CW, Huber KM. (2012) Multiple autism-linked genes mediate synapse elimination via proteasomal degradation of a synaptic scaffold PSD-95. *Cell* 151: 1581-1594 (*equal contribution)

4. Ronesi JA, Collins KA, Hays SA, **Tsai NP**, Guo W, Birnbaum SG, Hu JH, Worley PF, Gibson JR, Huber KM. (2012) Disrupted Homer scaffolds mediate abnormal mGluR5 function in a mouse model of fragile X syndrome. *Nat Neurosci* 15: 431-440, S431.

Published at University of Minnesota

1. **Tsai NP**, Lin YL, Tsui YC, Wei LN. (2010) Dual action of epidermal growth factor: extracellular signal-stimulated nuclear-cytoplasmic export and coordinated translation of selected messenger RNA. *J Cell Biol* 188: 325-333. (*Highlights* by Short B. (2010). EGF takes dual control of mRNA. *J. Cell Biol 188,* 300)
2. **Tsai NP**, Tsui YC, Pintar JE, Loh HH, Wei LN. (2010) Kappa opioid receptor contributes to EGF-stimulated neurite extension in development. *Proc Natl Acad Sci U S A* 107: 3216-3221.
3. **Tsai NP**, Wei LN. (2010) RhoA/ROCK1 signaling regulates stress granule formation and apoptosis. *Cell Signal* 22: 668-675.
4. **Tsai NP***, Huq M*, Gupta P, Yamamoto K, Kagechika H, Wei LN. (2009) Activation of testicular orphan receptor 4 by fatty acids. *Biochim Biophys Acta* 1789: 734-740. (*equal contribution)
5. **Tsai NP**, Lin YL, Wei LN. (2009) MicroRNA mir-346 targets the 5'-untranslated region of receptor-interacting protein 140 (RIP140) mRNA and up-regulates its protein expression. *Biochem J* 424: 411-418.
6. **Tsai NP**, Tsui YC, Wei LN. (2009) Dynein motor contributes to stress granule dynamics in primary neurons. *Neuroscience* 159: 647-656.
7. **Tsai NP** and Wei LN. (2009). RIP140. *Signaling Gateway*, *Nature Molecule Pages* (http://www.signaling-gateway.org/molecule/query?afcsid=A004092) (Review)
8. Gupta P, Ho PC, Huq MM, Ha SG, Park SW, Khan AA, **Tsai NP**, Wei LN. (2008) Retinoic acid-stimulated sequential phosphorylation, PML recruitment, and SUMOylation of nuclear receptor TR2 to suppress Oct4 expression. *Proc Natl Acad Sci U S A* 105: 11424-11429.
9. **Tsai NP**, Ho PC, Wei LN. (2008) Regulation of stress granule dynamics by Grb7 and FAK signalling pathway. *EMBO J* 27: 715-726.
10. Gupta P, Ho PC, Huq MD, Khan AA, **Tsai NP**, Wei LN. (2008) PKCepsilon stimulated arginine methylation of RIP140 for its nuclear-cytoplasmic export in adipocyte differentiation. *PLoS One* 3: e2658.
11. Bi J, **Tsai NP**, Lu HY, Loh HH, Wei LN. (2007) Copb1-facilitated axonal transport and translation of kappa opioid-receptor mRNA. *Proc Natl Acad Sci U S A* 104: 13810-13815.
12. Huq MD, **Tsai NP**, Khan SA, Wei LN. (2007) Lysine trimethylation of retinoic acid receptor-alpha: a novel means to regulate receptor function. *Mol Cell Proteomics* 6: 677-688.
13. Huq MD, **Tsai NP**, Lin YP, Higgins L, Wei LN. (2007) Vitamin B6 conjugation to nuclear corepressor RIP140 and its role in gene regulation. *Nat Chem Biol* 3: 161-165.
14. **Tsai NP**, Bi J, Wei LN. (2007) The adaptor Grb7 links netrin-1 signaling to regulation of mRNA translation. *EMBO J* 26: 1522-1531.
15. Bi J, **Tsai NP**, Lin YP, Loh HH, Wei LN. (2006) Axonal mRNA transport and localized translational regulation of kappa-opioid receptor in primary neurons of dorsal root ganglia. *Proc Natl Acad Sci U S A* 103: 19919-19924.
16. Huq MD, Gupta P, **Tsai NP**, Wei LN. (2006) Modulation of testicular receptor 4 activity by mitogen-activated protein kinase-mediated phosphorylation. *Mol Cell Proteomics* 5: 2072-2082.
17. Huq MD, **Tsai NP**, Gupta P, Wei LN. (2006) Regulation of retinal dehydrogenases and retinoic acid synthesis by cholesterol metabolites. *EMBO J* 25: 3203-3213.
18. Mostaqul Huq MD, Gupta P, **Tsai NP**, White R, Parker MG, Wei LN. (2006) Suppression of receptor interacting protein 140 repressive activity by protein arginine methylation. *EMBO J* 25: 5094-5104.
19. **Tsai NP**, Bi J, Loh HH, Wei LN. (2006) Netrin-1 signaling regulates de novo protein synthesis of kappa opioid receptor by facilitating polysomal partition of its mRNA. *J Neurosci* 26: 9743-9749.
20. **Tsai NP**, Wu YC, Chen JW, Wu CF, Tzeng CM, Syu WJ. (2006) Multiple functions of l0036 in the regulation of the pathogenicity island of enterohaemorrhagic Escherichia coli O157:H7. *Biochem J* 393: 591-599.
21. Gupta P, Huq MD, Khan SA, **Tsai NP**, Wei LN. (2005) Regulation of co-repressive activity of and HDAC recruitment to RIP140 by site-specific phosphorylation. *Mol Cell Proteomics* 4: 1776-1784.

Meeting Abstract

1. Lizarazo S, Yook Y and **Tsai NP**. (2022) Role of Fragile X Mental Retardation Protein in Amyloid Beta Induced Translational Suppression (Alzheimer's Association International Conference)
2. Lizarazo, S, Yook, Y and **Tsai, NP**. (2021) 'Role of Fragile X Mental Retardation Protein in Amyloid Beta Induced Translational Suppression (Society for Neuroscience Annual meeting)
3. Yook, Y, Liu, DC, Soriano, S, Lizarazo, S, Eagleman, DE and **Tsai, NP**. (2021) Chronic Activation of Gp1 mGluRs leads to Distinct Refinement of Neural Network Activity through Non-Canonical p53 and Akt Signaling (Society for Neuroscience Annual meeting)
4. Liu DC, Eagleman DE and **Tsai NP**. (2019) Novel Roles of ER Stress in Repressing Neural Activity and Seizure through Mdm2-p53 Signaling-dependent Translation (Society for Neuroscience Annual meeting)
5. Eagleman DE, Jewett KA, Lee KY, Soriano S, Eagleman DE, Liu DC and **Tsai NP**. (2019) Dysregulation and restoration of homeostatic network plasticity in fragile X syndrome mice. San Diego, CA (Society for Neuroscience Annual meeting)
6. Lee KY, Jewett KA, Chung HJ and **Tsai NP**. (2019) Loss of Fragile X Protein FMRP Impairs Homeostatic Synaptic Downscaling through Tumor Suppressor p53 and Ubiquitin E3 Ligase Nedd4-2. (Society for Neuroscience Annual meeting)
7. Jewett KA, Lee KY, Soriano S, Eagleman DE, Liu DC and **Tsai NP**. (2018) Dysregulation and restoration of homeostatic network plasticity in fragile X syndrome mice. San Diego, CA (Society for Neuroscience Annual meeting)
8. Zhu J, Lee KY, Jewett KA, Man HT, Chung HJ and **Tsai NP**. (2018) Epilepsy-associated mutations of Nedd4-2 disrupt AMPA receptor-dependent neuronal network activity. (Society for Neuroscience Annual meeting)
9. Liu DC, Seimetz J, Kalsotra A and **Tsai NP**. (2017) Mdm2 mediates FMRP- and Gp1 mGluR-induced protein translation and neural network activity. Washington, DC (Society for Neuroscience Annual meeting)
10. Jewett KA, Zhu J, Kawabe H and **Tsai NP**. (2016) Mdm2-p53 signaling guides Nedd4-2 and GluA1 expression in homeostatic downscaling. Chicago, IL (Society for Neuroscience Annual meeting)
11. Zhu J, Jewett KA and **Tsai NP**. (2016) Epilepsy-associated mutations of Nedd4-2 disrupt AMPA receptor-dependent neuronal network activity. San Diego, CA (Society for Neuroscience Annual meeting)
12. **Tsai NP**, Wilkerson, JR and Huber, KM. (2012) Protocadherin-10 mediates MEF2- and FMRP-mediated synapse elimination. Dallas, TX (8th Annual Postdoctoral Symposium at UT Southwestern)
13. **Tsai NP**, Wilkerson, JR and Huber, KM. (2012) Protocadherin-10 mediates MEF2- and FMRP-mediated synapse elimination through facilitating proteasomal degradation of PSD-95. Waterville Valley, NH (Gordon Conference: Cell Biology of Neuron)
14. **Tsai NP**, Wilkerson, JR and Huber, KM. (2011) Protocadherin-10 mediates MEF2- and FMRP-mediated synapse elimination. Dallas, TX (9th Annual Postdoctoral Symposium at UT Southwestern)
15. **Tsai NP** and Wei LN. (2009) Posttranscriptional regulation of kappa opioid receptor by EGF and Grb7 signaling. ASPET Graduate Student Best Abstract Competition, New Orleans, LA. (Experimental Biology, ASBMB)
16. **Tsai NP**, Ho PC and Wei LN. (2009) Regulation of stress granule dynamics by Grb7 and FAK signaling pathway. New Orleans, LA. (Experimental Biology, ASBMB)
17. **Tsai NP** and Wei LN. (2009) Posttranscriptional regulation of kappa opioid receptor by EGF and Grb7 signaling. New Orleans, LA (Experimental Biology, ASPET)
18. **Tsai NP** and Wei LN. (2009) Posttranscriptional regulation of kappa opioid receptor by EGF and Grb7 signaling. Chicago, IL (Society for Neuroscience Annual meeting)

19. **Tsai NP**, Ho PC and Wei LN. (2008) Regulation of stress granule dynamics by Grb7 and FAK signalling pathway. University of New England, Bradford, ME. (Gordon Conference: Phosphorylation and G-Protein Regulated Signaling Networks)

20. **Tsai NP** and Wei LN. (2007) The adaptor Grb7 links netrin-1 signaling to regulation of mRNA translation. University of Wisconsin, Madison, WI. (12th annual meeting of RNA society)

21. **Tsai NP** and Wei LN. (2006) Netrin-1 signaling regulates de novo protein synthesis of kappa opioid receptor by facilitating polysomal partition of its mRNA. Cold Spring Harbor Laboratory, New York, NY. (71st Symposium-regulatory RNAs)

Invited seminar or meeting presentations

2023 NYCU-UIUC Faculty Research Symposium
2022 National Institute of Health Workshop on Connection between ADRD and ASD (virtual)
2021 National Institute of Health IDG meeting (virtual)
2020 Midwest Fragile X Exchange, Madison, WI
2019 Department of Pharmacology and Chemical Biology, Emory University
2019 Department of Biochemistry, National Cheng Kung University, Taiwan
2019 Midwest Fragile X Exchange, Madison, WI
2018 Department of Psychology, University of Illinois at Urbana-Champaign
2018 Department of Physiology, Michigan State University
2017 Simons Foundation Investigator Meeting
2016 Society of Neuroscience annual meeting
2015 Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
2014 Neuroscience Program, Academia Sinica, Taipei, Taiwan
2014 Institute of Biomedical Sciences, National Taiwan University, Taipei, Taiwan
2014 Society of Neuroscience annual meeting
2014 Department of Cell Biology and Neuroscience, University of California at Riverside
2014 Department of Neurobiology and Anatomical Sciences, University of Mississippi Medical Center
2014 Department of Molecular and Cell Biology, University of Texas at Dallas
2014 Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
2013 Friedman Brain Institute, Mount Sinai School of Medicine
2013 Department of Physiology, University of Texas Health Science Center at San Antonio
2013 The Jackson Laboratory at Bar Harbor, Maine
2013 Department of Neuroscience, Tufts University School of Medicine
2013 School of Biology, Georgia Institute of Technology
2012 Department of Molecular, Cell and Developmental Biology, University of Michigan
2012 Division of Biomedical Sciences, University of California at Riverside
2008 Biomedical Sciences Graduate Recognition Day, University of Minnesota

External Service

Editorial board

Frontiers in Molecular Neuroscience (Jul, 2021 – Present)
Scientific Reports (Aug, 2017 – Present)
PLoS One (Nov, 2017 – Present)

Ad hoc journal reviewer:

Biochimica et Biophysica Acta, Biochemical Journal, Brain Research, Cell Death and Disease, Cell Reports, Cellular and Molecular Life Sciences, EBioMedicine, eLife, EMBO J, EMBO Molecular Medicine, EMBO Reports, FASEB Journal, Frontiers in Molecular Neuroscience, Human Molecular Genetics, Hypertension, Journal of Molecular Cell Biology, Journal of Neurochemistry, Journal of Neuroscience, Molecular Autism, Molecular Cell Research, Neuroscience, Neuropsychopharmacology, Neurochemistry International, PLoS Genetics, PNAS, Scientific Reports.

Grant reviewer:

2021- Present National Health Research Institutes (NHRI, Taiwan) Study Section

2020-2024	Standing member in NIH Study Section: MNG
2021/Oct	Department of Defense PRMRP Review Panel
2021/Jun	UIUC Research Board
2021/Jun	Department of Defense PRMRP Pre-Review Panel
2021/Jan	Health Research Council of New Zealand
2020/Oct	Department of Defense PRMRP Review Panel
2020/Jun	ad hoc NIH Study Section: MNG
2020/Jun	Department of Defense PRMRP Pre-Review Panel
2020/Feb	ad hoc NIH Study Section: MNG
2019/May	Academia Sinica (Taiwan) Thematic Project
2019/Feb	ad hoc NIH Study Section: MDCN Special Emphasis Panel (SEP) P57
2018/Nov	Department of Defense PRMRP Review Panel
2018/Feb	ad hoc NIH Study Section: SYN
2018/Feb	UIUC Research Board
2017/May	Academia Sinica (Taiwan) Thematic Project
2016/Nov	Department of Defense PRMRP Pre-Review Panel
2016/Jul	Medical Research Council (UK)
2015/Nov	Department of Defense PRMRP Review Panel
2015/Jul	Deutsche Forschungsgemeinschaft (German Research Foundation)
2014/Dec	Human Frontier Science Program

Other scholarly service:

2023	Chairperson, Biomedical Research Symposium of National Health Research Institutes in Taiwan
2018	Panelist, Midwestern Taiwanese Biotechnology Symposium
2016	Co-chair and organizer for Nanosymposium on "Mechanisms of Fragile X Syndrome" in Society of Neuroscience 2016 annual meeting
2014	Chair and organizer for Nanosymposium on "Fragile X syndrome and FMRP-related disorders" in Society of Neuroscience 2014 annual meeting

Internal Service

Administrative service

2021 – Present	UIUC Institutional Biosafety Committee
2020	*Ad hoc* Faculty Search Committee Chair
2020 – Present	School of MCB Award Committee
2018 – Present	Molecular and Integrative Physiology Graduate Student Admission Committee
2018 – 2019	Executive Committee for Neuroscience Program
2016 – 2017	Neuroscience Program Admission Committee
2016 – Present	Molecular and Integrative Physiology Graduate Student Travel Award Committee
2015 – Present	Molecular and Integrative Physiology Standing Graduate Qualifying Exam Committee
2015 – 2021	Molecular and Integrative Physiology Newsletter Committee
2015 – 2018	School of MCB Communication Committee
2015	*Ad hoc* MSP interview panel
2014 – 2015	Neuroscience Program Seminar Series Committee

PhD Dissertation Committee

2023 – Present	Manasi Inamdar (MCB; Benjamin Auerbach's lab)
2023 – Present	Shruti Bendre (MCB; Erik Nelson's lab)
2023 – Present	Hairuo Du (Neuroscience; Xinzhu Yu's lab)
2023 – Present	Dajin Cho (Neuroscience; Patrick Sweeney's lab)
2023 – Present	Hayden Noblet (Neuroscience; Hee Jung Chung's lab)
2022 – Present	Tejus Sreelal (MCB; Xin Li's lab)
2021 – Present	Kritika Mehta (MCB' Kai Zhang's lab)
2020 – Present	Greg Tracy (MCB; Hee Jung Chung's lab)
2019 – Present	Anushna Sen (MCB; Sayee Anall's lab)

2019 – 2020 Jessica Saw (MCB)
2018 – 2021 Jiaren Zhang (MCB; Hee Jung Chung's lab)
2016 – 2021 Connor Courtney (Neuroscience; Catherine Christian-Hinman's lab)

Current lab members:

Senior Research Scientist:
Kwan Young Lee, Ph.D. (Postdoc Jan, 2015 – May, 2018; Research Scientist May, 2018 – present)

Postdoctoral research associate:
Vipendra Kumar, Ph.D. (2021 – present)
Anirudh Acharya, Ph.D. (2022 – present)

Graduate Students:
Simon Lizarazo (5th year MCB graduate student)
Yeeun Yook (5th year MCB graduate student)
Gargi Palarshika (3rd year MCB graduate student)
Shiyu Wang (2nd year MCB graduate student)
Yingxin Wang (2nd year MCB graduate student)

Undergraduate students:
Matthew Babik (2022, 2023 MCB Summer Fellowship Recipient)
Sophia Azim
Olivia Wong

Lab alumni/Past trainee:

Emilie Forsell (IB290 undergraduate, Sep, 2021 - May, 2022)
Jessie Cook (MIP graduate student, Dec-2020 – Jun-2022; NINDS Diversity Awardee)
Daphne Eagleman (MIP graduate student, Jan-2018 – Nov-2021; AHA Predoctoral Fellow; James and Maxine Heath Excellence in Teaching Award; Mark A Smith award from the Journal of Neurochemistry) (Faculty at Central New Mexico Community College)
Urbi Saha (NSP graduate student, Aug, 2021 – Feb, 2022)
Jack Gerling (MCB290 undergraduate, Jan, 2019 – present; 2020 MCB Summer Fellowship Recipient)
Tiffany Jong (MCB290 undergraduate, Sep, 2017 – present; 2019 and 2020 MCB Summer Fellowship Recipient)
Bailey Metcalf (MCB290 undergraduate, Jan, 2019 – present; 2019 and 2020 MCB Summer Fellowship Recipient)
Jiuhe Zhu PhD (MIP graduate student, Jan, 2015 – Nov, 2019; MIP Excellence in Thesis Award) (Now a Scientist at ABClonal)
Dai-Chi Liu PhD (NSP graduate student, May, 2015 – Oct, 2019) (Now a Staff Engineer at Regeneron)
Stephanie Soriano (NSP graduate student, Jan, 2018 – Apr, 2019)
Aeshaa Pathak (MCB290 undergraduate, June, 2016 – June, 2018)
Steven Saletta (MCB290 undergraduate, Sep, 2016 – May, 2018) (Now a MD student at UI-Chicago)
Luke Mittlestaedt (MCB290 undergraduate, Sep, 2015 - Dec, 2015)
Kathryn Jewett, Ph.D. (Postdoc, Nov, 2014 – Feb, 2017) (Now an Assistant Professor of Biology at Juniata College)
Jonathan Bacos (MCB290 undergraduate, Sep, 2014 – May 2016; 2015 MCB Summer Fellowship Recipient)

Curriculum Vitae
Xinzhu Yu, Ph.D.

University of Illinois Urbana-Champaign
Department of Molecular and Integrative Physiology
514 Burrill Hall, 407 S. Goodwin Avenue,
Urbana, IL 61801, USA

Phone: 217-332-5711 (office)
323-387-2633 (cell)
Email: xinzhuyu@illinois.edu
Website: www.yu-lab.org

EDUCATION AND TRAINING

4/1/2014 – 10/31/2020 **Postdoctoral research**
University of California Los Angeles, Los Angeles, CA
Advisor: Baljit Khakh, Ph.D.
Projects: Understanding astrocyte biology under health and disease.

9/1/2012 – 3/31/2014 **Postdoctoral research**
University of California Santa Cruz, Santa Cruz, CA
Advisor: Yi Zuo, Ph.D.
Projects: Dissecting molecular mechanisms underlying synaptic and learning deficits in autism spectrum disorder.

9/7/2007 – 8/31/2012 **PhD. awarded in Neurobiology**
University of California Santa Cruz, Santa Cruz, CA
Advisor: Yi Zuo, Ph.D.
Dissertation title: “Imaging structural plasticity of synapses in the brain”

9/1/2005 – 7/12/2007 **M.S. awarded in Neuroscience**
Tsinghua University, Beijing, China
Advisor: Zuoping Xie, M.S.
Dissertation title “Modulation of synchronized calcium activity in cultured hippocampal networks through insulin/IGF-1 signaling”

9/1/2001 – 7/8/2005 **B.S. awarded in Biology**
Tsinghua University, Beijing, China
Advisors: Zuoping Xie, M.S.
Dissertation title: “Physiological properties of *murashka* neurons in memory deficit Drosophila model”

POSITIONS AND EMPLOYMENT

11/1/2020 – **Assistant Professor**
Department of Molecular and Integrative Physiology
Neuroscience Program
Beckman Institute
University of Illinois at Urbana-Champaign, Urbana, IL

HONORS AND AWARDS

2023 – 2028 Director’s New Innovator Award, National Institutes of Health

2023 – 2024 NARSAD Young Investigator Award, Brain and Behavior Research Foundation

2019 NIH BRAIN Initiative Principal Investigators Meeting Travel Award, National Institutes of Health

2018 – 2019 Brain Research Institute Postdoctoral Award, University of California Los Angeles

2016 – 2017 American Heart Association Postdoctoral Fellowship, American Heart Association

2009 Graduate Division Tuition Fellowship, University of California Santa Cruz

2008 McLean Fellowship, University of California Santa Cruz

2006 Excellent Performance Scholarship, Tsinghua University

2004 Hong Kong Citizen University Scholarship, Tsinghua University

MEMBERSHIPS

2015 – 2017 Member, American Heart Association

2008 – 2013 Member, Society for Neuroscience

PUBLICATIONS

Peer-reviewed articles

1. Phi NT, **Yu X** and Hong W (2023) Control of social hierarchy beyond neurons. ***Nature Neuroscience***. 2023 Sep;26(9):1485-1486. doi: 10.1038/s41593-023-01392-7.

2. Institoris A, Vandal M, Peringod G, Catalano C, Tran CH, **Yu X**, Visser F, Breiteneder C, Molina L, Khakh BS, Nguyen MD, Thompson RJ and Gordon GR (2022) Astrocytes amplify cerebral blood flow elevation to sustained cortical activation in the awake mouse. ***Nature Communications***. 2022 Dec 22;13(1):7872. doi: 10.1038/s41467-022-35383-2.

3. Endo F, Kasai A, Soto JS, **Yu X**, Qu Z, Hashimoto H, Gradinaru V, Kawaguchi R and Khakh BS (2022) Molecular basis of astrocyte diversity and morphology across the CNS in health and disease. ***Science***. 2022 Nov 4;378(6619):eadc9020. doi: 10.1126/science.adc9020. Epub 2022 Nov 4.

4. Cho FS, Vainchtein ID, Voskobiynyk Y, Morningstar AR, Aparicio F, Higashikubo B, Ciesielska A, Broekaart DWM, Anink JJ, van Vliet EA, **Yu X**, Khakh BS, Aronica E, Molofsky AV and Paz JT (2022) Enhancing GAT-3 in thalamic astrocytes promotes resilience to brain injury. ***Science Translational Medicine***. 2022 Jul 6;14(652):eabj4310. doi: 10.1126/scitranslmed.abj4310. Epub 2022 Jul 6.

5. **Yu X** (2022) Hippocampal astrocytes represent navigation space. ***PLoS Biology.*** 20(3): e3001568. https://doi.org/10.1371/journal. pbio.3001568.

6. **Yu X**[#] and Khakh BS[#] (2022) SnapShot: Astrocyte interactions. ***Cell.*** 2022 Jan 6; 185(1): 220-220.E1 ([#] *Correspondence*)

7. Nagai J, Bellafard A, Qu Z, **Yu X**, Ollivier M, Gangwani MR, Diaz-Castro B, Coppola G, Schumacher SM, Golshani P, Gradinaru V and Khakh BS (2021) Specific and behaviorally consequential astrocyte Gq GPCR signaling attenuation *in vivo* with iβARK. ***Neuron***. 2021 Jun 10;S0896-6273(21)00376-7.doi: 10.1016/j.neuron.2021.05.023.

8. **Yu X**[#], Moye SL, Khakh BS[#] (2021) Local and CNS-wide astrocyte intracellular calcium signaling attenuation *in vivo* with CalEx[flox] mice. ***Journal of Neuroscience****.* 26 April 2021, JN-RM-0085-21; DOI: https://doi.org/10.1523/JNEUROSCI.0085-21.2021. (*[#] Correspondence*)

9. Nagai J*, **Yu X***, Papouin T, Cheong E, Freeman MR, Monk KR, Hastings MH, Haydon PG, Rowitch D, Shaham S, Khakh BS (2021) Behaviorally consequential astrocytic regulation of neural circuits. ***Neuron.*** 2021 Feb 17;109(4):576-596. (***** *Equal contribution*)

10. **Yu X***, Nagai J*, Marti-Solano M, Soto JS, Coppola G, Babu MM and Khakh BS (2020) Context-specific striatal astrocyte molecular responses are phenotypically exploitable. ***Neuron***. 2020 Oct 9:S0896-6273(20)30745-5. (* *Equal contribution*)

11. **Yu X*,** Nagai J* and Khakh BS (2020) Improved tools to study astrocytes. ***Nature Reviews Neuroscience.*** 2020 Mar;21(3):121-138. (* *Equal contribution*)

12. Diaz-Castro B, Gangwani MR. **Yu X**, Coppola G and Khakh BS (2019) Astrocyte molecular signatures in Huntington's disease. ***Science Translational Medicine***. 2019 Oct 16;11(514).

13. **Yu X**, Taylor AMW, Nagai J, Golshani P, Evans CJ, Coppola G and Khakh BS (2018) Reducing astrocyte calcium signaling *in vivo* alters striatal microcircuits and causes repetitive behavior. ***Neuron***. 99(6):1170-1187

14. Chai H, Diaz-Castro B, Shigetomi E, Monte E, Octeau JC, **Yu X**, Cohn W, Rajendran PS, Vondriska TM, Whitelegge JP, Coppola G and Khakh BS (2017) Neural circuit-specialized astrocytes: transcriptomic, proteomic, morphological, and functional evidence. ***Neuron***. 95(3):531-549.

15. Tjia M, **Yu X**, Jammu LS, Lu J and Zuo Y (2017) Pyramidal neurons in different cortical layers exhibit distinct dynamics and plasticity of apical dendritic spines. ***Frontier in Neural Circuits***. 11:43.

16. Hodges JL*, **Yu X***, Gilmore A, Bennett H, Tjia M, Perna JF, Chen CC, Li X, Lu J and Zuo Y (2017) Astrocytic contributions to synaptic and learning abnormalities in a mouse model of Fragile X Syndrome. ***Biological Psychiatry***. 82(2): 139-149. (* *Equal contribution*)

17. Zemmar A, Weinmann O, Kellner Y, **Yu X**, Vicente R, Gullo M, Kasper H, Lussi K, Ristic Z, Luft AR, Rioult-Pedotti M, Zuo Y, Zagrebelsky M and Schwab ME (2014) Neutralization of Nogo-A enhances synaptic plasticity in the rodent motor cortex and improves motor learning *in vivo*. ***Journal of Neuroscience***. 25;34(26):8685-98.

18. **Yu X**, Zuo Y (2014) Two-photon *in vivo* imaging of dendritic spines in the mouse cortex using a thinned-skull preparation. ***Journal of Visualized Experiments: JoVE***. 2014 May 12;(87)

19. **Yu X**, Wang G, Gilmore A, Yee AX, Li X, Xu T, Smith SJ, Chen L and Zuo Y (2013) Accelerated experience-dependent pruning of cortical synapses in ephrin-A2 knockout mice. ***Neuron***. 80(1):64-71.

20. Zuo Y, **Yu X**, Tennant K and Jones T (2013) *In vivo* imaging of synapse plasticity in the mouse motor cortex. ***Methods in Molecular Biology***. 1010:45-57.

21. Fu M, **Yu X**, Lu J and Zuo Y (2012) Repetitive motor learning induces coordinated formation of clustered dendritic spines *in vivo*. ***Nature***. 483(7387):92-5.

22. **Yu X**, Zuo Y (2011) Spine plasticity in the motor cortex. ***Current Opinion in Neurobiology***. 21(1):169-74.

23. Xu T*, **Yu X***, Perlik A, Tobin W, Zweig J and Zuo Y (2009) Rapid formation and selective stabilization of synapses for enduring motor memories. ***Nature***. 462(7275):915-9. (* *Equal contribution*)

24. Li R*, **Yu X***, Fu M, Zong M, Liu R, Xie Z (2008) Frequency modulation of synchronized Ca^{2+} spikes in cultured hippocampal networks through mTOR. ***Neuroscience Letters***. 441(1):50-5. (* *Equal contribution*)

25. Rui Y, Li R, Liu Y, Zhu S, **Yu X**, Sheng Z and Xie Z (2006) Acute effect of beta amyloid on synchronized spontaneous Ca^{2+} oscillations in cultured hippocampal networks. ***Cell Biology International***. 30(9):733-40.

Book chapter

Zuo Y, **Yu X**, Tennant K and Theresa J (2012) *In vivo* imaging of synapse plasticity in the mouse motor cortex. ***Trinucleotide Repeat Protocols***. ed. by Kohwi Y and McMurray C, Humana Press. 2013.

RESEARCH GRANTS

Current research funding

09/01/2023 – 08/31/2028 NIH Director's New Innovator Award (1DP2NS136871-01)
Project: Functional, structural and molecular decoding of astrocyte-neuron interaction
Principal Investigator: Yu
Funding amount: $1,500,000 (direct)

01/15/2023 – 01/14/2025 NARSAD Young Investigator Award (30748)
Project: Astrocytic regulation of synaptic plasticity and behavior
Principal Investigator: Yu
Funding amount: $70,000 (direct)

10/01/2021 – 09/30/2024 Whitehall Foundation Research Grant (2021-08-025)
Project: Astrocyte-neuron coordination in motor learning and memory
Principal Investigator: Yu
Funding amount: $225,000 (direct)

Completed research funding

06/01/2021 – 05/31/2023 Brain Research Foundation (BRFSG-2021-12)
Project: Astrocyte contributions to cortical synaptic plasticity
Principal Investigator: Yu
Funding amount: $80,000 (direct)

11/01/2018 – 1/31/2020 University of California Los Angeles
Project: Astrocyte contributions to OCD phenotypes
Principal Investigator: Yu
Funding amount: $25,000 (direct)

01/01/2016 – 12/31/2017 American Heart Association 16POST27260256 (Principal Investigator: Yu)
Project: Exploring astrocyte calcium signaling in neurovascular function
Principal Investigator: Yu
Funding amount: $100,000 (direct)

PRESENTATIONS

Internal presentations

2021 Neuroscience Program Seminar, University of Illinois at Urbana-Champaign, Urbana, IL, October 2021.

2021 Frontiers in Miniature Brain Machinery Lecture Series, Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, September 2021.

External presentations

2023 Big 10 Neuroscience Seminar Series, online, October 2023.

2023 School of Neuroscience, Virginia Tech, Blacksburg, VA, April 2023.

2023 American Society for Neurochemistry Annual Meeting (Session Chair), Lexington, KY, March 2023.

2022 Gordon Research Conference on Neuroelectronic Interface, Ventura, CA, March 2022.

2021 NeuroZoom Neuroscience Research Talks, online, August 2021.

2021 American Society for Neurochemistry Annual Meeting, online, June 2021.

2019 Winter Conference on Brain Research, Snowmass, CO, February 2019.

2018 Learning and Behavior Seminar, University of California Los Angeles, Los Angeles, CA, November 2018.

2018 Conference on Glial Biology in Medicine, Roanoke, VA, October 2018.

2018 Synapse to Circuit Seminar, University of California Los Angeles, Los Angeles, CA, May 2018.

2017 Imaging the Behaving Brain with Miniscopes: A MCCS/ICLM Miniscope Workshop, Washington, DC, November 2017.

2013 Chinese Academy of Sciences, Institute of Genetics and Developmental Biology, Beijing, China, May 2013.

SELECTED LIST OF ABSTRACTS

2019 **Yu X,** *et al*. Astrocyte contributions to obsessive-compulsive disorder through calcium signaling. UCLA Bioscience Innovation Day, University of California Los Angeles, Los Angeles, CA, May 2019.

2019 **Yu X,** *et al*. Genetic approaches to attenuate astrocyte calcium signaling *in vivo*. 5th Annual NIH BRAIN Initiative Principal Investigators Meeting, Washington, DC, April 2019.

2017 **Yu X**, *et al*. Exploring astrocyte calcium signaling in neurovascular function. America Heart Association Awardee Event, Los Angeles, CA, February 2017.

2013 **Yu X**, *et al*. Accelerated experience-dependent pruning of cortical synapses in *ephrin-A2* knockout mice. Cold Spring Harbor Asia Symposium, Suzhou, China, May 2013.

2012 **Yu X**, *et al*. Involvement of ephrin-A2 in regulating experience-dependent synapse pruning in the mouse cortex. Society for Neuroscience 42nd Annual Meeting, New Orleans, LA, October 2012.

2011 **Yu X**, *et al*. Characterization of dendritic spine dynamics in the cortex of *Fmr1* knockout mice. Society for Neuroscience 41st Annual Meeting, Washington, DC, November 2011.

2009 **Yu X**, *et al*. Laminar differences of synaptic pruning in the mouse motor cortex. Society for Neuroscience 39th Annual Meeting, Chicago, IL, October 2009.

2008 **Yu X**, *et al*. Eph/ephrin interaction participates in dendritic spine stablization in developing mouse cerebral cortex. Society for Neuroscience 38th Annual Meeting, Washington, DC, November 2008.

SELECTED LIST OF JOURNAL REVIEWER

2020 –
Biological Psychiatry
Cell
Cell Reports
Current Biology
eLife
Frontiers in Neural Circuits *(Review Editor, Editorial Board)*
Glia
Journal of Neuroscience
Journal of Molecular Cell Biology
Nature Communications
Neuroscience and Biobehavioral Reviews
PLOS Biology
PLOS One
Science Advances

GRANT REVIEWER

2023 Equipes FRM grant, Fondation pour la Recherche Médicale (FRM)

2021 Race Against Dementia Fellowship, Alzheimer's Research UK

COMMITTEES

2023 – School of MCB Seminar and Retreat Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2023 Neuroinflammation Faculty Position Search Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2021 Academic Scientist Search Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2021 – Graduate Qualifying Exam Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2021 – Neuroscience Program Seminar Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2021 – Neuroscience Program Admissions Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2021 – MIP Retreat Committee, University of Illinois at Urbana-Champaign, Urbana, IL

2021 – NSP Graduate Student Diagnostic Committee, University of Illinois at Urbana-Champaign, Urbana, IL

TEACHING EXPERIENCE

2021 – Instructor, Fundamentals of Neuroscience Course (MCB 170/180), University of Illinois at Urbana-Champaign, Urbana, IL

2021 – Guest speaker, Interdisciplinary Approaches to Neuroscience (NEUR 542), University of Illinois at Urbana-Champaign, Urbana, IL

2021 Guest speaker, Graduate Course of Cell and Molecular Biology Research Program, Emory University, Atlanta, GA (Instructor: Steven Sloan, MD, PhD)

2011 Teaching Assistant, Neurobiology Course, Marine Biological Laboratory, Woods Hole, MA

2009 Teaching Assistant, Eukaryotic Genetics Laboratory Course, University of California Santa Cruz, Santa Cruz, CA

2008 Teaching Assistant, Neurobiology Course, Marine Biological Laboratory, Woods Hole, MA

2008 Teaching Assistant, Eukaryotic Genetics Laboratory Course, University of California Santa Cruz, Santa Cruz, CA

MENTORING EXPERIENCE

2023 – Undergraduate students, Meher Swamy, Tony Chang, Hritik Arasu, Boqin Yuan, University of Illinois at Urbana Champaign, Urbana, IL

2022 – Graduate student, Hairuo Du, NSP program, University of Illinois at Urbana Champaign, Urbana, IL

2022 – Undergraduate students, Huanyi Jiang, Anushree Vaidya, University of Illinois at Urbana Champaign, Urbana, IL

2021 – Graduate student, Kenneth Samuel, MCB program, University of Illinois at Urbana Champaign, Urbana, IL

2021 – Graduate student, Eunjoo Kang, NSP program, University of Illinois at Urbana Champaign, Urbana, IL
2021 – 2024 Interdisciplinary Environmental Toxicology Program Fellowship

2021 – Graduate student, Eunyoung Kim, NSP program, University of Illinois at Urbana Champaign, Urbana, IL

2021 – 2022 Undergraduate student, Mingyi Ma, University of Illinois at Urbana Champaign, Urbana, IL
2022 Jenner Family Summer Undergraduate Research Fellowship
2022 Graduated with Distinction in Research

2021 – 2023 Undergraduate student, Yufei Tian, University of Illinois at Urbana Champaign, Urbana, IL
2021 MCB Summer Undergraduate Research Fellowship
2022 Berkowitz Summer Undergraduate Research Fellowship

2021 Undergraduate student, Hannah Kim, University of Illinois at Urbana Champaign, Urbana, IL

2018 – 2019 Undergraduate student, Stefanie Moye, University of California Los Angeles, Los Angeles, CA

2018 – 2019 Undergraduate student, Brian Benyamini, University of California Los Angeles, Los Angeles, CA

2011 – 2012 Graduate student, Michelle Tjia, University of California Santa Cruz, Santa Cruz, CA

2011 – 2012 Graduate student, Jay Perna, University of California Santa Cruz, Santa Cruz, CA

2009 – 2012 Undergraduate student, Anthony Gilmore, University of California Santa Cruz, Santa Cruz, CA

2009 – 2012 Undergraduate student, Jonathan Zweig, University of California Santa Cruz, Santa Cruz, CA

2009 – 2012 Undergraduate student, Andrew Perlik, University of California Santa Cruz, Santa Cruz, CA

Steven R. Blanke, Ph.D.

curriculum vitae

Ralph S. Wolfe Professorial Scholar
Department of Microbiology
School of Molecular and Cellular Microbiology
University of Illinois
B103 CLSL
601 S. Goodwin Avenue
Urbana, IL 61801

Telephone (217) 244-2412
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Updated:03-07-22
Short version

EDUCATION

1990-96	Post-Doctoral	Harvard Medical School Department of Microbiology & Mol. Genetics, Boston, MA
1983-89	Ph.D.	University of Illinois Department of Biochemistry, Urbana, IL
1978-82	B.S.	Virginia Tech University Department of Biochemistry, Blacksburg, VA

RESEARCH AND PROFESSIONAL APPOINTMENTS

2020-present	Member	Center for Pathogen Diagnostics Grainger College of Engineering
2019-present	Member	Illinois Microbial Systems Initiative University of Illinois, Urbana, IL
2018-present	Professor	Biomedical and Translational Sciences Department Course Director, Infection and Immunity Carle-Illinois College of Medicine, Urbana, IL
2012-present	Professor	Pathobiology Department College of Veterinary Medicine University of Illinois, Urbana, IL
2010-present	Professor	Department of Microbiology, Institute for Genomic Biology College of Liberal arts and Sciences University of Illinois, Urbana, IL
2010-2014	Professor	Institute for Genomic Biology University of Illinois, Urbana, IL
2005-present	Core Faculty Affiliate	ACDIS, Center for Global Studies University of Illinois, Urbana, IL
2005-2010	Associate Professor	Department of Microbiology, Institute for Genomic Biology University of Illinois, Urbana, IL
2005-2007	Adjunct Associate Professor	Department of Biology & Biochemistry University of Houston, Houston TX
2004-2005	Adjunct Associate Professor	Department of Microbiology & Molecular Genetics University of Texas Medical School-Houston
2003-2005	Director	Institute for Molecular Biology University of Houston, Houston TX
2002-2005	Associate Professor	Department of Biology & Biochemistry Member, Biochemistry Division Associate, Molecular & Cellular Biology Division University of Houston, Houston TX
1996-2002	Assistant Professor	Department of Biology & Biochemistry Member, Biochemistry Division Associate, Molecular & Cellular Biology Division University of Houston, Houston TX
1990-1996	Post-Doctoral Fellow Dr. R. John Collier (advisor)	Department Microbiology & Molecular Genetics Harvard Med. School, Boston, MA
1983-1989	Graduate Research Assistant	Department of Biochemistry

	Dr. Lowell P. Hager (advisor)	University of Illinois, Urbana-Champaign, IL
1982-1983	Laboratory Specialist	Department of Toxicology Med. Coll. Virginia, Richmond, VA
1981	NSF Summer Research Fellow	Department of Chemistry North Carolina State Univ., Raleigh, NC

AWARDS, HONORS, AND RECOGNITION

Research, Scholarship, Professional, and Teaching Awards

2019	Foundation Award, University High School, Urbana IL
2017	Ralph S. Wolfe Professorial Scholar, University of Illinois
2015	Elected into Fellowship, American Academy of Microbiology
2014	Faculty Excellence Award (one award given per year within the School of Molecular and Cellular Biology at the University of Illinois).
2004	Excellence in Research and Scholarship Award at the Associate Professor Level (one University level award given per year at each academic rank at the University of Houston).
2002	Excellence in Research and Scholarship Award at the Assistant Professor Level (one University level award given per year at each academic rank at the University of Houston).
1999	Young Investigator Award, 10th International Meeting *Campylobacter* & *Helicobacter.*
1999	Teaching Excellence Award, College of Natural Sciences and Mathematics.
1998-99	Enron Award for Excellence in Teaching at the University level, University of Houston
1997	Natural Science and Mathematics Alumni Association Award.
1996	Oakridge Junior Faculty Award for Life Sciences Research.
1991-94	NIH Postdoctoral Research Award.
1981	NSF Undergraduate Research Award.

Lectureships, Meeting Chairs, Session Conveners, and Additional Activities/Honors

2022	Vice-Chair, Lakeside Conference on Protein Toxins and Effectors, Abbey Resort, Lake Geneva WI, October, 2022.
2022	Member, International Steering Committee, International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis*, Paris, France (Virtual), April 27, 2021.
2021	Convener and Organizer, Symposium: *Packing a Punch, while Grabbing some Lunch: Microbial Subversion of Host Cell Metabolism*, 2020 ASM Microbe, Anaheim, CA, June XX, 2020.
2021	Co-Chair, Host-pathogen interactions, International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis*, Paris, France (Virtual), April 27, 2021.
2020	Organizing, Committee, Session Chair, Lakeside Conference on Protein Toxins and Effectors, Virtual Meeting, October 5-7, 2020.
2020	Leader, Task Force on Curriculum Thread Objectives, Carle Illinois, College of Medicine, June 2020.
2020	Sigma Xi Honorary Research Society, elected as full-member
2019	Co-Founder, Lakeside Conference on Protein Toxins and Effectors, Inaugural meeting in Oct. 2020
2019	Co-Chair, Workshop on *Helicobacter pylori* virulence factors and Pathogenesis, International Meeting on Campylobacter, Helicobacter, and related Organisms, Belfast, Ireland, September 10, 2019
2019	Discussion Leader/Session Chair, *In vivo* Imaging of Disease, 2019 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 3-8, 2019.
2018	Speaker: ASM Microbe Plenary Session on Gut-Brain Axis, Atlanta, GA, June 2018.
2017-2019	Organizing Committee, 2019 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 3-8, 2019.
2017-2020	Speaker and Moderator, ASM Manuscript Writing and Publishing for Scientists Webinar Series
2017	Chair, 2017 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 10-15, 2017.
2017	Convener, Opening Plenary Session, 2017 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 10, 2017.
2017	International Steering Committee, International Conference on *Bacillus anthracis*,

B. cereus, and *B. thuringiensis*

2017 Sessions Chair, *Pathogenicity and Toxins, Sessions 1 and 2*, International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis*, Victoria, British Columbia

2016 Session Chair, 2016 Midwest Microbial Pathogenesis Conference

2016 Keynote Speaker 4th International Conference on Bacteriology and Infectious diseases (2016) Extending the Gut-Brain Axis: The Curious Case of *Helicobacter pylori*, May 16-18, 2016 at San Antonio, USA

2016 Organizing Committee, 2016 Midwest Microbial Pathogenesis Conference

2016 Organizing Committee, 4th Conference on Bacteriology and Infectious diseases, May 16-18, 2016 at San Antonio, USA

2015 Chair, Scientific Session on *Toxins*, 2015 International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis*, New Delhi, India, November 2, 2015.

2015 Convener and Organizer, Symposium on *Stem Cells and Microbial Reprogramming of Host Cells and Tissues*, 2015 ASM General Meeting, New Orleans, June 1, 2015.

2015 Chair, Opening Plenary Session, 2015 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 10-15, 2015.

2015 Organizing Committee and Vice-Chair, 2015 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 10-15, 2015.

2014 Co-Organizer, and Co-Master of Ceremonies, Lowell P. Hager Memorial Symposium (2014) Urbana, IL, October 17-18, 2014.

2014 Finalist for 2016 Vice Chair and 2018 Chair, Gordon Conference on Microbial Toxins and Pathogenicity, Waterville Valley, NH.

2014-2015 Council Member, Division B (Microbial Pathogens) of American Society for Microbiology.

2014 Plenary Session Convener and Organizer, *Malignant Microbiology*. 2014 ASM General Meeting, Boston, MA, May 2014.

2014 Invited Honor's Address, College of Liberal Arts and Sciences Honor's Ceremony, Urbana, IL, May 4, 2014.

2010, 2013 Cited as a Teacher ranked as ***outstanding*** by their students for Molecular and Cellular Biology/Life Sciences and College of Medicine Courses.

2008, 2009 Cited as a Teacher ranked as ***excellent*** by their students for Molecular and
2011, 2012 Cellular Biology/Life Sciences and College of Medicine Courses.

2013 Elected for 2015 Vice Chair and 2017 Chair, Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA,

2013 Chair, Bacteria-Host Interactions, 2013 International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis*, Victoria, Canada, September 2, 2013.

2013-2014 Chair, Division B (Microbial Pathogens) of ASM.

2013 Discussion Leader/Session Chair, Organizing Committee, 2013 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 10-15, 2013.

2012 Finalist for 2014 Vice Chair and 2016 Chair, Gordon Conference on Microbial Toxins and Pathogenicity, Waterville Valley, NH.

2011-2013 International Steering Committee, 2013 International Conference on *Campylobacter*, *Helicobacter*, and Related Organisms, Aberdeen, Scotland, September, 2013.

2012-2013 Chair Elect, Division B (Microbial Pathogens) of ASM, 2012-2013.

2011 Session Chair, Organizing Committee, 2011 International Conference on *Campylobacter*, *Helicobacter*, and Related Organisms, Vancouver, British Columbia, Canada, August 28 – September 1, 2011.

2011 Keynote Speaker, 23rd Annual Buffalo Conference on Microbial Pathogenesis – Witebsky Center for Microbial Pathogenesis and Immunology (2011) Of Persistence, Cancer, and Asthma: The Curious Case of *Helicobacter pylori*, Buffalo, NY, April 29, 2011.

2011 Organizing Committee, and Discussion Leader/Session Chair, 2011 Gordon Conference on Chemical & Biological Terrorism Defense, Ventura, CA, March 20-25, 2011.

2011-present Faculty Advisory Board Member for the Program in Arms Control, Disarmament, and International Security (ACDIS),

Center for Global Studies, University of Illinois, Champaign, IL.

2010 Session Co-Chair, Trans RCE Workshop on Toxins in Bethesda, MD: Toxin-cell Interactions and Toxin Entry." Bethesda, MD, September 23-24, 2010.

2010 Discussion Leader/Session Chair, 2010 Gordon Conference on Microbial Toxins and Pathogenicity, Waterville Valley, NH, July 11-16, 2010.

2010-2018 Faculty of 1000, Faculty Member in Cellular Microbiology

2009 Keynote Speaker, Microbial Pathogenicity Session, Christchurch, New Zealand, ComBio 2009.

2009 Keynote Speaker, Symposium on Protein Structure and Function in Health and Disease at the University of Otago, Dunedin, New Zealand, December 4, 2009.

2009 Co-Chair, Bacillus-ACT session on Host-Pathogen Interactions, Santa Fe, NM, September 2, 2010.

2009 Chair, "Gastrointestinal Cancers," International World Cancer Conference in Beijing, China: June 23, 2009.

2009 Chair, ASM Colloquium in Philadelphia, PA: "Pathogen Targeting of Mitochondria as the Multifunctional Organelle at the Cross-Roads of Innate Immunity, Apoptosis, and Autophagy," May 20, 2009.

2009 Annual Hans Christian Gram Lecturer, Indiana State University, April 7, 2009.

2008 Plenary Lecturer – International Meeting of the Federation Korean Microbiological Societies, October 2008.

2008 Co-Chair, ASM Symposium in Boston, MA: "Mechanisms of Complex Polymicrobial Disease: Walking The Fine Line Between Symbiosis and Pathophysiology." May 2008.

2006 Co-Chair, Hager Symposium, Urbana, IL, September, 2006.

2005-present Core Faculty Member, Program in Arms Control, Disarmament, and International Security (ACDIS), University of Illinois, Champaign, IL.

2004-2005 Invited Member, Bio-Houston Task Force on Infectious Diseases.

2004 Co-Chair, ASM Symposium in New Orleans: "Portals and Pathways," May 2004.

2003 Nominee, National Defense Safety Study Group, Spring 2003.

2001 Chair, Microbial pathogenesis session, ASM Texas Branch, Fall 2001.

2000 George Lynn Cross Lecturer – University of Oklahoma, April 2000.

1999 Commencement Speaker, College of Natural Sciences and Mathematics, May 1999.

1988 Conference Chair, Allerton Biochemistry Research Conference, Univ. of Illinois, 1988.

PROFESSIONAL SERVICE

Manuscript Review

Editorship

Associate Editor, Biosafety and Biosecurity Section, *Frontiers in Bioengineering and Biotechnology*, 2019-present

Associate Editor, *Frontiers in Cellular and Infection Microbiology*, May 2018-present.

Associate Editor, Molecular Bacterial Pathogenesis, *Frontiers in Cellular and Infection Microbiology*, 2018-2020

Editor – *Journal of Biomedicine and Biotechnology / BioMed Research International*, 2009-2017

Associate Editor – *PLoS Pathogens*, 2008-present.

Editor – *Infection and Immunity*, 2007 - 2017.

Guest Editor

Proceedings of the National Academy of Sciences – 2014, 2020

mBIO – 2018, 2020

Editorial Board Service

Editorial Board Member, Journal of Microbiology and Biotechnology, January 2016 - present

Review Editor, *Frontiers in Biosecurity and Biosafety*, July 2014-present
Editorial Board Member – F1000 Research – June 2012-2017.
Review Editor, *Frontiers in Cellular and Infection Microbiology*, May 2010-present.
Editorial Board Member – *Infection and Immunity*, January 1, 2002-2007.

ad hoc Manuscript Review (probably not complete)

Nature, Science, PLoS Pathogens, Proceedings of the National Academy of Sciences, Nature Chemical Biology, Nature Microbiology, Science Signaling, ***Science Advances****, Nature Scientific Reports, Immunity, mBIO, Cell Host & Microbe,* ***Cell Reports,*** *Trends in Microbiology, Nature Reviews Microbiology, ACS Infectious Disease, Applied and Environmental Microbiology, BioCell, Biochimica et Biophysica Acta, Biochemistry, BioMed Research International, BMC Research Notes, Cell Communication and Signaling, Cellular Microbiology, Cell and Molecular Life Sciences, Clinical and Diagnostic Laboratory Immunology, Clinical Microbiology and Infection, Clinical and Vaccine Immunology, European Journal of Clinical Microbiology & Infectious Diseases, European Journal of Pharmacology, Experimental Biology and Medicine, FEBS Journal, FEMS Immunology and Medical Microbiology, Frontiers in Cellular and Infection Microbiology,* ***Infection and Immunity****, Health Security, Journal of Bacteriology, Journal of Biological Chemistry, Journal of Cellular Biochemistry, Journal of Clinical Microbiology, Journal of Medical Microbiology, Journal of Molecular Biology, Journal of infectious Diseases, Journal of Innate Immunity, Journal of Inorganic Biochemistry, Microbial Biotechnology, Molecular Microbiology, PLoS One, Protein Science, Science Translational Medicine, Seminars in Cell and Developmental Biology, Trends in Molecular Medicine*

Study Sections & Review Panels

Standing member

College of CSR Reviewers – 2010-2012
National Institutes of Health – Permanent member
Bacterial Pathogenesis Study Section, 2004-2007
Bacteriology & Mycology I Study Section, 2003-2004

ad hoc member

National Institutes of Health
Panelist, Special Emphasis Panel, Limited Competition: Bacterial Pathogenesis, Review meeting: November, 2021.
National Institutes of Health
Panelist, Special Emphasis Panel, Limited Competition: Facility and Building System Upgrades Support for the Regional Biocontainment Laboratories, G20, ZAI1 LR-M (S1) 2 Review meeting: June 20, 2021.
National Institutes of Health
Panelist, Special Emphasis Panel, Bacterial Pathogenesis, ZRG1 IDIA-B (02) Review meeting: June 9, 2021.
National Institutes of Health.
Panelist, Bacterial Pathogenesis Study Section, February 22-23, 2016.
National Institutes of Health
Participant, Special Emphasis Panel, ZRG1 IDM-B-80 Review meeting: March 1-3, 2015.
National Institutes of Health
Participant, Special Emphasis Panel, ZRG1 IDM-V-02 Review meeting: January 7-8, 2014.
UIUC Review Board, *ad hoc* member, 2013.
National Institutes of Health
Participant, Special Emphasis Panel, ZRG1 IDM-N-03 Review meeting: November 20-21, 2013.
Food and Drug Administration
Site Visit review team– Center for Biologics Evaluation and Research, October 25, 2013
National Institutes of Health
Participant, Special Emphasis Panel, ZRG1 IDM-V-02 Review meeting: May 22-23, 2013.

NIH-sponsored Pacific-Southwest Regional Center of Excellence (PSWRCE) for Biodefense and Emerging Infectious Disease Research, March 2012.
Participant, Special Emphasis Panel, ZRG1 CB J 02, Cell Biology Integrated Review Group, December 22, 2010.
Participant, Special Emphasis Panel, ZRG1 CB-P (02) M, Cell Biology. September 1-2, 2010.
Chair, Special Emphasis Panel, ZRG1 IDM-B 02 M, Pathogens and their Vectors. February, 2010.
Infectious Disease and Microbiology (2) Study Section Special Emphasis Panel, February 2009.
Regional Centers for Excellence in Biodefense and Emerging Infectious Diseases Special Emphasis Panel, September 2008.
Molecular Basis of Infectious Diseases Study Section, June 2008.
Center of Biomedical Research Excellence in Protein Structure and Function (COBRE-PSF) Program, June 2007.
Bacteriology and Mycology Study Section
Spring 2003
Summer 2002
Fall 2000
Spring 2000
CSR Special Emphasis Panel on Biodefense, summer 2003.
CSR Special Emphasis Panel on *Helicobacter* Immunity, spring 2003.
Medical Research Council, UK, Infections & Immunity Board (IIB) Fall, 2011.
Cancer Research UK – November 2006.
United States Army Medical Research and Material Command
Summer 2000
Fall 2000
Fall 2002

Award Review Panels

2017 Pew Scholars Program
2016 John D. and Catherine T. MacArthur Foundation, Invited Nominator, MacArthur Fellows Program,
2015 Howard Hughes Medical Institute's International
Student Research Fellowship Review Panel, October, 2015
2015 Searle Scholars Pre-proposal Review Panel
2014 Howard Hughes Medical Institute's International
Student Research Fellowship Review Panel, October, 2014
2011 Midwest Association of Graduate Schools (MAGS) Outstanding Thesis Award, January 2011.

Book Reviews

2007 Infectious Disease by Nandini Shetty, Julie Andrews, and Julia Tang. Blackwell Publishing.

2002 *Microbiology: Principles and Explorations*, Fifth Edition, by Jacqueline Black
Publisher: John Wiley & Sons, Inc.

1999 *Biochemistry*, Third Edition, by Chris Matthews and Ken van Holde
Publisher: Addison Wesley.

Consulting, Advisory Boards, Steering Committees

Board of Trustees, University of Illinois, Campus Ministry, 2021-present
Chairman, Board of Directors, Lakeside PTE Conference NFP, 2020-present
Scientific Consultant, Prenosis, Inc. Urbana, IL, 2017-2018.
Scientific Consultant, Ocean Spray Inc. Global Health Sciences, Corporate Headquarters, Lakeville, MA, January 10, 2017.
Consultant, Association of Analytical Communities (AOAC) 2015 Stakeholder Panel on Agent Detection Assays, Rockville, MD, September 1-2, 2015.
Subject Matter Expert, Biodefense Agent Detection
Department of Homeland Security, Science and Technology Directorate

Chemical and Biological Defense Division
Ventura CA March 13th-17th, 2015.

Scientific Consultant, The Implementation Group, Washington, D.C., February 7, 2014
Subject Matter Expert, Biodefense Modeling Parameters Review
Department of Homeland Security, Science and Technology Directorate
Chemical and Biological Defense Division
Ventura CA March 11th-15th, 2013.
Faculty Advisory Board Member for the Program in Arms Control, Disarmament, and International Security (ACDIS), 2011- Present
Scientific Consultant, PIC, Inc. Urbana, IL, October 29, 2008.
Scientific Consultant, BioRad, January 29, 2008.
Scientific Consultant, Molecular Logix, Inc., 2003-2005.
Scientific Consultant, Gerson Lehrman., 2003-2005.
Scientific Consultant, Eagle Analytical, Inc., 2003-2004.
Steering Committee Member – Houston Area Molecular Basis of Infectious Diseases, 2002-2005.
Lowell P. Hager Endowed Scholarship Committee, 1997-2000.
Scientific Advisory Board, Pathobiotek Inc., 1997-2002.

Professional Societies

Current

American Chemical Society
American Society for the Advancement of Science
American Society for Microbiology
Sigma XI

Past

American Society for Biochemistry and Molecular Biology
Biophysical Society
The Protein Society

RESEARCH

Active and Recently Active Research Support

R21AI144544 – Blanke – (PI) 03/12/21 - 02/28/23
National Institutes of Health / NIAID –
Cytolethal Distending Toxin and Intestinal Homeostasis
The major goals of this project are to investigate the mechanism and role of microbial genotoxicity in altering intestinal barrier function.

Center for Pathogen Diagnostics – Cunningham - (PI) 07/01/20 – 06/30/25
University of Illinois - Zhejiang University
ZJU-UIUC Center for Pathogen Diagnostics (CPD)
The major goals of this project are to interface the disciplines of engineering and microbial pathogenesis/infectious diseases for the development of next generation diagnostics.
Role: Center Investigator

T32 GM070421 – van der Donk – PI 07/01/05-06/30/25
National Institutes of Health / GM
A Training Program in Chemistry Interface with Biology"
The major goals of this project are to provide training experiences for Ph.D. students in the discipline of chemical at the biology.
Role: Preceptor

T35OD011145 – Hoyer – PI 07/01/15 – 06/30/25
National Institutes of Health / Office of the Director (OD)
"Summer Training in Translational Biomedical Research"
The major goal is to enhance the training of DVM-Ph.D. candidates.
Role: Preceptor

Completed Research Support (Last 20 years)

R21AI131168 – Blanke – (PI) 04/01/17-03/31/20
National Institutes of Health / NIAID
"*Helicobacter pylori* and Neuroinflammation"
Annual direct costs for the first year: $125,000
Total Project Direct Costs: $275,000
Other Investigators: None

R21 AI122202 – Blanke – (PI) 02/01/16-01/31/18
National Institutes of Health / NIAID
"*Bacillus anthracis* egress from infected macrophages"
The major goal of this project is to investigate the mechanism by which intracellular escape infected macrophages during infection, using an *in vivo* adaptive transfer mouse model for inhalational anthrax
Annual direct costs for current year: $125,000
Total Project Direct Costs: $275,000
Other Investigators: None

RB17152 (Blanke – PI) 04/17/17 – 11/17/18
UIUC Research Board Award
"*Helicobacter pylori* and host iron deficiency"
Annual direct costs for the first year: approximately $22,000
Total Project Costs to Blanke Lab at UIUC: $22,000

F30 OD023012 - Holland (PI) 04/01/2016 - 03/31/20
National Institutes of Health / Office of the Director (OD)
"Mitochondrial targeting by the vacuolating cytotoxin of *Helicobacter pylori"*
Annual direct costs for current year: $37,068
Total Project Direct Costs: $161,763
Other Investigators: Blanke (Sponsor)

T32 GM070421 – Blanke (Preceptor) 07/01/05-06/30/20
"A Training Program in Chemistry Interface With Biology"
Annual Direct Costs for Current Year: unknown
Total Project Direct Costs: unknown
National Institutes of Health / GM
Other Investigators: (van der Donk – PI)

T35OD011145 – Blanke (Preceptor) 07/01/15 – 06/30/20
"Summer Training in Translational Biomedical Research"
Annual Direct Costs for Current Year: unknown
Total Project Direct Costs: unknown
National Institutes of Health / Office of the Director
Other Investigators: (Hoyer – PI)

R21 AI105664 – Blanke – (PI) 07/01/15-6/30/17
National Institutes of Health / NIAID
"Bacillus-containing vacuole-mediated interactions of *Bacillus anthracis* with macrophages"
Annual direct costs for current year: $125,000

Total Project Direct Costs: $275,000
Other Investigators: None

R01 GM098756 – Bradley (PI) 09/01/11-08/31/16
National Institutes of Health / NISGM
"Interactions of cytolethal distending toxins with host cells"
Annual direct costs for current year: approximately $470,000
Total Project Direct Costs: approximately $2,391,082
Other Investigators: Blanke (Co-PI)

R21 AI117497 – Blanke (PI) 04/01/15 – 03/31/17
National Institutes of Health / NIAID
"Intracellular trafficking of the pore-forming VacA from *Helicobacter pylori* "
Annual direct costs for current year: $125,000
Total Project Direct Costs: $275,000
Other Investigators: None

R21 AI105664 – Blanke – (PI) 07/01/15-6/30/17
National Institutes of Health / NIAID
"Bacillus-containing vacuole-mediated interactions of *Bacillus anthracis* with macrophages"
Annual direct costs for current year: $125,000
Total Project Direct Costs: $275,000
Other Investigators: None

RB15182 – Blanke (PI) 05/01/15 – 10/31/16
Arnold O. Beckman Award
"Evaluation of cognitive performance in a rat model of *Helicobacter* pylori chronic infection"
The major goals of this project are to investigate the consequences of *Helicobacter pylori* mediated inflammation on cognition.
Annual direct costs for current year: $28,800
Total Project Direct Costs: $28,800
Other Investigators: None

F30 OD023012 - Holland (PI) 04/01/2016 - 03/31/2020
National Institutes of Health / Office of the Director (OD)
Mitochondrial targeting by the vacuolating cytotoxin of *Helicobacter pylori*
The major goal is to enhance the training of this DVM-Ph.D. candidate. There is no overlap with the proposed research in this application.
Role: Sponsor

Keck.2014-06231 – Blanke (co-PI) 01/1/15 – 12/31/18
"Aminoacyl-tRNA Synthetases: Evolutionary Scaffolds to Novel Biology and Physiology"
Annual Blanke direct costs for current year: $55,000
Total Blanke Project Direct Costs: $165,000
The Keck Foundation
Other Investigators: Susan Martinis (PI)

RB14045 (Blanke – PI) 11/27/13 – 06/28/15
"Evaluation of systemic and central nervous system inflammation by the human gastric pathogen *Helicobacter pylori*, within a rat model of infection"
Annual direct costs for the first year: approximately $28,800
Total Project Costs to Blanke Lab at UIUC: $28,800
UIUC Research Board Award

Other Investigators: Josh Gulley (Co-I)

2016 ASM-URFP (Blanke – sponsor) 05/15/16 – 06/31/16
American Society for Microbiology
Undergraduate Research Fellowship Program
Annual Direct Costs for Current Year: $4000
Total Project Direct Costs: $5,000
Other investigators: Bosi (student applicant)

R13AI115882 – Blanke (PI) 12/01/14 - 01/16/16
"2015 Chemical & Biological Terrorism Defense Gordon Research Conference and Gordon Research Seminar"
Total Project Direct Costs: $5,000
National Institutes of Health / NIAID
012/01/14-04/13/15
Other Investigators: (Fletcher, J. – co-I)

T32 GM078876-01 – Blanke (Executive Committee Member, Preceptor) 07/01/10-06/30/15
"A Training Program in Infection Biology"
Total Project Direct Costs: $1,670,377
National Institutes of Health / GM
Other Investigators: (Slauch – PI)

R01 DK085158-01 (Blanke – Co-I) 12/01/09-11/30/14
National Institutes of Health / NIDDK
"NF-κB signaling and *H. pylori*-induced gastric disease"
Total Project Direct Costs: approximately $1,250,000
Other Investigators: (Chen – PI)

R03 AI079478 (Blanke – Co-I) 08/01/09-07/31/12
National Institutes of Health / NIAID
"Polyphosphate, Acidocalcisomes, and *Helicobacter pylori* stress Response"
Total Project Direct Costs: $100,000
Other Investigators: Seufferheld (PI)

R01 AI45928 – Blanke (PI) 04/01/00 – 09/30/12
National Institutes of Health / NIAID
"Molecular Mechanisms of the *Helicobacter pylori* Vacuolating Toxin"
The major goals of this project are to investigate the structure-function relationships that dictate toxin epithelial cell activity.
Total Project Direct Costs: $1,375,000
Other Investigators: None

R21 AI076830 (Blanke – Co-I) 08/01/09-07/31/12
National Institutes of Health / NIAID
"B. anthracis glutamate racemases"
Annual direct costs for the first year: $125,000
Total Project Direct Costs: $275,000
Other Investigators: (Spies – PI)

T32 GM007283 - Blanke (Preceptor) 07/01/06 – 06/30/11
National Institutes of Health / GM
"Cellular and Molecular Biology Training Grant"

Annual direct costs for the first year: unknown
Total Project Direct Costs: unknown
Other Investigators: (Morrissey – PI)

John D. and Catherine T. MacArthur – Blanke (Biosecurity Theme Co-Leader) 02/01/09-01/31/11
John D. and Catherine T. MacArthur Foundation
"Security Policy Formation: Bringing Scientific Expertise and Dialogue to Policymakers"
Annual direct costs for the first year: approximately $180,000
Total Project Direct Costs: approximately $360,000
Other Investigators: (Flint – PI)

U54 AI057156 – Blanke (Co-I) 10/01/03 – 02/29/09
National Institutes of Health / NIAID
"Biodefense & Emerging Infectious Diseases"
Annual direct costs for the first year: $200,000
Total Project Direct Costs: $1,000,000
Other Investigators: Walker (PI), Koehler (PI), Ballard (Co-I); Lyons (Co-I)

CRI (Blanke – co-PI) 09/01/06-08/31/08
UIUC - CRI
"Evolutionary Medicine and Women's Vaginal Health"
Annual direct costs for the current year: 75,000
Total Project Direct Costs: $150,000
Other Investigators: Wilson (PI), Slauch (Co-PI), Gaskins (Co-PI), Olsen (Co-PI), Tapping (Co-PI), Weisbaum (Co-PI).

CRI (Blanke – co-PI) 09/01/06-08/31/08
UIUC - CRI
"Effects of genetic variation in mucosally-expressed components of the innate defense on the composition of the colonic microbiota and susceptibility to IBD"
Annual direct costs for the current year: 75,000
Total Project Direct Costs: $150,000
Other Investigators: Gaskins (PI), Greenberg (Co-PI), Mackie (Co-PI), Weaver (Co-PI), Tapping (Co-PI), Zhong (Co-PI).

AI059095- Blanke (PI) 04/01/04 – 03/31/06
National Institutes of Health / NIAID
"C. jejuni Cytolethal Distending Toxin Cell Interactions"
Annual direct costs for the current year: $110,000
Total Project Direct Costs: $400,000
Other Investigators: Bradley (Co-I)

Research Board – Blanke (Co-PI) 06/01/06 – 05/31/07
Research Board - UIUC
"The role of PPK in the *Helicobacter pylori* Stress Responses"
Annual direct costs for the current year: $8,111
Total Project Direct Costs: $8,111
Other Investigators: Seufferheld (PI)

AI055883 – Blanke (Co-I) 08/01/03 – 07/31/05
National Institutes of Health / NIAID
"Dynamic Drug Design Targeting Botulinum Neurotoxins"
Annual direct costs for the current year: $200,000 (completed)

Total Project Direct Costs: $400,000
Other Investigators: Briggs (PI)

AI053287 - Blanke (PI) 10/01/02 – 09/30/04
National Institutes of Health / NIAID
"Blocking Cellular Intoxication by Bacterial Toxins"
Annual direct costs for the current year: $200,000 (completed)
Total Project Direct Costs: $400,000
Other Investigators: Briggs (Co-I)

URC-HBCU-02-0000-0019 - Blanke (Co-I) 07/01/03 - 06/30/08
NASA
"The NASA Research Center for Biotechnology and Environmental Health"
Annual direct costs for the current year: 45,000
Total Project Direct Costs: $6,000,000

Publications, Reviews, Book Chapters

Kim, I., Seeger, A. Y., & Blanke, S. R. (2022) VacA-dependent Inhibition of Protein Translation during Helicobacter pylori Infection. (Final stages of preparing for submission).

Chen, H., Ang, C., & Blanke, S. R. (2022) Understanding the relationships between the CdtA, CdtB, and CdtC subunits of *Campylobacter jejuni* cytolethal distending toxin. *In preparation.* (Anticipate submission Autumn 20212)

Lieu D.J., Kryza J., Batcha T., Jeong E., Kaminski P., Mok H., Chen H., Schaefer Z., Son S., Bradley K., Phillips H., & Blanke S.R. (2022). Suppression of autophagy through pruning of cellular LC3-I as a conserved strategy for promoting viability during DNA repair. Under revision to *Science Advances* (Science).

Huang, G., Boesze-Battaglia, K., Pankoski, L. M., Zekavat, A., Schaefer, Z. P., Blanke, S. R., and Shenker, B. J. (2021) The active subunit of the cytolethal distending toxin, CdtB, derived from both Haemophilus ducreyi and Campylobactor jejuni exhibits potent phosphatidylinositol-3,4,5-triphosphate phosphatase activity, *Frontiers in Cellular and Infection Microbiology*, 2021 Mar 29;11:664221. doi: 10.3389/fcimb.2021.664221.

Seeger, A. Y., Ringling, M.D., Zohair, H., & Blanke, S. R. (2020) Risk factors associated with gastric cancer during chronic *Helicobacter pylori* Infection. Medical Research Archives, March, 2020, Volume 8, issue 3. DOI: https://doi.org/10.18103/mra.v8i3.2068.

Holland, R. L., Bosi, K., Harpring, G., Luo, J., Wallig M., Phillips, H., Blanke , S. (2020) Chronic *in vivo exposure* to *Helicobacter pylori VacA*: Assessing the efficacy of automated and long-term intragastric toxin infusion. *Scientific Reports* (*Nature*), Jun 9;10(1):9307. doi: 10.1038/s41598-020-65787-3.

John Dunbar, Segaran P Pillai, David Wunschel, Michael Dickens, Stephen Morse, David Roy Franz, Andrew Bartko, Jean Challacombe, Timothy Persons, Molly Hughes, Steven R Blanke, Robin Holland, Janine R Hutchison, Eric Merkley, Katrina Campbell, Catherine Branda, Shashi Sharma, Luther Lindler, Kevin Anderson, David Hodge (2018) Perspective on improving environmental monitoring of biothreats. *Frontiers in Bioengineering and Biotechnology, section Biosafety and Biosecurity*, 2018 Oct 23;6:147. doi: 10.3389/fbioe.2018.00147. PMCID: PMC6207620.

Kim, I.-J., Lee, Jeongmin, Oh, S. J., Yoon, M.-S., Jang, S.-S., Holland, R. L., Reno, M. L., Hamad, M. N., Maeda, T., Chung, H. J., Chen, J., & Blanke, S. R. (2018) Helicobacter pylori infection modulates host

cell metabolism through VacA-dependent inhibition of mTORC1, *Cell Host & Microbe*, 2018 May 9;23(5):583-593. doi: 10.1016/j.chom.2018.04.006. PMCID: PMC6538298.

Hadfield TL, Jackson PJ, Appler J, Baillie L, Bailor E, Ballin J, Beck L, Blanke SR, Cahall R, Damer K, Dragon D, Forsman M, Jaing C, Johns M, Lin N, Maple L, Morse SA, New D, Retford M, Shah S, Sozhamannan S, Trudil D, Welkos S, Coates SG. (2016) Standard Method Performance Requirements for DNA- Based Methods of Detecting *Bacillus anthracis* in Field- Deployable, Department of Defense Aerosol Collection Devices. J AOAC Int. 2016 Jul;99(4):1084-9. doi: 10.5740/jaoacint.SMPR2016.006. PMID: 27455936

Cover, T. L., Holland, R. L., & Blanke S. R. (2016) *Helicobacter pylori* Vacuolating Toxin, in *Helicobacter pylori* Research: From Bench to Bedside, Yamaoka, Y., & Backert, S (eds.) Springer Press, UK, 113-143.

Dixon, S. D., Huynh, M. M., Tamilselvam, B., Spiegelman, L. M., Son, S. B., Eshraghi, A., Blanke, S. R., & Bradley, K. A. (2015) Distinct Roles for CdtA and CdtC during Intoxication by Cytolethal Distending Toxins. *PLoS One*. 2015 Nov 30;10(11):e0143977. PMCID: PMC4664275.

Holland, R. L., & Blanke, S. R. (2014) Dynamic intervention: pathogen disarmament of mitochondrial-based immune surveillance. *Cell Host & Microbe 16*.555-557. PMID: 25525786, PMCID: in progress.

Eshraghi, A., Dixon, S. D., Tamilselvam, B., Kim, E. J.-K., Gargi, A., Kulik. J. C., Damoiseaux, R., Blanke, S. R., & Bradley, K. A. (2014) Cytolethal distending toxins require components of the ER-associated degradation pathway for host cell entry. *PLoS Pathogens 10*:e1004295. PMCID: PMC4117610.

Gillespie, E.J., Ho, C.-L. C., Balaji, K., Li, Z., Thomas, D., Clemens, D. L., Deng, G.,. Wang, Y. E., Elsaesser, H. J., Tamilselvam, B., France, B., Camberlain, B. T., Blanke, S. R., Cheng, G., de la Torre, J. C., Brooks, D. G., Jung, M. E., Manchester, M., Zink, J. I., Colicelli, J., Damoiseaux, R., & Bradley, K. A. (2013) A selective inhibitor of endosomal trafficking pathways exploited by multiple toxins and viruses protects rats from anthrax toxin. *Proc. Natl. Acad. Sci. USA 110*, 4904-12. doi: 10.5740/jaoacint.SMPR2016.006. PMCID: PMC3864319.

Lamb, A., Chen, J., Blanke, S. R., & Chen, L.F. (2013) *Helicobacter pylori* activates NF-κB by inducing Ubc13-mediated ubiquitination of lysine 158 of TAK1. *J. Cell. Biochem*. *114*, 2284-2292. PMCID: PMC3909677.

Gargi, A., Powers, B, Tamilselvam, B., Prouty, M. G., Lincecum, T., Maldonaldo-Arocho, F. J., Eshraghi, A., Wilson, B. A., Bradley, K. A., & Blanke, S. R. (2013) Cellular interactions of the cytolethal distending toxins from *Escherichia coli* and *Haemophilus ducreyi*, *Journal of Biological Chemistry 288*, 7492-7505. PMCID: PMC3597790.

Gargi, A., Reno, M., & Blanke, S. R. (2012) Bacterial Toxin Modulation of the Eukaryotic Cell Cycle: Are all Cytolethal Distending Toxins Created Equally? *Frontiers in Cellular and Infection Biology*, 2:124. doi: 10.3389/fcimb.2012.00124. PMCID: PMC3465861.

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Manuscripts in preparation or under revision.

Jain, P., Kim, I.-J., & Blanke, S. R. (2022) *Helicobacter pylori* VacA disruption of mitochondrial dynamics is linked to Bax activation through the calpain-mediated processing of Bid to tBid.

Discovery of the VacA receptor binding site (Seung Jay Oh). Envision submission for publication in 2022.

Helicobacter pylori-mediated mitochondrial dysfunction during infection of gastric epithelial cells is detected by the central host sensor of cellular energy, AMPK, which coordinates repair of VacA-dependent mitochondrial damage (Ami Seeger). Envision submission for publication in 2022.

Mapping the Host Cell VacA Binding Site. Flexible loops on the surface of the carboxyl-terminal beta-solenoid structure of VacA confers VacA binding to the cell surface. (Anna Kim) Envision submission for publication in 2023.

The capacity to bind SM defines structural differences between Type I and Type II forms of the *Helicobacter pylori* Vacuolating Cytotoxin. (Megan Ringling) Envision submission for publication in 2023.

Seminars, Invited Talks, and Special Presentations

Carle-Illinois College of Medicine, Brown Bag (2021) Fantastic bugs and were to find them. Urbana, IL, June 1, 2021.

ASM Microbe, Invited Symposium Speaker (2021) Rewiring Metabolic Homeostasis within the *Helicobacter pylori* Infection Microenvironment, June 23, 2021, Virtual.

Carle-Illinois College of Medicine (2021) Host-pathogen co-evolution, and the paradox of chronic infection: The curious case of *Helicobacter pylori*. Urbana, IL, May 25, 2021.

***Vanderbilt University Medical Center, Department of Pathology, Microbiology, and Immunology (2021) Stranger in a Strange Land: *Helicobacter pylori* Remodeling of the Harsh Gastric Milieu into an Infection Microenvironment, Nashville, TN, March 15, 2021.

***Invited by the Graduate Students.

Beta Psi Omega Intellect Pillar (2021) ∆: The Covid-19 Pandemic as a Driver of Change in the Practice of Science (virtual), University of Illinois, Urbana, IL, February 27, 2021

Center for Pathogen Diagnostics, First Virtual Symposium, (2021) Fantastic Bugs and Where to Find Them. January 19, 2021.

Center for Pathogen Diagnostics, University of Illinois, Urbana-Champaign (2020) Pathogen Remodeling of the Infection Microenvironment. Urbana, IL. Urbana, IL, Urbana, December 14, 2020.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2020) The Life Factory: Promise, Perils, and Policing of Synthetic Biology. Urbana, IL, October 18, 2020.

Carle-Illinois College of Medicine (2020) Host-pathogen co-evolution, and the treatment of chronic infection: The curious case of *Helicobacter pylori.* Urbana, IL, May 1, 2020.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2019) The Life Factory: Promise, Perils, and Policing of Synthetic Biology. Urbana, IL, September 23, 2019.

20th International Meeting on *Campylobacter*, *Helicobacter*, and Related Organisms (2019) Extending The Gut-Brain Axis: Impact of Gastric *Helicobacter pylori* Infection on Neuroinflammation and Cognitive Performance, Belfast, Ireland, September 13, 2019.

University of Illinois, MCB New Student Talk (2019) Precision Pathogenesis: The Remarkable Ability of Microbes to Remodel their Infection Microenvironment, Urbana, IL, August 2019.

West Coast *Helicobacter* Meeting (2019) *Hp* and me: Microbial Tinkering with Host Metabolic Homeostasis, Sacramento, CA, June 2-4, 2019.

Carle-Illinois College of Medicine (2019) Host-pathogen co-evolution, and the treatment of chronic infection: The curious case of *Helicobacter pylori*, Urbana, IL, May 3, 2019.

Gordon Research Conference on Chemical & Biological Terrorism Defense (2019) Exploitation of the Macrophage Phagolysosome: The Curious Case of *Bacillus anthracis*. Ventura, CA, March 3-8, 2019.

***Baylor College of Medicine, Department of Molecular Virology and Microbiology (2018) A Mito Tale: Remodeling of the *Helicobacter pylori* Replicative Niche through Manipulation of Host Metabolic Homeostasis. Houston, TX, November 15, 2018.

***Invited by the Graduate Students.

University of Illinois Laboratory High School, Med Club (2018) Fantastic Microbes and Where to Find Them: Unexpected Ways that the Hidden World of Microorganisms Affects Human Health and Disease, Urbana IL, November 8, 2018.

American Society of Biochemistry and Molecular Biology Professor Talk Series, University of Illinois (2018) Traversing the Hidden Universe of Microbes. Urbana IL, October 24, 2018

University of Illinois, Program in Arms Control, Disarmament, and International Security (2018) Playing in the Biological Sandbox: The Promise, Perils, and Policing of Synthetic Biology. Urbana, IL, Fall Semester 2018.

2018 Discovery Day, College of Liberal Arts and Sciences Discovery, University of Illinois (2018) “Fantastic Microbes and where to Find Them.” Urbana, IL, September 23, 2018.

University of Illinois, MCB New Student Talk (2018) Hidden Treasures within the Microbial Sand-Box, Urbana, IL, August 22, 2018.

Gordon Research Conference on Toxins & Microbial Pathogenesis (2018) A Mito Tale: Toxin Navigation of the Cellular Metabolic Web, Waterville Valley, NH July 8-13, 2018.

Plenary Session on the Gut Brain Axis, ASM Microbe (2018) Extending the Gut-Brain Axis: Unexpected Consequences of Chronic Gastric Infection with *Helicobacter pylori*, Atlanta GA, June 8, 2018.

***Eastern Illinois University, Department of Biological Sciences (2018) Fantastic Microbes and Where to Find Them: Unexpected Mechanisms and Consequences of Microbe-Host Interactions for Human Health and Disease, Charleston, IL, April 23, 2018.

***Invited by the Graduate Students.

Systems Biology Colloquium Speaker, George Mason University (2018) Pathogen-Mediated Remodeling of Intracellular Organelles: The Curious Case of *Bacillus anthracis*

University of Illinois, The Rheticus Conversations on Faith and Science (2017) Microbiology and Faith: A Mixed Culture?, Champaign, IL, November 6, 2017.

Food and Drug Administration (2017) Traversing Host Barriers to Dissemination: The Peculiar Case of *Bacillus anthracis,*

2017 International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis* (2017) Convergence between Bacterial and Host Cell Remodeling during *Bacillus anthracis* Infection of Macrophages: *In vitro* and *in vivo* studies. Victoria, Canada, October 4, 2017.

2017 Molecular and Cellular Biology Undergraduate Research Workshop, University of Illinois (2017) So You Want to do Undergraduate research? Champaign, IL. September 28, 2017.

2017 Discovery Day, College of Liberal Arts and Sciences Discovery, University of Illinois (2017) Masters of the Universe? Romping in the Microbial Sandbox.” Urbana, IL, September 24, 2017.

Science and the Public BioCafe Series, Champaign Public Library, (2017) Fantastic Microbes and where to Find Them, Champaign, IL, May 23, 2017.

Ocean Spray Global Health Sciences, Inc. (2017) Remodeling the Gastric Microenvironment for Chronic Infection: The Curious Case of *Helicobacter pylori*, Lakeville, MA, January 10, 2017.

Headline Speaker, International Conference on the Biology of Anthrax (2016) Navigating Host Barriers to Dissemination: The Peculiar Case of *Bacillus anthracis,* Tampa FL, November 15-18, 2016.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2016) The 5 Ps of Synthetic Biology: Principles, Power, Promise, Peril, and Policy, Urbana, IL, September 26, 2016.

University of Illinois, College of Liberal Arts and Sciences Discovery Day (2016) Masters of the Universe? Romping in the Microbial Sandbox. Urbana, IL, September 18, 2016.

Keynote Speaker, 4th International Conference on Bacteriology and Infectious diseases (2016) Extending the Gut-Brain Axis: The Curious Case of *Helicobacter pylori*, May 16-18, 2016 at San Antonio, USA.

Distinguished Speaker Series, Washington State University, Paul G. Allen School for Global Animal Health (2016) Reshaping of the Intracellular Microenvironment by *Bacillus anthracis*: Unexpected Convergence of Bacterial Development and Virulence, Pullman, WA, April 26, 2016.

University of Kentucky, Department of Microbiology, Immunology and Molecular Genetics (2016) Remodeling the Host Microenvironment for Chronic Infection: The Curious Case of *Helicobacter pylori*, Lexington KY, Tuesday, April 5, 2016.

Jawaharial Nehru University, School of Biotechnology & Genetic Engineering (2015) Pathogen Remodeling of the Infection Microenvironment: The Curious Case of *Helicobacter pylori*. New Delhi, India, Wednesday, November 4, 2015.

Hindusthan College of Arts and Science (2015) The Role of Academia in Emergency Response Preparedness. Coimbatore, Tamil Nadu, India, Tuesday, November 3, 2015.

Bharathiar University (2015) Understanding Intracellular Pathogenesis: *Bacillus anthracis*: Survival within Infected Macrophages and Escape Back to the Extracellular Environment. Coimbatore, Tamil Nadu, India, Monday, November 2, 2015.

2015 International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis* (2015) Unique Molecular Features of *Bacillus anthracis*-containing Vacuoles Important for Bacterial Survival and Escape from Infected Macrophages. New Delhi, India, Wednesday, October 28, 2015.

University of Illinois, College of Liberal Arts and Sciences Discovery Day (2015) Synthetic Biology and Global Health: Romping in the Biological Sandbox. Urbana, IL, September 26, 2015.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2015) The 5 Ps of Synthetic Biology: Principles, Power, Promise, Peril, and Policy, Urbana, IL, September 21, 2015.

University of California, Los Angeles, Department of Microbiology, Immunology, and Molecular Genetics (2015) Divergent: Non-canonical Mechanisms of Pathogen Egress from Infected Immune Cells. Los Angeles, CA, March 6, 2015.

University of Illinois, Lowell P. Hager Memorial Symposium (2014) Heme Wars: How Lowell Saved the Galaxy from Rhombic Distortion, Urbana, IL, October 18, 2014.

Dasan Conference on Natural Disaster-Associated Pathogens and Difficult-to-Treat Infectious Diseases: Risks and Challenges (2014) Portals, Pathways, and Peculiarities of Intracellular Pathogen Egress: The Curious Case of *Bacillus anthracis*, Gyeongju, Korea, October 16, 2014.

Seoul National University (2014) *Helicobacter pylori*: Evolution, Anatomy, and Unexpected Consequences of Chronic Human Infection, Seoul, Korea, October 14, 2014.

Sogang University, Department of Life Science (2014) Rewiring the Epithelial Barrier: Lessons in Infection Persistence from the Chronic Gastric Pathogen *Helicobacter pylori*, Seoul, Korea, October 13, 2014.

Medical College of Wisconsin, Department of Microbiology and Molecular Genetics (2014) Escape from Perdition: Developmental-Linked Egress of *Bacillus anthracis* from Immune Cells, Monday, September 15, 2014.

Honor's Address, University of Illinois, College of Liberal Arts and Sciences (2014) Roaming the Uninhabited Frontiers of Knowledge Space, Urbana, IL, May 4, 2014.

University of North Carolina, Chapel Hill (2014) Remodeling the Intracellular Environment of Host Macrophages as a Portal for Egress: The Curious Case of *Bacillus anthracis.*

ASM Biodefense Research Meeting (2014) Portals, Pathways, and Peril: *Bacillus anthracis* Interactions with Host Cells, Washington D.C., January 28, 2014.

Southern Illinois University, Division of Microbiology (2013) A Movable Feast: The Curious Case of how *Helicobacter pylori* Remodels the Human Stomach during Chronic Infection, Carbondale, IL, November 15, 2013.

Meharry Medical College (2013) Tales from the Crypt: How *Bacillus anthracis* Escapes Death Inside of Immune Cells to cause Disseminated Human Disease, Nashville, TN, October 31, 2013.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2013) The 5 Ps of Synthetic Biology: Principles, Power, Promise, Peril, and Policy, Urbana, IL, September 16, 2013.

2013 International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis* (2013) Intracellular Remodeling: Germination Initiation as the Trigger for *Bacillus anthracis* Escape from Infected Macrophages, Victoria, Canada, September 2, 2013.

Vanderbilt University Medical Center, Digestive Disease Research Center (2013) Modulating Energy Homeostasis at the Host-Pathogen Interface: The Curious Case of *Helicobacter pylori*, Nashville, TN, May 14, 2013.

University of Maryland School of Medicine, Department of Microbiology and Immunology (2013) Portals, Pathways, and Peculiarities of Intracellular Pathogen Egress: The Curious Case of *Bacillus anthracis*, Baltimore MD, May 1, 2013.

University of Oklahoma Health Sciences Center, Department of Microbiology and Immunology (2013) Portals, Pathways, and Peculiarities of Intracellular Pathogen Egress: The Curious Case of *Bacillus anthracis*, Oklahoma City, OK, April 9, 2013.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2012) The 5 Ps of Synthetic Biology: Principles, Power, Promise, Peril, and Policy, Urbana, IL, September 17, 2012.

University of Illinois, Department of Pathobiology (2012) Remodeling the Intracellular Environment as a Portal for Escape: The Curious Case of *Bacillus anthracis* Urbana, IL, September 5, 2012.

Gordon Conference on Microbial Toxins and Pathogenicity (2012) Taking the Red Pill: Pathogen Manipulation of the Mitochondrial Matrix, Waterville Valley, NH, July 9, 2012.

Harvard Medical School, Department of Microbiology and Immunobiology (2012) Pathogen Remodeling of the Host Intracellular Environment to Promote Escape and Dissemination: The Curious Case of *Bacillus anthracis*, Boston MA, April 3, 2012.

George Mason University, National Center for Biodefense and Infectious Diseases (2012) Pathogen Remodeling of the Host Intracellular Environment to Promote Escape and Dissemination: New Insights from *Bacillus anthracis*, March 16, 2012, Alexandria, VA.

Northwestern University Feinberg School of Medicine, Department of Microbiology and Immunology (2012) Dynamic remodeling of the host-pathogen interface during persistent infection: The curious case of *Helicobacter pylori*, Chicago, IL, February 7, 2012.

Loyola University, Chicago, Infectious Disease & Immunology Institute of Loyola Stritch School of Medicine (2011) Remodeling the host-pathogen interface during chronic infection: The curious case of *Helicobacter pylori,* Chicago, IL, November 30, 2011.

Oregon State University, Biomedical Sciences Guest Speaker Seminar (2011) Pathogen Remodeling of Host Intracellular Compartments to Promote Escape and Dissemination: New Insights from *Bacillus anthracis*, Corvallis, OR, October 11, 2011.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2011) The 5 Ps of Synthetic Biology: Principles, Power, Promise, Peril, and Policy, Urbana, IL, September 19, 2011.

16th International Meeting on *Campylobacter*, *Helicobacter*, and Related Organisms (2011) Vancouver, CA, August 31, 2011.

Bacillus-ACT 2011; The International *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis* Conference (2011) Germination-dependent remodeling of Bacillus-containing vacuoles (BCVs) to promote intracellular spore egress from mammalian cells. Brugges, Belgium, August 10, 2011.

Ohio State University, Biomedical Sciences Guest Speaker Seminar (2011) The Great Escape: Intracellular Remodeling as a Strategy to Promote Pathogen Egress from Host Immune Cells, ”Columbus, OH, May 11, 2011.

Keynote Speaker, 23rd Annual Buffalo Conference on Microbial Pathogenesis – Witebsky Center for Microbial Pathogenesis and Immunology (2011) Of Persistence, Cancer, and Asthma: The Curious Case of *Helicobacter pylori*, Buffalo, NY, April 29, 2011.

University of Pittsburgh School of Medicine, Department of Microbiology and Molecular Genetics (2011) "Inside the Matrix: Subversion of Host Cell Function by the Chronic Pathogen *Helicobacter pylori*", Pittsburgh, PA, April 19, 2011.

West Virginia University, Department of Microbiology, Immunology, and Cell Biology (2010) Of Persistence, Cancer, and Asthma: The Curious Case of *Helicobacter pylori*, Morgantown, WV, December 9, 2010.

Trans RCE Workshop on Toxins (2010) Receptor binding targets *Helicobacter pylori* VacA for uptake and intracellular transport by a novel mechanism. Bethesda, MD, September 23, 2010.

President's Lecture Series. Burnham Institute for Medical Research, Infectious and Inflammatory Disease Center (2010) Remodeling the host-pathogen interface during chronic infection: Navigating the fine-line between persistence and disease. La Jolla, CA, May 4, 2010.

Fralin Life Science Institute Molecular Cell Biology and Biotechnology Interdepartmental Seminar Series. Virginia Tech University (2010) "Remodeling the Host-Pathogen Interface during Chronic Infection: The Curious Case of *Helicobacter pylori,*" Blacksburg, VA, April 23, 2010.

Keynote Speaker of "Microbial Pathogenicity" Session, ComBio 2009 (2009) "Navigating the fine line between chronic infection and disease: Mechanisms of pathogen-mediated remodeling of host cells and tissues to promote colonization and persistence." Christchurch, New Zealand, December 8, 2009.

Keynote Speaker. Symposium on Protein Structure and Function in Health and Disease (2009) Molecular recognition and remodeling at the host-pathogen interface: Bacterial protein toxins as potent modulators of eukaryotic cell function. St Margaret's College, University of Otago, Dunedin, New Zealand, December 4, 2009.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2009) Science, technology, and security: New institutions to manage global security in the 21st century: Synthetic biology. Champaign, IL, November 19, 2009.

***ASM Invited Speaker. St. Louis University, Department of Medical Microbiology and Immunology (2009) Micromanaging the Executioner: Bacterial Remodeling of the Host-Pathogen Interface during Chronic Infection. St. Louis, MO, October 15, 2009.

***Invited by the Graduate Students.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2009) Synthetic biology. Champaign, IL, September 22, 2009.

University of Illinois, Infection Biology Working Group (2009) "Microbial-mediated remodeling of the host-pathogen interface to promote colonization and persistence," Urbana, IL, September 21, 2009.

Symposium Speaker and Co-Chair. Bacillus-ACT 2009: The International *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis* Conference (2009) An alternative mechanism of *Bacillus anthracis* release from infected immune cells: Spore-mediated dynamic remodeling of *Bacillus*-containing vacuoles. Santa Fe, NM, August 30-September 3, 2009.

Symposium Speaker and Chair. 2nd International World Cancer Conference (2009) On the Edge between Chronic Infection and Stomach Cancer: *Helicobacter pylori* and Gastric Remodeling. Beijing China, June 23, 2009.

Colloquium Speaker and Chair. 119th American Society for Microbiology National Meeting (2009) Pathogen Modulation of Mitochondrial Dynamics: Navigating the Razor's Edge between Cellular Dysfunction, Autophagy, and Death. Philadelphia, PA, May 20, 2009.

Indiana University School of Medicine, Department of Microbiology and Immunology (2009) "Remodeling the Host-Pathogen Interface during Chronic Infection: Life on the High Wire between Persistence and Disease." Indianapolis, IN., May 7, 2009.

The 2nd Annual Hans Christian Gram Lecture, Indiana State University, Department of Biology (2009) The Relationship of a Persistent Pathogenic Microbe to Ulcers, Cancer, and Asthma: The Curious Case of *Helicobacter pylori*, Terre Haute, IN, April 7, 2009.

University of Illinois at Chicago (2009) Remodeling the Host-Pathogen Interface during Chronic Infection: On the Razor's Edge between Persistence and Disease." Chicago, IL, March 9, 2009.

University of Rochester, Department of Microbiology & Immunology (2009) "Remodeling the host-pathogen interface: Bacterial protein toxins as potent modulators of eukaryotic cell function", February 3, Rochester, NY, 2009.

Seoul National University, Department of Food Biotechnology (2008) "Recognition and Remodeling at the Host-Pathogen Interface: Insights into Chronic Infection" Seoul Korea, October 17, 2008.

Plenary Speaker. International Meeting of the Federation of Korean Microbiological Society (2008) Close Encounters: Remodeling of the host-pathogen interface to promote colonization and persistence. Seoul, Korea, October 16, 2008.

University of Rome, Department of Cellular and Developmental Biology (2008) "Remodeling the host-pathogen interface: Bacterial protein toxins as modulators of eukaryotic cell function" July 2, 2008, Rome, Italy.

IGB Fellows Symposium, University of Illinois (2008) "Host-Pathogen Interactions: Navigating the Fine-line between Persistence and Disease" Champaign, IL, April 5, 2008.

***Eastern Illinois University, Department of Biological Sciences (2008) War and Peace at the Prokaryotic-Eukaryotic Border: Successful Strategies of Bacterial Pathogens, Charleston, IL, March 25, 2008.
***Invited by the Graduate Students.

Bio-Rad Laboratories (2008) The Interface of Prokaryotic and Eukaryotic Cell Biology: How Pathogenic Organisms Remodel their Eukaryotic Hosts, Hercules, CA, January 29, 2008.

East Coast Meeting on Poly ADP-ribose Polymerase (2007) Targeting and Activation of the Nuclear Protein Poly(ADPribose) Polymerase1, which Modulates Inflammation and Apoptosis within Mammalian Cells, by an IntracellularActing *Helicobacter pylori* Factor, Quebec City, Canada, October 6, 2007.

14th Annual Midwest Microbial Pathogenesis Conference (2007) Remodeling the Host: Cellular and Tissue Modulation by Pathogenic Microorganisms, Chicago, IL, September 29, 2007.

International *Bacillus anthracis/cereus/thuringiensis* Meeting (2007) Interactions of *Bacillus anthracis* with immune cells: Probing Heterogeneous Outcomes of Infection at the Single Cell Level, Oslo, Norway, June 20, 2007.

National Meeting of the Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases (2007) *Bacillus Anthracis*-Host Interactions. St. Louis, MO, April 17, 2007.

University of Texas Southwestern Medical Center, Department of Microbiology (2007) Altered States: Cellular Remodeling Strategies by Pathogenic Bacteria, Dallas, TX, April 3, 2007.

Uniformed Services University, Department of Microbiology and Immunology (2007) Tissue and cellular remodeling to promote infection by pathogenic organisms, Bethesda, MD, March 5, 2007.

University of Virginia, Department of Microbiology (2006) Cellular-tuning and remodeling strategies of pathogenic organisms during infection, Charlottesville, VA, November 14, 2006.

Hager Symposium (2006) Altered States: From Rhombic Distortion to Host-Pathogen Interactions, University of Illinois, Urbana, IL, September 30, 2006.

Gordon Conference on Microbial Toxins and Pathogenicity (2006) Micromanaging the executioner: Targeting mitochondria within host cells, Andover, NH, July 19, 2007.

American Society for Microbiology. 106th National Meeting (2006) Complex cellular interactions of multifunctional toxins. Orlando, FL, May 24, 2006.

East Coast PARP 2006 (2006) Modulation of PARP by Pathogenic Organisms as a Strategy for Manipulating Host Cells During Infection, Quebec City, Canada, May 19, 2006.

9th Annual New and Re-emerging Infectious Conference (2006) Helicobacter pylori: persistence mechanisms, Urbana, IL, April 14, 2006.

Harvard Medical School, Center for Digestive Disorders (2006) Cellular Remodeling Strategies of the Chronic Pathogen, Helicobacter pylori, Boston, MA, April 4, 2006.

University of Illinois, Urbana, Department of Pathobiology (2006) Models of Cellular Remodeling by Pathogenic Bacteria: Working at the Interface of Prokaryotic and Eukaryotic Biology, Urbana, IL, March 15, 2006.

University of Illinois, Program in Arms Control, Disarmament, and International Security (2005) Applications of Research for Bioterrorism Reduction, Urbana IL, November 2, 2005.

Baylor College of Medicine, Department of Molecular Virology and Microbiology (2005) Dynamic Cellular Remodeling Strategies employed by Helicobacter pylori during Infection, Houston, TX, April 26, 2005.

***University of Texas Health Science Center at San Antonio, Department of Microbiology (2005) Cellular Remodeling Strategies by Pathogenic Bacteria, San Antonio, TX, April 22, 2005.
***Invited by the Graduate Students.

The University of Texas Health Science Center at Houston, Department of Microbiology and Molecular Genetics (2005) Mechanisms of Cellular Remodeling during Infection with *Helicobacter pylori*. Houston, TX, March 10, 2005.

American Society for Microbiology, Texas Branch (2004). Portals and Pathways for the Transport of Bacterial Virulence Factors into Cells, Houston, TX, November 5, 2004.

FASEB conference on Microbial Pathogenesis: Mechanisms of Infectious Disease (2004) Micromanaging the executioner: Targeting the mitochondria by pathogenic microbes as a strategy for manipulating host cell viability. Snowmass, CO, August 14-19th, 2004.

American Society for Microbiology 104th National Meeting (2004) A road map into the cell – The complexity and diversity of cellular entry mechanisms, New Orleans, LA, May 21, 2004.

University of Michigan, Department of Microbiology and Immunology (2004) Cellular Remodeling Strategies of Pathogenic Bacteria. Ann Arbor, MI, March 11, 2004.

University of Illinois, Champaign-Urbana, Department of Microbiology (2004) Molecular Mechanisms of Bacterial and Host Remodeling during Persistent Infection with *Helicobacter pylori*. Urbana-Champaign, IL., January 23, 2004.

Scripps Research Institute, Division of Immunology (2004) Host and Pathogen Remodeling during Infectious Encounters: Chronic Infections with *Helicobacter pylori*, La Jolla, CA, January 14, 2004.

Cold Spring Harbor Meeting on Microbial Pathogenesis and Host Response (2003) Molecular mimicry of a pro-apoptotic Bcl-2 protein: The *Helicobacter pylori* vacuolating cytotoxin. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, September 10-14, 2003.

12th International Meeting on *Campylobacter*, *Helicobacter*, and Related Organisms (2003) Single Cell Analysis of VacA Intoxication: Toxin Channel Activity Modulates Mitochondria Membrane Permeability as a Strategy to Regulate Apoptosis. Aarhus, Denmark, Sept 6-10, 2003.

Fred Hutchinson Cancer Center, Division of Human Biology (2002), The intracellular lifestyles of a host cell modulator: The *Helicobacter pylori* Vacuolating Cytotoxin, Seattle, WA., August 30, 2002.

American Society for Microbiology 102 National Meeting (2002), Cellular intoxication mechanisms of the *Helicobacter pylori* Vacuolating Cytotoxin, Salt Lake City, Utah, May 21, 2002.

University of Illinois, Champaign-Urbana, Department of Microbiology (2001), How to Build a Molecular Modulator of Mammalian Cells: The *Helicobacter pylori* Vacuolating Cytotoxin, Urbana-Champaign, Ill., December 5-7, 2001.

11th International Meeting on Campylobacter, Helicobacter, and Related Organisms (2001) Development of therapeutic inhibitors based on dominant-negative mutant forms of the *Helicobacter pylori* vacuolating cytotoxin. Freiburg Germany, Sept. 2001.

State University of New York at Buffalo, Department of Microbiology (2000) How to Build a Host Cell Modulator: Intracellular Mechanisms of the *Helicobacter pylori* Vacuolating Cytotoxin, Buffalo, NY, October 20, 2000.

University of Texas Health Science Center at San Antonio, Department of Microbiology (2000) Intracellular Lifestyle of a Cytotoxic Virulence Factor: The Helicobacter pylori Vacuolating Toxin, San Antonio, TX, May 11, 2000.

The University of Oklahoma, George Lynn Cross Lecture in the Department of Botany and Microbiology (2000) Operating behind Enemy Lines: Intracellular Investigations of the *Helicobacter pylori* Vacuolating Toxin . Oklahoma City, OK, April 27, 2000.

The University of Oklahoma Health Sciences Center, Department of Microbiology & Immunology (2000) Intracellular Structure and Function of a Host Cell Modulator: The *Helicobacter pylori* Vacuolating Cytotoxin, Oklahoma City, OK, April 26, 2000.

University of Minnesota, Department of Microbiology (2000) Stranger in a Strange Land: Investigations of the *Helicobacter pylori* Vacuolating Toxin from within Target Cells, Minneapolis, MN, April 3, 2000.

University of Houston, Department of Pharmacological and Pharmaceutical Sciences (2000) Bacterial Toxins: Mechanisms of Cellular Intoxication and Domestication of Poisonous Proteins for Therapeutic Applications, Houston, TX, March 27, 2000.

The Houston Area Molecular Basis of Infectious Diseases Symposium (2000) The *Helicobacter pylori* Vacuolating Cytotoxin: Intoxicating Mechanisms Outside of the Box? Houston, TX, February 18, 2000.

American Society for Microbiology – Texas Branch (1999) How to Snarl Intracellular Traffic: The *Helicobacter pylori* Vacuolating Toxin. Dallas-Fort Worth, TX, November 11-13.

Lost Pines Conference on Molecular Biology (1999) Novel Molecular Properties and Role of the *Helicobacter pylori* Vacuolating Cytotoxin in the Pathogenesis of Gastric Ulcer Disease. Smithville, Texas, October 8-10.

10th International Workshop on Campylobacter*, Helicobacter*, and Related Organisms (1999) Dissecting the *Helicobacter pylori* Vacuolating Cytotoxin Using Sliding Complementation Analysis within Target Cells, Baltimore, MD, Sept. 1999.

Pharmacia-Upjohn (1999) How to Create an Intracellular Traffic Jam: The Vacuolating Cytotoxin of *Helicobacter pylori*, Kalamazoo MI, June 4, 1999.

St. Mary's University, Department of Biology (1998) Bacterial Toxins: From Infectious Disease to Drug Delivery, St. Mary's University, San Antonio TX, September 11, 1998.

American Chemical Society 1998 National Meeting (1998) Synthetic Gene to Investigate the Structure, Function, and Chemical Mechanism of the Cholera Toxin Catalytic Domain. Boston, MA. August 8, 1998.

Trinity University (1998) Bacterial Toxins: From Infectious Disease to Drug Delivery Systems, San Antonio TX, February 16, 1998.

Conference on Frontier Technologies (1997) Bacterial Toxins as Molecular Syringes, The Association for the Progress of New Chemistry*,* Tokyo, Japan, May 16, 1997.

University of Tokyo (1997) Mechanisms of Bacterial Toxin Translocation, Tokyo, Japan, May 13, 1997.

Heart of Texas Microbiology Conference (1996) Toxins as Molecular Syringes, Houston, TX, November 9, 1996.

University of Texas Medical School, Department of Microbiology and Molecular Genetics (1996) Molecular Mechanisms of Toxins from Pathogenic Bacteria, Houston, TX, Oct. 17, 1996.

Beckman Center Symposium, University of Illinois (1996) Molecular Aspects of Bacterial Toxins, Urbana, IL, September 14, 1996.

The University of Delaware, Department of Chemistry and Biochemistry (1995) Delineating the Active Site Structure and Function of Diphtheria Toxin as a Model for ADP-Ribosyltransferases, Newark, DE.

The University of Kentucky Medical School, Graduate Center for Toxicology (1995) From Infectious Disease to DNA Repair: The Catalytic Domain of Diphtheria Toxin as a Model for ADP-Ribosyltransferases, Lexington KY, June 1995.

The University of North Carolina at Chapel Hill, Division of Medicinal Chemistry & Natural Products (1995) From Infectious Disease to DNA Repair: The Catalytic Domain of Diphtheria Toxin as a Model for ADP-Ribosyltransferases, Chapel Hill NC, May 1995.

American Society for Microbiology 95th National Meeting (1995) Active Site Structure and Catalysis in Diphtheria Toxin Session on ADP-Ribosylating Toxins, Washington D. C. May 1995.

The University of Houston, Department of Biology and Biochemistry (1995) Delineating the Active Site Structure and Function of Diphtheria Toxin as a Model for ADP-Ribosyltransferases, March 1995.

Oklahoma State University, Department of Microbiology (1995) Delineating the Active Site Structure and Function of Diphtheria Toxin as a Model for ADP-Ribosyltransferases, March 1995.

University of Texas, El Paso, Department of Biology (1995) From Infectious Disease to DNA Repair: The Catalytic Domain of Diphtheria Toxin as a Model for ADP-Ribosyltransferases, Chapel Hill NC, March 1995.

Worcester University, Department of Chemistry (1995) Bacterial Toxin Chemistry, Structure, and Function, Worcester, MA, January 20, 1995.

Cubist Pharmaceuticals (1994) Delineating the Structure-Function Relationships of Diphtheria Toxin, an Efficient Assassin of Eukaryotic Cells. Cambridge MA, March 1994.

Medical College of Virginia, Department of Pharmacology (1987) The Potential Uses of *Caldariomyces fumago* for Biological Remediation. Richmond VA, August 1987.

Patent Applications

Collier, R. J., Blanke, S. R., Milne, J. C., Lyszak, E. L., Ballard, J. D., & Starnbach, M. Use of Toxin Peptides and/or Affinity Handles for the Delivery of Compounds into the Cytoplasm of Cells.

Invention Disclosures

Willhite, D. C., & Blanke, S. R. (1999) Utilizing Phage Display vs. IgG to Obtain Immunogenic Mimotopes.

Blanke, S. R., Willhite, D. C., & Hardin, S. (1998) Clone selection by octamer recognition sequence, November 17, 1998.

Blanke, S. R., & Willhite, D. C. (1997) Recombinant expression of *Bacillus anthracis* protective antigen in *E. coli*.

TEACHING AND EDUCATION

Educational Policy Leadership

Strengthening the "Ph" in the Ph.D.: The Role of Professional Societies in Graduate Training, Report on an American Academy of Microbiology Colloquium in Washington, DC, in November 2017, published in May 2109. — 2017-2019

Professional Education Leadership

Chair, ASM Scientific Writing and Publishing Institute for Graduate Students and Postdoctoral Scientists — 2009-2016

Member, ASM Committee for Graduate and Postdoctoral Education — 2008-2017

Off-Campus Instruction – Professional Development

Invited Contributor (2021) American Medical Women's Association, Virtual Leadership Development Conference for Women Physicians Conference 2021 — March 2021
You Tube Link: https://www.youtube.com/watch?v=LCjq2oeh29Q

Invited Speaker (2020) ASM Scientific Writing and Publishing Institute, Interactive Webinar "Authors are from Mars, Reviewers are from Venus" — April 19, 2020

Invited Moderator (2020) ASM Scientific Writing and Publishing Institute, Interactive Webinar "Introductions" — February 20, 2020

Invited Speaker (2019) ASM Scientific Writing and Publishing Institute, Interactive Webinar "Authors are from Mars, Reviewers are from Venus" — April 21, 2019

Invited Moderator (2019) ASM Scientific Writing and Publishing Institute, Interactive Webinar "Introductions" — February 21, 2019

Invited Moderator (2018) ASM Scientific Writing and Publishing Institute, Interactive Webinar "How to Review a Manuscript" — April 5, 2018

Invited Moderator (2018) ASM Scientific Writing and Publishing Institute, Interactive Webinar "Results and Methods" — February 22, 2018

Invited Speaker (2018) ASM Scientific Writing and Publishing Institute, Interactive Webinar "Rendering your *Awesome* Data: Figures, Tables and Figure Legends" — February 8, 2018

Invited Speaker (2016) MCB Undergraduate Research Workshop: Faculty Perspective — September 16, 2016
Link: https://www.youtube.com/results?search_query=Steven+BlankeYouTube

Chair and Participant (2016) ASM Scientific Writing and Publishing Institute, Washington, D.C. — August 12-14, 2016

Chair and Participant (2015) ASM Scientific Writing and Publishing Institute, Washington, D.C. — March 19-22, 2015

Chair and Participant (2014) ASM Scientific Writing and Publishing Institute, Washington, D.C.	March 20-23, 2014
Chair and Participant (2013) ASM Scientific Writing and Publishing Institute, Washington, D.C.	March 21-24, 2013
Invited Speaker and Participant (2012) ASM Kadner Institute For Professional Development, East Lansing, MI.	July 21-25, 2012
Chair and Participant (2012) ASM Scientific Writing and Publishing Institute, Washington, D.C.	March 22-25, 2012
Invited Speaker and Participant (2011) ASM Kadner Institute For Professional Development, East Lansing, MI.	July 23-27, 2011
Chair and Participant (2011) ASM Scientific Writing and Publishing Institute, Washington, D.C.	March 24-28, 2011
Invited Speaker and Participant (2010) ASM Kadner Institute For Professional Development, East Lansing, MI.	July 24-28, 2010
Chair and Participant (2010) ASM Scientific Writing and Publishing Institute, Washington, D.C.	March 18-21, 2010
Invited Speaker and Participant (2009) ASM Kadner Institute For Professional Development, Boulder, CO.	July 18-22, 2009
Invited participant in Innovative Teaching at Illinois Faculty Forum, Urbana, IL.	September 30, 2009
Invited Speaker and Participant (2008) ASM Kadner Institute, For Professional Development, Boulder, CO.	July 19-23, 2008

On-Campus Instruction – Professional Development

Invited Contributor (2021) MCB 300: Introduction to Microbiology You Tube Link: Coming	March 25, 2021
Invited Contributor (2020) Welcome to MCB 300, Dr. Blanke https://mediaspace.illinois.edu/media/t/1_jegfh7p8	August 2020
Invited Contributor (2018) MCB 300:	
Invited Contributor (2018) MCB Undergraduate Research: Unlock the full potential of your coursework You Tube Link: https://www.youtube.com/watch?v=M7_xKrm1rwE	September 4, 2018
Invited Contributor (2018) Undergraduate Research Faculty Perspective https://www.youtube.com/watch?v=qv2A776biEM	2018
Invited Contributor (2016) MCB 300: Microbiology, a conversation with Dr. Steven Blanke https://www.youtube.com/watch?v=2DJbpUE2Jm8	September 29, 2016
Invited Contributor (2009) MCB Faculty Interview https://mcb.illinois.edu/videos/faculty/sblanke.mp4	September, 2009

2020

Carle Illinois College of Medicine

Phase I - Nutrition

Lecture on Gut Microbiome

Friday, June 5, 2020. More than a gut feeling? Impact of the emerging gut microbiota-immunity-metabolism axis on human health and disease

Brown Bag Seminar

Friday, May 1, 2020. Reconciling host-pathogen co-evolution and the treatment of chronic infection: The curious case of *Helicobacter pylori*.

2019

Carle Illinois College of Medicine

Brown Bag Seminar

Friday, May 28, 2020. Just a gut feeling? Impact of the emerging gut microbiota-immunity-metabolism axis on human health and disease

Brown Bag Seminar

Friday, May 3, 2019. Host-pathogen co-evolution, and the treatment of chronic infection: The curious case of *Helicobacter pylori*

Evaluation of Classroom Teaching

				Teaching Effectiveness*			
Course #	**Course name**	**Contact hours**	**Date taught**	**Rating**	**Highest**	**Lowest**	**Students**
University of Illinois							
CI-COM	Infection and Immunity	6	Fall, 2020	ND			48
MCB 300	Microbiology	40	Fall, 2020	4.22	5.00	1.00	130
CI-COM	Infection and Immunity	6	Fall, 2020	ND			32
MCB 300	Microbiology	40	Fall, 2020	4.09	5.00	1.00	116
MCB 435	Global Biosecurity	1	Fall, 2020	ND			120
MCB 300	Microbiology	20	Spring, 2020	4.20	5.00	1.00	109
CI-COM	Infection and Immunity	6	Fall, 2019	ND			32
MCB 300	Microbiology	20	Fall, 2019	ND	5.00	1.00	ND
MCB 435	Global Biosecurity	1	Fall, 2019	4.25			109
MCB 300	Microbiology	20	Spring, 2019	4.00	5.00	1.00	114
CI-COM	Digestion	2	Spring, 2019				32
MCB 300	Microbiology	20	Fall, 2018	4.17	5.00	1.00	107
MCB 435	Global Biosecurity	1	Fall, 2018				80
MCB 300	Microbiology	20	Spring, 2018	4.04	5.00	1.00	118
MCB 250	Molecular Genetics	20	Spring, 2018	3.31	5.00	1.00	174
MCB 250	Molecular Genetics	20	Fall, 2017	2.47	5.00	1.00	425
MCB 435	Global Biosecurity	1	Fall, 2018				85
MCB 300	Microbiology	20	Spring, 2017	4.42	5.00	1.00	113
MCB 300	Microbiology	20	Fall, 2016	4.00	5.00	1.00	
MCB 300	Microbiology	20	Spring, 2016	4.15	5.00	1.00	
MCB 300	Microbiology	20	Fall, 2015	3.81	5.00	1.00	
MCB 300	Microbiology	20	Spring, 2015	4.19	5.00	1.00	
MCB 300	Microbiology	20	Fall, 2014	3.81	5.00	1.00	
MCB 429	Cellular Micro. & Disease	45	Spring, 2014	4.55	5.00	1.00	
MCB 429	Cellular Micro. & Disease	45	Spring, 2013	4.90	5.00	1.00	

MCB 429	Cellular Micro. & Disease	45	Spring, 2012	4.70	5.00	1.00
MCB 429	Cellular Micro. & Disease	45	Spring, 2011	4.60	5.00	1.00
MCB 539	Advan. Cell. Micro. & Disease	15	Spring, 2011	4.40	5.00	1.00
MCB 429	Cellular Micro. & Disease	45	Spring, 2010	4.90	5.00	1.00
MCB 429	Cellular Micro. & Disease	45	Spring, 2009	4.60	5.00	1.00
MCB 429	Cellular Micro. & Disease	45	Spring, 2008	4.70	5.00	1.00
MCB 493	Cellular Micro. & Disease	45	Spring, 2007	4.40	5.00	1.00

University of Houston**

Biology 1353	Prenursing Microbiology	45	Fall, 2004	1.23	1.005.00
BCHS 6219	Cell Biology of Disease	22	Spring, 2004	1.27	1.005.00
Biology 1353	Prenursing Microbiology	45	Fall, 2003	1.20	1.005.00
BCHS 6218	Host-Pathogen Interact.	45	Spring, 2003	1.29	1.005.00
Biology 1353	Prenursing Microbiology	45	Fall, 2002	1.30	1.005.00
Biology 1353	Prenursing Microbiology	45	Fall, 2001	1.09	1.005.00
BCHS 6219	Cell Biology of Disease	22	Spring, 2001	1.07	1.005.00
Biology 1353	Prenursing Microbiology	45	Fall, 2000	1.15	1.005.00

BCHS 6411	Graduate Biochemistry	22	Spring, 2000	4.91	5.001.00	
BCHS 6218	Host Pathogen Interact.	22	Spring, 2000	4.18	5.001.00	
Biology 1353	Prenursing Microbiology	45	Fall, 1999	4.72	5.001.00	
BCHS 6411	Graduate Biochemistry	22	Spring, 1999	4.21	5.001.00	
BCHS 6217	Molec. Mech. Infect. Dis.	22	Spring, 1999	4.65	5.001.00	
Biology 1353	Prenursing Microbiology	45	Fall, 1998	4.88	5.001.00	
BCHS 6217	Molec. Mech. Infect. Dis.	22	Spring, 1998	4.49	5.001.00	
BCHS 6113	Biochem. Grad. Seminar	22	Spring, 1998	4.74	5.001.00	
Biology 1353	Prenursing Microbiology	45	Fall, 1997	4.70	5.001.00	
Biology 1353	Prenursing Microbiology	45	Fall, 1996	4.67	5.001.00	

* Students were asked to fill in scantron evaluations with a series of questions about the instructor, and the effectiveness of the instructor's teaching.
** At the University of Houston, prior to Fall 2000, the highest rating was 5.00 for each category. However, beginning Fall 2000, the system was changed so that 1.00 is the highest score.

SERVICE

UNIVERSITY SERVICE

University of Illinois

Senator, UIUC Faculty Senate	2021-2023
Search Committee, College of Veterinary Medicine - Assistant or Associate Professor Small Animal Soft Tissue Surgery – Veterinary Clinical Medicine	2021-present
Carle Illinois – College of Medicine, Assessor 19th Annual Health Innovation Research Day Program Innovations in Health: Past, Present, and Future, April 16, 2021	2021
Search Committee, MCB Cancer Biology Search Committee	2021
CI-COM Task Force Leader on Curriculum Thread Objectives	2020
LAS Executive Committee Interim Member	2019

Participant, LAS Strategic Planning Roundtables: Promoting Diversity and Inclusion	2019
LAS Advancement Planning and Opportunities Meeting (Ashley Nadele)	2019
Graduate Recruiter, ASPIRE Program, Graduate College Education Equity Program Office, October 8, 2018	2018
University of Illinois, College of Liberal Arts and Sciences Discovery Day (2018) "Fantastic Microbes and where to Find Them." Urbana, IL, September 23, 2018.	2018
School of Molecular and Cellular Biology, University of Illinois. Interviewed for MCB Video on undergraduate research	2018
Discussion Leader: Bio-Threat Presenter for the Sandia National Laboratory-Illinois Strategic Alliance Meeting, May 15, 2018	2018
Graduate Recruiter, ASPIRE Program, Graduate College Education Equity Program Office	2017
University of Illinois, Molecular and Cellular Biology Undergraduate Research Workshop (2016) So You Want to do Undergraduate research? Undergraduate Research in the Laboratory. September 28, 2017.	2017
University of Illinois, College of Liberal Arts and Sciences Discovery Day (2017) "Masters of the Universe? Romping in the Microbial Sandbox." Urbana, IL, September 24, 2017.	2017
University of Illinois, Molecular and Cellular Biology Undergraduate Research Workshop (2016) Weighing PI Expectations for Undergraduate Research in the Laboratory. October 18, 2016.	2016
University of Illinois, College of Liberal Arts and Sciences Discovery Day (2016) "Masters of the Universe? Romping in the Microbial Sandbox." Urbana, IL, September 18, 2016.	2016
Honors Council of the College of Liberal Arts and Sciences	2016 -2017
Graduate Recruiter, ASPIRE Program, Graduate College Education Equity Program Office	2016
Bio-Threat Presenter for the Sandia National Laboratory-Illinois Strategic Alliance Meeting, August 2016	2016
3rd Year Review Faculty Examiner for MCB (Patrick Degnan)	2016
Graduate Recruiter, ASPIRE Program, Graduate College Education Equity Program Office	2015
University of Illinois, College of Liberal Arts and Sciences Discovery Day (2015) "Synthetic Biology and Global Health: Romping in the Biological Sandbox." Urbana, IL, September 26, 2015.	2015
Searle Scholars Pre-proposal Review Panel	2015
Junior Faculty Mentor (Patrick Degnan). Department of Microbiology	2015-2017
Howard Hughes Medical Institute's International Student Research Fellowship Review Panel	2014-2015
Department of Pathobiology Faculty Search Committee	2014-2015
Chair, Research Integrity Inquiry Panel, Office of the Vice Chancellor for Research	2014-2017
Member, MCB Distinction Committee	2014
Member, Valee Foundation Young Investigator Award Selection Committee	2013
Member, Department of Microbiology Graduate Admissions & Recruitment Committee	2013-2015
Member, MCB Combined Graduate Admissions/Graduate Programs Committee	2013-2015
Member, Search Committee for the David R. and Margaret Stirewalt Lincicome Professor of Host-Parasite Interactions, Department of Animal Biology, School of Integrative Biology, University of Illinois at Urbana-Champaign	2012-2013

Member, MCB Promotions and Tenure Committee	2012-2015
Chair, Graduate Awards Committee, Department of Microbiology	2011-present
Chair, Undergraduate Awards Committee, Department of Microbiology	2011-present
Member, MCB Communications and Awards Committee	2011-2017
Member, Executive Committee, Program in Arms Control, Disarmament, and International Security at UIUC	2011-present
Member, Committee for Development of NIH C06 Grant Application for Renovation of Existing Facilities for Campus-Wide BSL3 Core Facility	2009-2010
Co-PI – NIH shared Instrumentation grant for Image Stream from Q Amnis.	2009
Chair, MCB Imaging Facility Oversight Committee	2008-2009
Faculty Co-Advisor, University of Illinois ASM student chapter	2008-present
Liaison, Department of Microbiology/Cross-College effort to submit applications for the National Centers of Excellence for "Food Security" and "Zoonotic and Animal Disease Defense"	2008-2009
Member, Chemical Biology Training Grant Selection Committee	2008
Member, ACDIS, Director Search Committee	2007
Member, CDB Faculty Search Committee	2007
Member, Microbiology Faculty Search Committee	2007
Member, Infection Biology Training Grant Planning Committee	2007
Member, Medical Scholars Interview Panelist	2007-2008
Member, Executive Committee, Program in UIUC Arms Control, Disarmament, and International Security	2006-2009
Member, Promotions and Tenure Committee, School of Molecular and Cellular Biology	2006-2009
Chair, Student Awards and Scholarship Committee Department of Microbiology	2006-2011
Member, Institutional Biological Safety Committee (IBC)	2006-2010
Member, Infection Biology Working Group	2005-present
Member, Program in UIUC Arms Control, Disarmament, and International Security	2005-present
Member, BSL-3 Committee, Campus-Wide	2005-2008

University of Houston

Chair, University Biosafety Committee	2004-2005
Director, Institute for Molecular Biology	2003-2005
Member, University Task Force on Homeland Security	2002-2005
Member, University Biosafety Committee	2002-2003
Member, Departmental Awards Committee	2004
Member, Departmental Curriculum Committee	2003-2004
Member, A.D. Bruce Religion Center Committee	2001-2004
Member, Departmental Faculty Search Committee for Biochemistry Division	2004
Member, Graduate Committee, Dept. Biology & Biochem.	2001-2004
Member, Proteomics Search Committee	2003
Member, John Butler Teaching Award Committee, U. Houston	2002-2003
Member, mass spectrometry purchasing group	2002
Honor's College Reader	2001
Member, NMR Search Committee	2000-2001
Member, Computer Committee	1998-2000
Member, Committee for Evaluation of First Year Graduate Students	2000
Environ. Institute 2000 Research Assessment Program Self-Study	2000
Speaker, 3rd Department of Biology and Biochemistry Career Day	2000
Chair, Subcommittee for Corporate Fundraising	1999
Member, Fluorescence Activated Cell Sorter Committee	1999
ISSO Pre-proposal for expanding NSBRI	1999
Member, Develop./Fund-Raising Com.; U. Houston, D. Biol./Bioch.	1998-1999
Member, Faculty Search Committee (microbial pathogenesis)	1997-1998
Member, NSM College Academic Honesty Hearing Panel	1998
Member, Faculty Search Committee (neuroscience)	1996-1997
Member, Committee for Grad. Student Recruiting, Dept. Biol./Bioch	1996-1997
Member, Committee for National Merit Scholar Recruiting, Dept. Biol./Bioch.	1997
Member, Committee to submit NSF grant for acquisition of the Biosensor	1996-1997
Member, Dept of Biochem. Biophys. Sci.; Undergrad. Res. Fellowship Pgrm.	1996

Graduate Student Advisory Committees, (not including laboratory members)

University of Illinois

Saika Hossain	(Member, Microbiology)	2020-present
Joel Rivera Cardona	(Member, Microbiology)	2020-present
Tongyu (Anna) Zhang	(Member, Microbiology)	2019-present
Nicolas Handy	(Chair, Microbiology)	2018-present
Ruben Leonardo Sanchez-Nieves	(Member, Microbiology)	2018-present
Rouhallah Ramezanifard	(Member, Microbiology)	2018-present
Chris Brooks Lab member	(Member, Microbiology)	2017-present
Meghan Diefenbacher	(Chair, Microbiology)	2016-present
Yueheng Joy Zhou	(Member, Microbiology)	2015-2016
Ted Kim	(Chair, Microbiology)	2015-present
Elizabeth Mayberry	(Chair, Microbiology)	2014-2019
Paola Parraga Solorzano	(Member, Microbiology)	2014-present
Lauren Gates	(Member, Microbiology)	2013-2017
Adam Kolakowski	(Member, Microbiology)	2012-2013
T.V. Pritha Rao	(Chair, Microbiology)	2012-present
Daniel Harris	(Member, Microbiology)	2012

Sarah Getter	(Member, Microbiology)	2012-2013
Sunetra Biswas	(Member, Microbiology)	2012-present
Tucker Maxson	(Member, Chemistry)	2011-2015
Hazel Ozuna	(Member, Microbiology)	2010-2011
Kyungsub Kim	(Member, Microbiology)	2011-2019
Seyfullah Kotil	(Member, Biophysics)	2011-2017
Melissa Szyperski Ryerson	(Chair, Microbiology)	2011-2017
Michael Brothers	(Member, Chemistry)	2010-2013
Katie Molohon	(Chair, Microbiology)	2010-2015
Brent Walling	(Member, Pathobiology)	2010-2013
Kate Woodall	(Member, Microbiology)	2010-2012
Ariana Bravo Cruz	(Member, Microbiology)	2010-2016
Nicole Tsang	(Member, Biochemistry)	2009-2015
Li-Hsin Chang	(Chair, Microbiology)	2009-2010
Jesse Grenz	(Member, Microbiology)	2009-present
Michael Tencati	(Member, Microbiology)	2009-2016
Nathan Clemons	(Chair, Microbiology)	2008-2019
Song Jiang	(Chair, Microbiology)	2008-2015
Josh Turner	(Member, Microbiology)	2008
Gerardo Nava	(Member, Animal Sciences)	2007-2009
Crystal Harmon	(Member, Microbiology)	2007-2013
Bryan Hart	(Member, Microbiology)	2007-2013
Marinos Kalafatis	(Member, Microbiology)	2007-2014
Bo Song	(Member, Microbiology)	2007-2008
Kristen Lee	(Chair, Microbiology)	2006-2010
Shuo Xi	(Chair, Microbiology)	2006-2012
Yuka Bannai	(Member, Microbiology)	2006-2014
Sarah McKenna	(Chair, Microbiology)	2006-2007
Jiyeon Park	(Member, Microbiology)	2006-2011
Margaret Wetzel	(Member, Microbiology)	2006-2016
Helen Ting	(Member, Microbiology)	2006-2008

University of Houston

Manali Mehendale	(Biology & Biochemistry)	2003-2005
Pete Taylor	(Biology & Biochemistry)	2003-2005
Jerry Houl	(Biology & Biochemistry)	2003-2004
Maria Kostakioti	(Biology & Biochemistry)	2003-2005
Cheryl Newman	(Biology & Biochemistry)	2003-2004
Anna Matejko	(Chemistry)	2002-2005
Jeremy Strauch	(Chemical Engineering)	2002-2005
A. Kumaraswamy	(Biology & Biochemistry)	2002-2003
Kyu-Yeon Jun	(Chemistry)	2001-2005
Steve Anaya	(Biology & Biochemistry)	2000-2004
Jerry Johnson	(Biology & Biochemistry)	2000-2003
M. Mehrahzin	(Biology & Biochemistry)	2000-2002
Rong Yang	(Biology & Biochemistry)	2000-2001
C. Uehara	(Chemical Engineering)	1999
He Wang	(Biology & Biochemistry)	1998-1999
Carol Li	(Biology & Biochemistry)	1998-1999
N. Offringa	(Chemical Engineering)	1997-1999
Robert Wagner	(Chemical Engineering)	1997-1998
C. Jeffers	(Biology & Biochemistry)	1997-2000
Qing Lu	(Biology & Biochemistry)	1997

Janet Siefert	(Biology & Biochemistry)	1997
C.- K. Tang	(Biology & Biochemistry)	1997
Hoon Choi	(Biology & Biochemistry)	1997-1999
Xue Zhi Dai	(Biology & Biochemistry)	1997-1999
J. Wibbenmeyer	(Biology & Biochemistry)	1997
Shoquin Huang	(Biology & Biochemistry)	1997
A. Manzo-Fontes	(Biology & Biochemistry)	1997-2000
John Mensah	(Chemistry)	1997-2000
Alex Bernal	(Biology & Biochemistry)	1996-1997
Weiping Dai	(Biology & Biochemistry)	1996-1997
Karen Posey	(Biology & Biochemistry)	1996-2000
N. Sankrithi	(Biology & Biochemistry)	1996-1997

Baylor College of Medicine

Erin Strome	(Cell Biology)	2003-2005

University Texas – Houston Health Science Center

Mr. Doug Botkin	(Biomedical Sciences)	2001-2005

External Ph.D. Thesis Examiner

2014 Faith Blum, Ph.D. Candidate,
Medical College of Wisconsin,
Milwaukee, Wisconsin

2012 Melanie Hutton, Ph.D. Candidate,
Monash Institute of Medical Research,
Victoria, Australia

Selected Public Outreach/Engagement

February 21, 2021. Provided commentary on the 2021 antimicrobial resistance report card. ***Science and Development Network (Scidev.Net)***

April 2017 – Interviewed on WCIA, Channel 3 news concerning report that rubber ducks are great environments for microbial growth

January 2016 – *MCB* article highlighted lab member Michael Reno's research that is evaluating the effects of chronic inflammation due to the human gastric pathogen *Helicobacter pylori* on central nervous system function and cognition.

January 2016 – *MCB Spotlight* on lab member Robin Holland for having won the "People's Choice" Award at the 2015 "Science Speaks" competition at the University of Illinois.

Vet Med Release on Robin's "People's Choice" Award

March, 2015 – News release about election as a Fellow of the American Academy of Microbiology, picked up by several on-line reporting services and also featured internally with article in "Inside Illinois."

February, 2015 – Beckman Institute News report on Anna Kim's work in the Blanke Lab studying host-pathogen interactions using electron microscopy.

June, 2015 - *Microbe* highlighted the goals and activities of the ASM Scientific Writing and Publishing Institute, including a quote from S.R. Blanke as Chair of the Institute stressing the importance of effective writing for the scientific enterprise in the United States.

June, 2014 - *Microbe* highlighted the goals and activities of the ASM Scientific Writing and Publishing Institute, including a quote from S.R. Blanke as Chair of the Institute stressing the importance of effective writing for the scientific enterprise in the United States.

June, 2014 - Interviewed by Ms. Stephanie Kowalowski CBS News regarding recent exposure of CDC personnel to anthrax exposure.

June, 2013 - *Microbe* highlighted the goals and activities of the ASM Scientifıc Writing and Publishing Institute, including a quote from S.R. Blanke as Chair of the Institute stressing the importance of effective writing for the scientific enterprise in the United States.

June, 2012 – *Microbe*. Provided quote, as chair of the ASM Scientifıc Writing and Publishing Institute (SWPI), highlighting the importance of effective and powerful scientific writing, as part of an article feature describing the goals and activities of the SWPI.

November, 2011 – News release describing *Helicobacter pylori* disruption of mitochondrial dynamics, published in PNAS, picked up by national and international news agencies.

October 19, 2011 – *Daily Illini*. Provided commentary about cancer risks, with particular focus on the differences between establishing association versus causality.

April 27, 2010 – *Chemical and Engineering News*. Offered comments on *Science* article by Richard Losick's lab on the role of D-amino acids in biofilm disassembly.

January 2010 – News release describing discovery of the *Helicobacter pylori* activation of PARP-1, published in PNAS, picked up by national and international news agencies.

November 15, 2009 – *Chem. Eng. News* (*C&EN*), 2009, *87* (38), p 10. Comments published on *Science* article (*Science* (2009, *325* , 1552)), by Matt Waldor's laboratory, in a news article entitled "DELVING INTO D-AMINO ACIDS. BIOCHEMISTRY: Bacteria use right-handed amino acids to build and regulate part of their cell wall."

November 4, 2009 – Participated in MCB 150 Honors Discussion Course about careers in science. Was interviewed and filmed.

September 2009 – Interviewed by *The Scientist* about recent paper in *Science* concerning D-amino acids in peptidoglycan remodeling.

August 2008 – *Helicobacter* research describing the discovery of the VacA receptor featured in August 8 issue of "*Microbe*," the news magazine of ASM.

May 2008 – News release describing discovery of the VacA receptor, picked up by national and international news agencies. Discovery also featured internally with article in "Inside Illinois" and University of Illinois Alumni magazine.

October 2005 – Was interviewed by Ed Edelson of the "Health Day" News Service about the following article: Deborah T. Hung,* Elizabeth A. Shakhnovich, Emily Pierson, John J. Mekalanos (2005) Small Molecule Inhibitor of *Vibrio cholerae* Virulence and Intestinal Colonization, Science (October 13, 2005).

January 12, 2004 – Interviewed by Channel 45 News about Biowarfare and research involving countermeasures against the potential use of bioagents. Was aired as part of a series in February 2004.

October 27, 2003 – Interviewed at KUHF for the Radio Current Affairs Show "Images" about Biodefense and research within the Blanke Laboratory at the University of Houston. Will be aired in Spring 2004.

October 9, 2003 – Large biodefense award to the Blanke Laboratory was featured as the lead story in the University of Houston *Campus News.*

October 9, 2003 – Interviewed by Ms. Nancy Holland at Channel 11 News about Bio-Defense, and the new Regional Center for Excellence. Segment was aired at least three different times.

October 9, 2003 – Large biodefense award to the Blanke Laboratory was featured in the University of Houston *Daily Cougar.*

April 28, 2003 – Interviewed by Ms. Amanda Gardner from Health Scout News regarding a published *Nature* study by Dr. Claire Fraser and co-workers about the completed anthrax genome (*Bacillus anthracis*).

January 13, 2003 – Interviewed by Ms. Amanda Gardner from Health Scout News regarding a published *PNAS* study by Dr. Rita Colwell (Director, NSF) about cholera.

November 6, 2001 – Panelist on KUHT-TV, concerning the use of anthrax as a potential biological warfare agent.

November 1, 2001 – Interviewed by Jimmi Richards on KBMT, Channel 12, concerning the use of anthrax as a potential biological warfare agent.

October 29, 2001 – Interviewed by Alexandra Witze on The Dallas Morning News, concerning the use of anthrax as a potential biological warfare agent.

October 21, 2001 – Guest panelist on Channel 13 weekly Current Affairs News Program.

October 8, 2001 – Quoted in Daily Cougar concerning the use of anthrax as a potential biological warfare agent.

September 29, September 30, 2001 – Interviewed on FOX News, Channel 26, concerning the use of anthrax as a potential biological warfare agent.

May 18, 1999 – Interviewed by Dr. Robert Musburger on the KKRW (93.7 FM) Talk Show, "Images" about biological warfare and the development of an improved anthrax vaccine.

May 10, 1999 – Interviewed by Norma Morato of NBC's "20-20" about the marketing claims of antimicrobial reagents.

April 30, 1999 – Interviewed by Drew Teitler of *Meetings and Conventions* about the relationship of antibacterial reagents to the emergence of resistant bacteria (appeared in the June 1999 issue).

March 16, 1999 – Interview with Debra Funk of the *Army Times* about the efficacy of the current anthrax vaccine.

January 13-20, 1999 – Interview featured in the Electronic *Daily Cougar.*

Fall 1998-Winter 1999 – Interviewed for the University of Houston *Collegium.*

December 16, 1997 – Scientific Consultant on the 950 AM Radio Broadcast of *America Talks Health.*

Christopher Brooke

Associate Professor of Microbiology
School of Molecular and Cellular Biology
University of Illinois at Urbana-Champaign

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601 S. Goodwin Ave.
Urbana, IL 61801
217-265-0991
cbrooke@illinois.edu
Twitter: @_chris_brooke
Brookelab.org

FACULTY APPOINTMENTS

2021-present: Associate Professor of Microbiology
Department of Microbiology, University of Illinois, Urbana, IL

2015-2021: Assistant Professor of Microbiology
Department of Microbiology, University of Illinois, Urbana, IL

2017-Present: Faculty
Program in Ecology, Evolution & Conservation Biology, University of Illinois, Urbana, IL

2017-Present: Faculty
Carl R. Woese Institute for Genomic Biology, University of Illinois, Urbana, IL

EDUCATION AND TRAINING

2010-2015: IRTA Postdoctoral Fellow, Laboratory of Viral Diseases, NIH, Bethesda, MD
Mentors: Drs. Jonathan Yewdell and Jack Bennink

2004-2010: **Ph.D. Microbiology & Immunology**, University of North Carolina, Chapel Hill, NC
Thesis: The Protective Roles of T Cells and Complement During Venezuelan Equine Encephalomyelitis Virus Infection
Advisor: Dr. Robert E. Johnston

1999-2003: **B.A. Biology**, Washington University, St. Louis, MO
Research Advisors: Drs. Lee Ratner and Andrew Pekosz

PUBLICATIONS (PRE-PRINTS)

1. Farjo M, Koelle K, Martin MA, Gibson LL, Walden KKO, Rendon G, Fields CJ, Alnaji F, Gallagher N, Luo CH, Mostafa HH, Manabe YC, Pekosz A, Smith RL, McManus DD, and **Brooke CB**. 2022. Within-host evolutionary dynamics and tissue compartmentalization during acute SARS-CoV-2 infection. **bioRxiv**. Available from https://doi.org/10.1101/2022.06.21.497047.

2. Ranoa DRE, Holland RL, Alnaji FG, Green KJ, Wang L, **Brooke CB**, Burke MD, Fan TM, and Hergenrother PJ. 2020. Saliva-Based Molecular Testing for SARS-CoV-2 that Bypasses RNA Extraction. **bioRxiv**. Available from https://doi.org/10.1101/2020.06.18.159434.

PUBLICATIONS (IN PRESS)

1. Farjo M and **Brooke CB**. 2023. Influenza viruses don't play well with others. **Nature**. DOI: 10.1038/d41586-023-00983-5.

2. Ferrell A, **Brooke CB**, Koelle K, and Ke R. 2023. Semi-infectious particles contribute substantially to influenza virus within-host dynamics when infection is dominated by spatial structure. Accepted at **Virus Evolution**. Pre-print available from https://doi.org/10.1101/547349.

3. Goodrum F and 155 additional authors including **Brooke CB**. 2023. Virology under the microscope – a call for rational discourse. Co-published at **J. Virology, mBio,** and **mSphere**. DOI: 10.1128/jvi.00089-23.

4. Farjo M and **Brooke CB**. 2023. Low Viral Diversity Limits the Effectiveness of Sequence-Based Transmission Inference for SARS-CoV-2. **mSphere**. DOI: 10.1128/mSphere.00400-22.

5. Hwang HS, Lo CM, Murphy M, Grudda T, Gallagher N, Luo CH, Robinson ML, Mirza A, Conte M, Conte A, Zhou R, **Brooke CB**, Pekosz A, Mostafa HH, Manabe YC, Thio CL, and Balagopal A. 2022. Characterizing SARS-CoV-2 transcription of subgenomic and genomic RNAs during early human infection using multiplexed ddPCR. **J. Infectious Diseases**. DOI: 10.1093/infdis/jiac472.

6. Lei R, Tan TJC, Garcia A, Wang Y, Diefenbacher M, Teo C, Gopan G, Dargani Z, Teo QW, Graham CS, **Brooke CB**, Nair S, and Wu NC. 2022. Prevalence and mechanisms of evolutionary contingency in human influenza H3N2 neuraminidase. **Nature Communications**. DOI: 10.1038/s41467-022-34060-8.

7. Liu T, Wang Y, Tan TJC, Wu NC, and **Brooke CB**. 2022. The evolutionary potential of the influenza A virus hemagglutinin is highly constrained by epistatic interactions with neuraminidase. **Cell Host & Microbe**. DOI: 10.1016/j.chom.2022.09.003.

8. Ranoa DRE, 140 additional authors, **Brooke CB**, Walsh JT, Sullivan WC, Smith RL, Goldenfeld ND, Fan TM, Hergenrother PJ, and Burke MD. 2022. Mitigation of SARS-CoV-2 Transmission at a Large Public University. **Nature Communications**. DOI: 10.1038/s41467-022-30833-3.

9. Ke R, Martinez PP, Smith RL, Gibson LL, Mirza A, Conte M, Gallagher N, Luo CH, Jarrett J, Conte A, Liu T, Farjo M, Walden KKO, Rendon G, Fields CJ, Wang L, Fredrickson R, Edmonson DC, Baughman ME, Chiu KK, Choi H, Scardina KR, Bradley S, Gloss SL, Reinhart C, Yedetore J, Quicksall J, Owens AN, Broach J, Barton B, Lazar P, Heetderks WJ, Robinson ML, Mostafa HH, Manabe YC, Pekosz A, McManus DD, and **Brooke CB**. 2022. Daily sampling of early SARS-CoV-2 infection reveals substantial heterogeneity in infectiousness. **Nature Microbiology**. DOI: 10.1038/s41564-022-01105-z.
   - *Nature Research Highlight*

10. Diefenbacher M, Tan TJC, Bauer DLV, Stadtmueller B, Wu NC, and **Brooke CB**. 2022. Interactions between influenza A virus nucleoprotein and gene segment UTRs facilitate selective modulation of viral gene expression. **J. Virology**. DOI: 10.1128/jvi.00205-22.

11. Ke R*, Martinez PP*, Smith RL, Gibson LL, Achenbach CJ, McFall S, Qi C, Jacob J, Dembele E, Bundy C, Simons LM, Ozer EA, Hultquist JF, Lorenzo-Redondo R, Opdycke AK, Hawkins C, Murphy RL, Mirza A, Conte M, Gallagher N, Luo CH, Jarrett J, Conte A, Farjo M, Rendon G, Fields CJ, Wang L, Fredrickson R, Baughman ME, Chiu KK, Choi H, Scardina KR, Owens AN, Broach J, Barton B, Lazar P, Robinson ML, Mostafa HH, Manabe YC, Pekosz A, McManus DD, and **Brooke CB**. 2022. Longitudinal analysis of SARS-CoV-2 vaccine breakthrough infections reveal limited infectious virus shedding and restricted tissue distribution. **Open Forum Infectious Diseases.** DOI: 10.1093/ofid/ofac192. * Authors contributed equally.
   - *Referenced in The Atlantic, Popular Science, New Scientist, etc.*

12. Alnaji FG, Reiser WK, Rivera-Cardona J, te Velthuis AJW, and **Brooke CB**. 2021. Influenza A virus defective viral genomes are inefficiently packaged into virions relative to wild-type genomic RNAs. **mBio**. DOI: 10.1128/mBio.02959-21.

13. Pelz L, Rüdiger D, Alnaji FG, Genzel Y, **Brooke CB**, Kupke SY, and Reichl U. 2021. Semi-continuous propagation of influenza A virus and its defective interfering particles: analyzing the dynamic competition to select candidates for antiviral therapy. **J. Virology**. DOI: 10.1128/JVI.01174-21.

14. Drayman N, Jones KA, Azizi SA, Froggatt HM, Tan K, Maltseva NI, Chen S, Nicolaescu V, Dvorkin S, Furlong K, Kathayat RS, Firpo MR, Mastrodomenico V, Bruce EA, Schmidt MM, Jedrzejczak R, Munoz-Alia MA, Schuster B, Nair V, Botten JW, **Brooke CB**, Baker SC, Mounce BC, Heaton NS, Dickinson BC, Jaochimiak A, Randall G, and Tay S. 2021. Drug repurposing screen identifies masitinib as a 3CLpro inhibitor that blocks replication of SARS-CoV-2 in vitro. **Science**. DOI: 10.1126/science.abg5827.

15. Smith RL, Gibson LL, Martinez PP, Ke R, Mirza A, Conte M, Gallagher N, Conte A, Wang L, Fredrickson R, Edmonson DC, Baughman ME, Chiu KK, Choi H, Jensen TW, Scardina KR, Bradley S, Gloss SL, Reinhart C, Yedetore J, Owens AN, Broach J, Barton B, Lazar P, Henness D, Young T, Dunnett A, Robinson ML, Mostafa HH, Pekosz A, Manabe YC, Heetderks WJ, McManus DD, and **Brooke CB**. 2021. Longitudinal assessment of diagnostic test performance over the course of acute SARS-CoV-2 infection. **J. Infectious Diseases.** DOI: 10.1093/infdis/jiab337.
    - *Highlighted in NIH Director's blog*
    - *Referenced in The New York Times, The Atlantic, Politico, Scientific American, etc.*

16. Tan TJC, Yuan M, Kuzelka K, Padron GC, Beal JR, Chen X, Wang Y, Rivera-Cardona J, Zhu X, Stadtmueller BM, **Brooke CB**, Wilson IA, and Wu NC. 2021. Sequence signatures of two IGHV3-53/3-66 public clonotypes to SARS-CoV-2 receptor binding domain. **Nature Communications**. DOI: 0.1038/s41467-021-24123-7.

17. Martin BE, Harris JD, Sun J, Koelle K, and **Brooke CB**. 2020. Cellular co-infection can modulate the efficiency of influenza A virus production and shape the interferon response. **PLOS Pathogens**. DOI: 10.1371/journal.ppat.1008974

18. Sun J, Vera JC, Drnevich J, Lin YT, Ke R, and **Brooke CB**. 2020. Single cell heterogeneity in influenza A virus gene expression shapes the innate antiviral response to infection. **PLOS Pathogens**. DOI: 10.1371/journal.ppat.1008671.
    - *Commentary in Nature Reviews Microbiology*

19. Alnaji FG and **Brooke CB**. 2020. Influenza virus DI particles: defective interfering or delightfully interesting? **PLOS Pathogens**. DOI: 10.1371/journal.ppat.1008436.

20. Dardir K, Wang H, Martin BE, Atzampou M, **Brooke CB**, and Fabris L. 2020. A SERS nanoprobe for intracellular monitoring of viral mutations. **J. Phys. Chem. C**. DOI: 10.1021/acs.jpcc.9b09253.

21. Koelle K, Ferrell A, **Brooke CB**, and Ke R. 2019. Within-host infectious disease models accommodating cellular coinfection, with an application to influenza. **Virus Evolution**. DOI: 10.1093/ve/vez018.

22. Lakdawala SS, Lee N, and **Brooke CB.** 2019. Teaching an old virus new Tricks: A review on new approaches to study age-old questions in influenza biology. **J. Molecular Biology.** DOI: 10.1016/j.jmb.2019.04.038.

23. Zhang Y, Ahn J, Green KJ, Vann KR, Black J, **Brooke CB**, and Kutateladze. 2019. MORC3 is a target of the influenza A viral protein NS1. **Structure**. DOI: 10.1016/j.str.2019.03.015.

24. Alnaji FG, Holmes JR, Rendon G, Vera JC, Fields CJ, Martin BE, and **Brooke CB**. 2019. Sequencing framework for the sensitive detection and precise mapping of defective interfering particle-associated deletions across influenza A and B viruses. **J. Virology**. DOI: 10.1128/JVI.00354-19.
    - *Cover article*

25. Kosik I, Angeletti D, Gibbs JS, Angel M, Takeda K, Kosikova M, Nair V, Hickman HD, Xie H, **Brooke CB**, and Yewdell JW. 2019. Neuraminidase inhibition contributes to influenza A virus neutralization by anti-hemagglutinin stem antibodies. **J. Exp. Med.** DOI: 10.1084/jem.20181624.

26. Martin BE and **Brooke CB**. 2019. Flu shows the power of diversity. **Cell**. DOI: 10.1016/j.cell.2018.12.017.

27. Gallagher ME, **Brooke CB**, Ke R, and Koelle K. 2018. Causes and Consequences of Spatial Within-Host Viral Spread. **Viruses**. DOI: 10.3390/v10110627.

28. Sun J and **Brooke CB**. 2018. Influenza A virus superinfection potential is regulated by viral genomic heterogeneity. **mBio**. DOI: 10.1128/mBio.01761-18.

29. Diefenbacher M, Sun J, and **Brooke CB**. 2018. The parts are greater than the whole: the role of semi-infectious particles in influenza A virus biology. **Curr. Opin. in Virol**. DOI: 0.1016/j.coviro.2018.07.002.
    - *Invited review for special issue on multi-component viral systems*

30. Kosik I, Ince WL, Gentles L, Oler AJ, Kosikova M, Angel M, Magadan J, Xie H, **Brooke CB***, and Yewdell JW*. 2018. Influenza A virus hemagglutinin glycosylation compensates for antibody escape fitness costs. **PLOS Pathogens**. DOI: 10.1371/journal.ppat.1006796. ****Authors contributed equally***
    - *In top 10% most cited PLOS Pathogens articles from 2018*
    - *Selected by editors as a featured research article*

31. **Brooke CB.** 2017. Population diversity and collective interactions during influenza virus infection. **J. Virology**. PMID: 28855247.

32. **Brooke CB***, Ince WL*, Wei J, Bennink JR, and Yewdell JW. 2014. Influenza A virus nucleoprotein selectively decreases neuraminidase gene segment packaging while enhancing fitness and transmissibility. **PNAS**. 111(47): 16854-16859. ****Authors contributed equally***

33. **Brooke CB.** 2014. Biological activities of 'noninfectious' influenza A particles. **Future Virology**. 9(1):41-51.
    - *Invited Review*

34. Das SR, Hensley SE, Ince WL, **Brooke CB**, Subba A, Delboy MG, Russ G, Gibbs JS, Bennink JR, and Yewdell JW. 2013. Defining Influenza A Virus Hemagglutinin Antigenic Drift by Sequential Monoclonal Antibody Selection. **Cell Host & Microbe**. 13(3): 314-323.

35. **Brooke CB**, Yewdell JW. 2013. Host versus flu: antibodies win a round? **Nature Structural & Molecular Bio**. 20(3):245-6.

36. **Brooke CB**, Ince WL, Wrammert J, Ahmed R, Wilson PC, Bennink JR, and Yewdell JW. 2013. Most influenza A virions fail to express at least one essential viral protein. **J. Virology**. 87(6): 3155-62.
    - *Commentary on NationalGeographic.com by Carl Zimmer*
    - *Quoted in The Atlantic by Ed Yong*
    - *F1000 Prime Recommendation*
    - *Selected as Issue Highlight*

37. Yewdell JW and **Brooke CB**. 2012. Monocytes, viruses, and metaphors: Hanging the Trojan horse. **Cell Cycle**. 11(9): 1748-9

38. Hou W, Gibbs JS, Lu X, **Brooke CB**, Roy D, Modlin RL, Bennink JR, and Yewdell JW. 2012. Viral infection triggers rapid differentiation of human blood monocytes into dendritic cells. **Blood**. 119(13):3128-31.

39. **Brooke CB**, Schaefer A, Matsushima GK, White LJ, and Johnston RE. 2012. Early activation of the host complement system is required to restrict CNS invasion and limit neuropathology during Venezuelan equine encephalitis virus infection. **J. Gen. Virology**. 93(4):797-806.

40. Schaefer A**, Brooke CB**, Whitmore AC, and Johnston RE. 2011. The role of the blood brain barrier during Venezuelan equine encephalitis virus infection. **J. Virology**. 85(20):10682-90.

41. **Brooke CB**, Deming DJ, Whitmore AC, White LJ, and Johnston RE. 2010. T cells facilitate recovery from Venezuelan equine encephalomyelitis virus-induced encephalomyelitis in the absence of antibody. **J. Virology**. 84(9):4556-68.

HONORS AND AWARDS

2022	List of Teachers Ranked as Excellent by Their Students (Fall semester)
2021	University of Illinois System Presidential Medallion
2021	College of Liberal Arts and Sciences Impact Award (2X)
2020	*News-Gazette* and *Central Illinois Business Magazine* Under-40 Man of the Year Award
2020	List of Teachers Ranked as Excellent by Their Students (Spring semester)
2020	List of Teachers Ranked as Excellent by Their Students (Fall semester)
2017	List of Teachers Ranked as Excellent by Their Students (Spring semester)
2016	Princeton IDEAS Research Coordination Network Research Exchange Award
2014	American Society for Virology travel award
2014	European Scientist Working group on Influenza (ESWI) young scientist travel award
2014	NIH Fellows Award for Research Excellence (FARE)
2007	Selected for Bassford Memorial Lecture committee
2007-2008	Molecular Basis of Viral Diseases graduate training grant
2001	Howard Hughes Medical Institute (HHMI) undergraduate research fellowship

PROFESSIONAL ACTIVITIES

2022-present	Associate editor: *Virus Evolution*
2022	Workshop convener: Keystone Symposium on Respiratory Viruses. Keystone, CO.
2022-present	Program Planning Committee: American Society for Virology
2021	Workshop convener: American Society for Virology Conference. Virtual.
2017-2020	Program Planning Committee: American Society for Virology
2018	Workshop convener: American Society for Virology Conference. College Park, MD.
2016	Workshop convener: American Society for Virology Conference. Blacksburg, VA.
2014	Immunology session co-chair: ESWI Influenza Conference. Riga, LV.
2014	Workshop convener: American Society for Virology Conference. Ft. Collins, CO.
2013-present	Member: American Society for Virology

Additional editorial work:

Reviewing editor at *eLife*
Guest editor at *PLOS Pathogens*
Co-edited special issue of *Viruses*: Recent advances in influenza virus biology

Ad hoc reviewer: *Cell Host & Microbe, Cell Reports, Current Biology, Current Opinions in Virology, eLife, Evolution, Journal of Biological Chemistry, Journal of Clinical Investigation, Journal of Medical Virology, Journal of Molecular Biology, Journal of Virology, mBio, Molecular Biology and Evolution, mSphere, Nature, Nature Communications, Nature Microbiology, PLOS Biology, PLOS Pathogens, PNAS, RNA, Science, Science Advances, Science Signaling, Scientific Reports, Vaccine, Viruses, Virus Evolution*

Study sections:	2022 - NIH VIR-B (Ad hoc)
	2022 - NIH ZRG1 IDIA-K (02): Member conflicts – topics in virology
	2020 - DOD CDMRP: COVID-T4
	2018 - NIH VIR-B (Ad hoc)
	2018 - DOD Vannevar Bush Faculty Fellowship Program
	2018 - U.S.-Israel Binational Science Foundation
	2017 - NIH 01 ZAI1 KP-M (J1): Rapid Assessment of Zika virus (ZIKV) complications.
	2017 - DOD CDMRP: PRE-FLU-Peer Reviewed Medical Research Program (PRMP)

DEPARTMENTAL AND UNIVERSITY SERVICE

2022-2023	Committee appointed to improve graduate education in the Microbiology Dept.
2022-2023	Chair; School of MCB Faculty Search Committee
2021-present	School of MCB Strategic Advisory Committee
2019-present	Roy J. Carver Biotechnology Center Faculty Advisory Committee
2019-present	School of MCB Curriculum Committee
2019	Department of Microbiology Curriculum Planning Committee
2018-2019	School of MCB Faculty Search Committee (Resulted in hiring of one Asst. Professor)
2017-2018	School of MCB Faculty Search Committee (Resulted in hiring of two Asst. Professors)
2017-2021	School of MCB Graduate Admissions/Graduate Programs Committee

SERVICE ACTIVITIES DURING COVID-19 PANDEMIC

- Initiated and orchestrated efforts to establish high-throughput, same-day COVID-19 molecular testing capacity at Carle Foundation Hospital using equipment and expertise from UIUC.
  Press here.

- Initiated, developed, and supervised large scale (>35k vials/week) Viral Transport Medium (VTM) production facility at UIUC to support state-wide COVID-19 testing efforts. Delivered >200,000 vials as of 6/15/20.
  Press here and here:

- Helped develop a novel saliva-based COVID-19 molecular test (covidSHIELD) that has been deployed for massive scale (>10k tests/day; over 2M tests total) same-day surveillance testing of university students, staff, and faculty. This test received Emergency Use Authorization from the FDA and has been widely used around the country.
  Press here:

- Served as an outside advisor to Governor Pritzker's office on:
  - Expanding molecular testing capacity
  - Evaluating a serological testing strategy
  - Developing a long-term plan for statewide COVID-19 mitigation and control

- Participated in numerous community outreach efforts, including:
  - American Society for Virology online townhalls on COVID vaccines
  - COVID Courts Initiative briefing on genomic epidemiology and diagnostic testing
  - COVID-19 Briefing Series with Chancellor Robert Jones and Provost Andreas Cangellaris
  - Facebook Live Q&A with U.S. Rep. Bill Foster on COVID-19
    Press here.
  - IGB science chat: "A COVID-19 Primer: Virology, Immunology, Evolution, and Epidemic Modeling"
  - University Library System online community panel discussion on COVID-19

- University Science Policy Group coffee chat on COVID-19

PRIMARY TEACHING RESPONSIBILITY

2017-onwards	Developer and sole instructor for MCB 493: Virology (40-80 contact hours/year).

ADDITIONAL TEACHING EXPERIENCE AND OUTREACH

2019-2022	Virology lecturer for 2nd year medical students at Carle-Illinois College of Medicine
2019	Public lecture on viruses as part of local “Science Café” series
2018	Osher Lifelong Learning Institute (OLLI) lecture on viral genomics
2017-present	Lecturer. MCB 585: Current Topics in Microbiology
2016-2019	Guest Lecturer. MCB 436: Global Biosecurity

PH.D. STUDENTS GRADUATED

2021	Jiayi Sun	Subsequent position: Postdoc with Patrick Wilson, Weill Cornell Medicine
2022	Meghan Diefenbacher	Subsequent position: Postdoc with Tim Sheahan, UNC-Chapel Hill

STUDENT PHD COMMITTEES

Jeremiah Heredia (Biochemistry; 2017-2019)
Hanzhong Ke (Pathobiology; 2017-2019)
Peter Korajczyk (Microbiology; 2018-2020)
Samantha DeWerff (Microbiology; 2018-2021; committee chair)
Yung-Tien Tien (Pathobiology; 2018-present)
Sneha Das (Microbiology; 2018-present; committee chair)
Molly Crowder (Microbiology; 2018-present)
Kevin Gill (Biochemistry; 2019-2023)
Brittney Gorman (Biophysics; 2019-2022)
Maria Atzampou (Chemistry; Rutgers Univ.; 2019-2020)
Tongyu (Anna) Zhang (Microbiology; 2019-present; committee chair)
Auroni Gupta (Microbiology; 2020-2022; committee chair)
Deborah Frederick (Microbiology; 2020-2022; committee chair)
Ivan Marquez (Microbiology; 2020-2022)
John Schneider (Microbiology; 2020-present)
Nayeem Bari (Microbiology; 2021-2022)
Courtney Hill (Microbiology; 2021-present)
Torri Boyle (Microbiology; 2021-present; committee chair)
Melanie Brunet (Chemical & Biomedical Engineering; 2021-present)
Timothy Tan (Biochemistry; 2022-present)
Lindsey Grady (Microbiology; 2022-present)
Suvanthee Gunasekera (Microbiology; 2022-present; committee chair)
Henry Peel (Microbiology; 2022-present)
Jiayue Yang (Microbiology; 2022-present)
Junya Li (Microbiology; 2022-present)
Antonio Leonardo-Cattolica (Pathobiology; 2023-present)
Vanessa Jones (Microbiology; 2023-present)
Aniritha Balasubramian (Microbiology; 2023-present)

INVITED SEMINARS

2023. Microbiology Seminar Series. Biology Department. University of Indiana. Bloomington, IN.
2023. Center for Pathogen Genomics and Microbial Evolution. Northwestern University. Chicago, IL.
2023. Ohio Virology Association. Ohio State University. Columbus, OH.
2023. Department of Microbiology and Molecular Genetics. University of Vermont. Burlington, VT.
2023. Department of Immunology and Microbiology. University of Colorado Anschutz School of Medicine, Denver, CO.
2022. Department of Microbiology. NYU Langone Health. New York, NY.
2022. Department of Microbiology and Immunology. University of North Carolina. Chapel Hill, NC.
2021. Department of Microbiology and Immunology. Wake Forest University. Winston-Salem, NC.
2021. Northwestern University Institute for Global Health Work. Chicago, IL.
2021. Department of Microbiology and Immunology. Montana State. Bozeman, MT.
2020. Department of Microbiology. Icahn School of Medicine at Mt. Sinai. New York, NY.
Cancelled due to COVID-19 pandemic
2020. Department of Microbiology and Immunology. University of North Carolina. Chapel Hill, NC.
2019. Microbiology and Immunology Seminar Series. University of Wisconsin. Madison, WI.
2019. Center for Vaccine Research. University of Pittsburgh. Pittsburgh, PA.
2018. Microbiology and Immunology Department. University of Minnesota. Minneapolis, MN.
2018. Chinese Agricultural University. Beijing, PRC.
2018. Darwin Day Keynote speaker. Biology Department. Eastern Illinois University. Charleston, IL.
2017. Microbiology Seminar Series. Biology Department. University of Indiana. Bloomington, IN.
2017. Program in Evolution, Ecology, and Conservation Biology. University of Illinois. Urbana, IL.
2017. Microbiology and Immunology Department. University of Illinois - Chicago. Chicago, IL.
2016. Microbial Pathogenesis Seminar Series. University of Utah. Salt Lake City, UT.
2016. Department of Microbiology. Southern Illinois University. Carbondale, IL.
2016. School of Veterinary Medicine. University of Illinois. Urbana, IL.
2015. Department of Molecular Microbiology. Washington University. St. Louis, MO.
2015. Department of Microbiology. University of Illinois. Urbana, IL.
2014. Inflammation Research Group. University of Maryland School of Medicine. Baltimore, MD.
2013. Institute Pasteur. Paris, FR.

INVITED CONFERENCE PRESENTATIONS

2022. The Social Lives of Viruses Meeting. Oxford, UK.
2021. Global Virus Network International Workshop on SARS-CoV-2 Diagnostics. Monte Carlo, MC.
2020. International Society for Evolution, Medicine, and Public Health (ISEMPH) Annual Meeting. Athens, GA.
Cancelled due to COVID-19 pandemic.
2020. Molecules in the Midwest: Amer. Soc. for Biochemistry and Molecular Biology meeting. Madison, WI.
2019. Integrating Critical Phenomenon & Multi-Scale in Virus Evolution Workshop II. Santa Fe Institute. Santa Fe, NM.
2018. Integrating Critical Phenomenon & Multi-Scale in Virus Evolution Workshop. Santa Fe Institute. Santa Fe, NM.
2018. Single Cell Virology Symposium. American Society for Virology Conference. College Park, MD.
2016. Midwest Microbial Pathogenesis Conference. Urbana, IL.

SELECTED ORAL CONFERENCE PRESENTATIONS

2022. Keystone Symposium on Respiratory Viruses: New Frontiers. Keystone, CO.
2012. Negative Strand RNA Viruses Meeting. Braga, PT.
2021. Fifth Workshop on Viral Dynamics. Virtual and Seattle, WA
2019. Jacques-Monod Conference on Viral Evolution at the Mutualist-Parasite Continuum. Roscoff, FR.
2019. Workshop on Virus Evolution. State College, PA.
2018. Negative Strand RNA Viruses Meeting. Verona, IT.

2014. The Fifth European Scientific Working group on Influenza (ESWI) Influenza Conference. Riga, LV.
2014. Multinational Influenza Seasonal Mortality Study (MISMS) Influenza Workshop. Bethesda, MD.
2014. American Society for Virology Conference. Ft. Collins, CO.
2014. Keystone Symposium on Pathogenesis of Respiratory Viruses. Keystone, CO.
2013. American Society for Virology Conference. State College, PA.
2012. Keystone Symposium on Viral Immunity and Host Gene Influence. Keystone, CO.
2010. American Society for Virology Conference. Boseman, MT.

PATENTS ISSUED

"Saliva-based molecular testing for SARS-CoV-2". US application serial No. 11,530,457

PATENTS PENDING

"Saliva Based RT-qPCR test for the Sensitive Detection of Influenza Viruses without RNA Extraction". US application serial No. 63/381,782

CURRENT RESEARCH SUPPORT

NIH-NIAID
Christopher Brooke (PI)
9/21/18-8/31/23
1R01AI139246: "The effects of influenza virus genomic heterogeneity on replication dynamics and the host response"
Total direct costs: $1,250,000

PENDING RESEARCH SUPPORT

NIH-NIAID
Christopher Brooke (PI)
11/1/23-10/31/28
1R01AI179910-01: "Dissecting the viral and host constraints that govern influenza virus antigenic evolution"
Total direct costs: $1,718,205

NIH-NIAID
Christopher Brooke (PI)
11/1/23-10/31/28
1R01AI176154-01A1: "Dissecting the molecular origins and consequences of influenza virus defective genome production"
Total direct costs: $2,433,373

NIH-NIAID
Christopher Brooke (PI)
7/1/23-6/30/28
1R01AI177542-01: "Spatial dynamics of influenza virus spread and innate antiviral signaling"
Total direct costs: $2,441,872

COMPLETED RESEARCH SUPPORT

NIH
Christopher Brooke (PI)

11/1/20-6/30/21 (NCE through 6/30/22)
3U54HL143541-02S2 (Subaward: OSP/WPM33765-UIUC): "COVID Detect: Longitudinal comparison of multi-modal CoV test results with live virus shedding"
Total costs (to Brooke): $1,776,790

NSF
Rachel Whitaker (PI)
Christopher Brooke (coPI; 25 other coPIs)
9/1/20-8/31/25
2022049: "BII-Implementation: GEMS: Genomics and eco-evolution of multi-scale symbioses"
Total direct costs (to Brooke): $81,493

DOD-DARPA
Christopher Brooke (co-PI, lead scientific PI)
3/1/17-2/28/21 (NCE through 4/11/22)
DARPA INTERCEPT-W911NF-17-2-0034: "VIPER: Viral Interdiction through Population Engineering and Restructuring"
Total direct costs (to Brooke): $1,111,555
Total direct costs (to team): $5,217,828

Roy J. Carver Charitable Trust
Christopher Brooke (PI)
4/1/17-3/30/21
17-4905: "Dissecting the influence of genome architecture on influenza virus replication and evolution"
Total direct costs: $375,000

NIH-NIAID
Christopher Brooke (PI)
7/1/16-6/30/19
1K22AI116588: "Defining novel mechanisms of influenza virus gene regulation"
Total direct costs: $275,000

Curricula Vitae

John E. Cronan, Jr.

Education:

California State University at Northridge (then called San Fernando Valley State College) Northridge, California - B.A. (Biology) 1965.

University of California, Irvine - Ph.D. (Molecular Biology) 1968.

Cold Spring Harbor Laboratory of Quantitative Biology, Cold Spring Harbor, New York -- Courses in bacterial genetics and in bacterial viruses, 1969.1992-9

Washington University School of Medicine, St. Louis, Missouri - Postdoctoral 1968-1970.

Professional and Research Experience

Professor, Department of Microbiology, University of Illinois, July 1978-present. Professor, Department of Biochemistry, University of Illinois, August, 1987-present. Head, Department of Microbiology University of Illinois, September 1997-2019. Professor of Medical Microbiology, University of Illinois, September 1997-2015. Professor, Institute of Genomic Biology, University of Illinois, January 2010-present. Microbiology Alumni Endowed Professorship 2004-present. Named Senior University Scholar in 1990. Visiting Professor of Biochemistry, University of Otago, New Zealand, Feb 1986. Sabbatical leaves: August 1985-June 1986. DSIR Overseas Fellow, Plant Research Center, Department of Scientific Research, Auckland, New Zealand with Dr. P. G. Roughan and Aug. 1992-July 1992-July 1993, NIH Fogarty Senior International Fellow and Distinguished Visiting Scholar, Department of Biochemistry, University of Adelaide, Australia with Prof. J. C. Wallace. Aug 2003-Aug. 2004. NIH Kirschstein Senior Fellow, Medical Research Council, Cambridge, UK with Prof. Sir John E. Walker.

Associate Professor, Department of Molecular Biophysics and Biochemistry, Yale University, July 1974 to July 1978. NIH Research Career Development Awardee 1972-1977.

Assistant Professor, Department of Molecular Biophysics and Biochemistry, Yale University, December 1970 to July 1974.

NIH Postdoctoral Fellow and Instructor, Department of Biological Chemistry, Washington University School of Medicine, St. Louis, Missouri, November 1968 to November 1970, Mentor: P. Roy Vagelos.

Predoctoral Fellow and Graduate Student, University of California, Irvine, Department of Molecular and Cell Biology, 1965-1968. Advisor: D. L. Wulff.

Other:

Editor, Microbiology and Molecular Biology Reviews, 2002-2009.

Section Editor, EcoSal—*Escherichia coli* and *Salmonella:* Cellular and Molecular Biology.

American Society of Microbiology Press

Editorial Boards: Journal of Bacteriology, 1975 to 2001; Archives of Biochemistry and Biophysics, 1982 to 1986; Journal of Biological Chemistry, 1977 to 1982; 1994 to 1995. Molecular Microbiology 2011-.

Member, Metabolic Biology Panel, NSF, 1975-1977; Member, Molecular Biology/Biochemistry Panel, NSF, 1982 to 1988.

Ad Hoc Reviewer, Various NIH Study Sections; Molecular Biology, Biochemistry, Microbial Chemistry Physiological Chemistry, Cell Biology, 1973 to Present; Member, NIH Microbial Physiology Study Section, 1991 to 1997 and Prokaryotic Cell and Molecular Biology 2013-.

Panel member, NIH-Gates Foundation Challenge Grant Panels on Tuberculosis (2002) and Toxoplasmosis (2004).

Panel member, NIH Special Emphasis Review Panels (2009 and 2011).

Member-at-Large, Physiological Chemistry Research Study Committee, American Heart Association, 1981 to 1988.

Member, Prokaryotic Cell and Molecular Biology Study Section, NIH 2013-2019.

Scientific Advisory Board, Great Lakes Bioenergy Research Center (Department of Energy) 2012-2013. Scientific Advisory Board, EcoCyc Database, Stanford Research Institute 2002-2006.Oak Ridge National Labs, DOE 2020

Industrial Consultancies: DuPont, 1989-1993; Coors Biotechnology, 1991-1993; Nexagen, 1991-1993; BASF, (Germany) 1994-1998; Monsanto, 1994-2000; Baxter Health Care, 1998-2001. LG Biosciences (S. Korea), 2000-2002; Kosan Biosciences, 2001-2006; Advanced Medicine, 2001-2003; Surromed 2005; Wacker Chemie (Germany), 2001-2004. Degussa (Germany), 2006-2008, LS9 (now REG Biosciences) 2006-2016 (Scientific Advisory Board), Draths Corporation 2009-2010, Genencor 2009-2010, Ginko Bioworks, 2010-2011. Glycos Biotechnologies 2014-2015, INVISTA Biotechnology (UK) 2015-2017. VideraBio (UK) 2017-, Biosynthia (Denmark) 2018-.

External Reviewer: Ph.D. program in Microbiology, University of Kuwait (December 2003), the Ph.D. program in Biochemistry and Biophysics, Texas A&M University (June 2006), The

School of Biological Sciences, University of Missouri, Kansas City (Jan, 2007; Department of Molecular Biosciences, University of Kansas, 2017.

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Honors

Elected Member, National Academy of Sciences,2017.
University of Illinois Senior University Scholar 1990
American Society for Microbiology Award Lecturer in Bacterial Physiology 1991
Genentech Award Lecturer in Microbial Physiology, University of California, Davis 1992
Distinguished Visiting Scholar Award, University of Adelaide 1992-1993
NIH Fogarty Senior International Fellow 1992-1993
MERIT Award, National Institutes of Health 1993-2003
Baxter Laboratories Award in Biologics, 1994.
Decenary Award Lecturer, Institute for Microbiology, University of Graz, Austria 1995.
Keynote Speaker, Noble Foundation Symposium "Biochemical and Metabolic Aspects of 3-Ketoacyl Synthases" Humacao, PR, 1996.
Invited Speaker Federation of American Societies for Experimental Biology Annual Meeting, San Francisco, 1998.
Keynote Speaker, Royal Society of Chemistry Meeting "Polyketides II", University of Bristol, 1998.
Elected to the American Academy of Microbiology, 1998.
Keynote Speaker, National Plant Lipid Conference, Lake Tahoe, 1999 and 2002.
Plenary Speaker, Microbial Lipids Conference, Vienna, Austria, 2010
Plenary Speaker, the Argentine Biochemical Society Annual Meeting, Puerto Madryn, Argentina, 2010.
Plenary Speaker, Microbial Lipids Conference, Berne, Switzerland, 2012
Kirschstein Senior Fellowship, National Heart, Lung, and Blood Diseases Institute, National Institutes of Health, 2003.
Microbiology Alumni Endowed Professorship 2004-present.

External Support

National Institutes of Health. "Genetic Approaches to Regulation of Lipid Metabolism". AI15650, Years 37-42) Project Period: 01/01/2019 - 06/30/2023. Current year $440,800 direct costs. The R01 grant from the National Institutes of Allergy and Infectious Diseases has supported our lipid metabolism work continuously since 1970. A prior renewal was given MERIT status (a special category of ten year grants) and the two subsequent renewals were eligible for MERIT status

I also have funding as co-director of the metabolism core from the NIGMS P01GM11830 "Novel Strategies for the Discovery of Microbial Metabolic Pathways". Principal Investigator: John Gerlt. Project period: 6/1/16-5/30/2021. About$350,000 in direct costs.

I also have had funding from the Rockefeller Foundation, American Heart Association, Merck, Monsanto, Coors Biotechnology, Surromed, Inc, Wacker Chemie (Germany), and BASF (Germany). Postdoctoral fellows in my laboratory have had fellowships from NIH, the American Heart Association, the American Cancer Society, NSF, the Natural Sciences and Engineering Research Council (NSERC) of Canada, the Argentine National Science Foundation (CONICET) and the Swiss National Science Foundation. I also have had several industrial grants which supported a graduate student or postdoctoral fellow.

Memberships

American Society for Biochemistry and Molecular Biology; American Society for Microbiology

Personal Publications (Please note that in 2003 I ceased using the Jr. in my name since it resulted in erroneous annotations in the NIH Medline PubMed database which were difficult to have corrected).

Cronan, J. E., Jr. (1967) A Rapid Method for the Estimation of Bacterial Fatty Acid Biosynthesis. Anal. Biochem. 21:293-297.

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Jordan, S. and J. E. Cronan, Jr. (1997) Biosynthesis of Lipoic Acid and Post-Translational Modification with Lipoic Acid in *Escherichia coli.* Methods Enzymol. 279: 176-183.

Cronan, J. E., Jr. and K. E. Reed (2000) Biotinylation of Proteins In Vivo: A Useful Post-Translational Modification for Protein Analysis. Methods Enzymol. 326: 440-458.

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Patents

Cronan, J. E., Jr. (1993) Fusion Proteins Having an In Vivo Post-Translational Modification Site and Methods of Making and Purifying them U. S. Patent 5,252,466 (European Patent 0587763 [1994] and Australian Patent 647025 [1994])

Papers that were not coauthored.

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probiotic bacterium *Lactococcus lactis*. Sci Rep. 2016 May 10;6:25680. doi: 10.1038/srep25680.

Book

Microbial Genetics by S. Maloy, J. E. Cronan, Jr., and D. Freifelder, Second Edition , Jones and Bartlett Publishers Inc., Boston, Massachusetts 1994.

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Education

- **Ph.D., Microbiology & Molecular Genetics** and **Ecology, Evolutionary Biology & Behavior**
  Michigan State University, 2020
- **B.S. Biology**
  Grand Valley State University, 2014
- **A.S. General Education**
  Delta Community College, 2010

Research Experience

- **Michigan State University** **2022 – Current**
- Mentor: Professor Christopher Waters
  Research Project: Assessing synthetic lethal interactions in *Vibrio cholerae* using natural competence.

- **University of Idaho** **2020 – 2022**
- Mentor: Professor Christopher Marx
  Research Project: Experimentally evolving *Methylobacterium extorquens* toward increased aromatic use. Global objective is to funnel aromatic carbon toward polyhydroxy butyrate – an internal carbon store – which can then be used as a proxy for the butanol production capacity of single cells. Key methods employed include experimental evolution, genetic engineering, fluorescent microscopy, high-pressure liquid chromatography, flow cytometry, and mass spectrometry.

- **Michigan State University** **2015 – 2020**
  Mentor: Professor Richard E. Lenski
  Committee: Dr. Terence Marsh, Prof. Charles Ofria, Prof. Gemma Reguera, Prof. Christopher Waters
  Dissertation: Deconstructing the correlated nature of ancient and emergent traits: an evolutionary investigation of metabolism, morphology, and mortality.
  Dissertation Defense Video: https://www.youtube.com/watch?v=lO8paaLKgyg

- **Van Andel Research Institute** **Summer 2014**
  Mentor: Dr. Lorenzo Sempere
  Research Project: I used quantitative real-time polymerase chain reaction to investigate the role of micro RNAs in the establishment and progression of eight phenotypically distinct pancreatic cancer cell lines.

- **Grand Valley State University** **2013 – 2014**
  Mentor: Dr. Roderick Morgan

Research Project: Synthesized and tested novel antibiotics to treat antibiotic resistant microorganisms namely methicillin resistant *Staphylococcus aureus* (MRSA). Additionally, I used bioinformatic tools to identify the *in vivo* binding interactions that inhibited the activity of compounds that showed effectiveness *in vitro*.
Deliverable: Nkrumah Grant. 2013. "Anthranilic acid derivatives as novel antibiotics against MRSA and other gram-positive microorganisms: combating antibiotic resistance." **McNair Scholars Journal** 17:6.

- **Grand Valley State University** **Summer 2012**
  Mentor: Dr. Mark Luttenton
  Research Project: Here, I quantified the hybridization patterns between two native cattail species in Ottawa County to understand the rate at which the invasive hybrid is generated.

Teaching Experience

- Teaching Assistant: Introductory Microbiology, Lecture, Michigan State University – Spring 2019
- Teaching Assistant: Cellular and Molecular Biology, Lecture, Michigan State University – Fall 2015
- Teaching Assistant: Genetics, Lab, Grand Valley State University – Winter 2014
- Teaching Assistant: Environmental Microbiology, Lab, Grand Valley State University – Fall 2013

Publications

- Rohan Maddamsetti and **Nkrumah Grant**. 2022. "Discovery of positive and purifying selection in metagenomic timeseries of hypermutator microbial populations" ***PLOS Genetics*** doi: https://doi.org/10.1371/journal.pgen.1010324.

- Alexander Lalejini, Austin J. Ferguson, **Nkrumah A. Grant**, Charles Ofria. 2021. "Adaptive phenotypic plasticity stabilizes evolution in fluctuating environments." ***Frontiers in Ecology and Evolution*** doi: 10.3389/fevo.2021.715381

- **Nkrumah A. Grant**, Rohan Maddamsetti, Richard E. Lenski. 2021. "Maintenance of metabolic plasticity despite relaxed selection for anaerobic growth in a Long-Term Evolution Experiment with *Escherichia coli*." ***The American Naturalist*** doi: 10.1086/714530.

- Meghan A. Duffy, Carlos Garciá-Robledo, Swanne Gordon, **Nkrumah A. Grant**, Delbert A. Green II, Ambika Kamath, Rachel M. Penczykowski, María Rebolleda Gómez, Nina Wale, Luis Zaman. 2021. "Model systems in ecology, evolution, and behavior: A call for diversity in our model systems and discipline." ***The American Naturalist*** doi: 10.1086/714574

- **Nkrumah A. Grant**, Ali Abdel Magid, Joshua Franklin, Yann Dufour, Richard Lenski. 2021. "Changes in cell size and shape over 50,000 generations of experimental evolution with *Escherichia coli*." ***Journal of Bacteriology*** JB.00469-20. doi:10.1128/JB.00469-20

- Rohan Maddamsetti and **Nkrumah Grant**. 2020. "Divergent evolution of mutation rates and biases in the long-term evolution experiment with *Escherichia coli*. ***Genome Biology and Evolution*** 12evaa178.

- Zachary D. Blount†, Rohan Maddamsetti†, **Nkrumah A. Grant**†, Sumaya T. Ahmed, Tanush Jagdish, Brooke A. Sommerfeld, Alice Tillman, Jeremy Moore, Joan L. Slonczewski, Jeffrey E. Barrick, and Richard E. Lenski. 2020. Genomic and phenotypic evolution of *Escherichia coli* in a novel citrate-only resource environment. ***eLife*** 9e55414.

- Lenski, R.E., M. J. Wiser, N. Ribeck, Z. D. Blount, J. R. Nahum, J. J. Morris, L. Zaman, C. B. Turner, B. D. Wade, R. Maddamsetti, A. R. Burmeister, E. J. Baird, J. Bundy, **N. A. Grant**, K. J. Card, M. Rowles, K. Weatherspoon, S. E. Papoulis, R. Sullivan, C. Clark, J. S. Mulka, and N. Hajela. 2015. Sustained fitness gains and variability in fitness trajectories in the long-term evolution experiment with *Escherichia coli*. ***Proceedings of the Royal Society, London B*** 282: 20152292.

Grant Funding

- 2022 – Waters C., **Grant N.** Assessing synthetic lethal interactions using natural competence and transformation of a BAR-seq library into an ordered mutant (single, non-essential gene knockout) library of *Vibrio cholerae*. $74,000/2 years.

- 2019 – **Grant N.**, Card K., Bundy J., Lenski R. BEACON's legacy of research and diversity in the long-term evolution experiment. BEACON Center for the Study of Evolution in Action. $89,999/1 year.

- 2018 – **Grant N.**, Card K., Graves J., Lenski R., Thomas M. Investigating correlated responses in metabolism and antibiotic resistance in a long-term evolution experiment with *Escherichia coli.* BEACON Center for the Study of Evolution in Action. $94,583/1 year.

- 2018 – van Raay K., **Grant N.,** Kerr Ben., Lenski R., Marx C., Stolyar S. Investigating the relationship between increased competitive ability and cell size in experimentally evolved populations of *Escherichia coli.* BEACON Center for the Study of Evolution in Action. $96,270/1 year.

- 2017 – **Grant N.**, Card K., Bundy J., Lenski R. Integrating research, diversity, and education into the long-term evolution experiment (year 2 continuation). BEACON Center for the Study of Evolution in Action. $113,590/1 year.

- 2016 – **Grant N.**, Card K., Bundy J., Lenski R. Integrating research, diversity, and education into the long-term evolution experiment. BEACON Center for the Study of Evolution in Action. $90,565/1 year.

Awards

- University of Minnesota Presidential Postdoctoral Fellowship (declined) – 2022
- Ralph Evans Fellowship, Michigan State University – 2020
- Dissertation Completion Fellowship, Michigan State University – 2020
- Carl Storm Underrepresented Minority Fellowship, Gordon Research Conference – 2019
- Rudolph Hugh Fellowship, Michigan State University – 2018
- Honorable Mention, National Academies of Science Ford Fellowship Program – 2018
- Rudolph Hugh Fellowship, Michigan State University – 2017
- Honorable Mention, NSF Graduate Research Fellowship Program – 2016

- Academic Achievement Graduate Assistantship, Michigan State University – 2016
- Academic Achievement Graduate Assistantship, Michigan State University – 2014
- S-STEM Scholarship, Grand Valley State University – 2013-2014

Invited Seminar Presentations

- **Cornell University – May 2023**
  Regeneration of a *Vibrio cholerae* ordered mutant library using natural competence.

- **Keynote address: Grand Valley State University – May 2023**
  The road less traveled: my journey to becoming a research scientist.

- **National Institute of Health Lambda Lunch – December 2022**
  Death as a consequence of evolving novel metabolisms: an anomaly or the norm?

- **Gordon Research Conference on Geobiology – November 2022**
  Historical contingency in metabolism constrains long term evolution in the presence of oxygen.

- **National Academy of Sciences: The Science and Entertainment Exchange – October 2022**
  Everything I need to know to survive I learned from microbes.

- **Abigail Salyers Distinguished Early Career Seminar – April 2022**
  University of Illinois Urbana-Champaign
  STIMS: A simple test to detect hidden signatures of selection in hypermutator microbial populations.

- **University of Virgin Islands Emerging Carribean Scientists Seminar Series – February 2022**
  Adaptive and maladaptive consequences of metabolic changes in a decades long evolution experiment with *E. coli*.

- **University of Minnesota – October 2021**
  Maladaptive phenotypes of growth instability in bacteria with novel metabolisms.

- **The University of Alabama – January 2021**
  Probing the benefits and consequences of correlated trait evolution using *Escherichia coli* from a long-term evolution experiment

- **American Naturalist Vice Presidential Symposium – January 2021**
  Utilizing *Escherichia coli* as a model organism for evolution and physiology to understand the unselected maintenance of an ancient metabolism.

- **International Society for Microbial Ecologists – November 2020**
  Living to die: on the benefits and consequences of a key metabolic innovation in an experimental population of *E. coli*.

- **Eastern Carolina University Biology Seminar Series – November 2020**
  Pleiotropy maintains an ancient metabolism and causes elevated cell death with a novel metabolic innovation in evolving *E. coli* populations.

- **ETH Zürich & Eawag Department of Environmental Microbiology Seminar Series – October 2020**
  Fitter, bigger, and dying: on the cell morphology changes in a 32 year evolution experiment with *E. coli.*

- **North Carolina Agricultural & Technical State University: Genomics Group – 2020**
  Deconstructing the correlated nature of ancient and emergent traits: an evolutionary investigation of metabolism, morphology, and mortality.

Professional Presentations

- **Ecology, Evolutionary Biology and Behavior Colloquium – 2020**
  Genomic and phenotypic consequences of relaxed selection on the anaerobic growth of *Escherichia coli* from a long-term evolution experiment. (Contributed talk)

- **Gordon Research Conference: Microbial Population Biology – 2019**
  Changes in cell morphology across 50,000 generations of experimental evolution with *Escherichia coli.* (Poster)

- **American Society for Microbiology: Microbe – 2019**
  Correlated fitness responses across aerobic and anaerobic growth in a long-term evolution experiment with *Escherichia coli.* (Poster)

- **BEACON Seminar Series – 2019**
  Changes in cell morphology across 50,000 generations of experimental evolution with *Escherichia coli.* (Contributed talk)

- **National Science Foundation Site Visit at Michigan State University – 2018**
  Positive allometric scaling of cell size and fitness in a long-term evolution experiment with *Escherichia coli.* (Poster)

- **National Science Foundation Site Visit at Michigan State University – 2018**
  Correlated fitness responses across aerobic and anaerobic growth in a long-term evolution experiment with *Escherichia coli.* (Poster)

- **BEACON Congress – 2018**
  Correlated fitness responses across aerobic and anaerobic growth in a long-term evolution experiment with *Escherichia coli.* (Contributed talk)

- **National Science Foundation Site Visit at Michigan State University – 2017**
  Correlated fitness responses across aerobic and anaerobic growth in a long-term evolution experiment with *Escherichia coli.* (Poster)

- **BEACON Seminar Series – 2017**
  You don't use it, you lose it… or do you: understanding the importance of genetic interactions for the maintenance of unused traits. (Contributed talk)

- **Grand Valley State University Student Scholars Day – 2014**
  GV-2 - A Novel Anthranilic Acid Derived Therapeutic to treat MRSA and other Antibiotic Resistant Microorganisms and its Inhibitory Interaction with Human Serum Albumin. (Poster)

- **West Michigan Regional Undergraduate Science Research Conference – 2013**
  GV-2 A Novel Anthranilic Acid Derived Therapeutic to treat MRSA and other Antibiotic Resistant Microorganisms and its Inhibitory Interaction with Human Serum Albumin. (Poster)

- **Grand Valley State University Showcase – 2013**
  Anthranilic Acid Derivatives as Novel Antibiotics against MRSA and other Gram Positive Microorganisms: Combating Antibiotic Resistance. (Poster)

- **Grand Valley State University Student Scholars Day – 2013**
  Antibacterial Activity of GV-1 Chemical Derivatives in the Presence of Human Serum. (Poster)

Professional Development

- Cultural Competency for Personal, Organizational and Community Change Workshop, Michigan State University – 2019
- NextProf Science participant, University of Michigan – 2019
- Broadening Experiences in Scientific Training (BEST) Trainee, Michigan State University –2015
- New Teaching Assistant Institute Workshop, Michigan State University – 2015
- Navigating the Ph.D. Workshop, Michigan State University – 2015
- Ronald E. McNair Scholar, Grand Valley State University – 2013

Mentorship

- Jordan Sontz, Michigan State University (2023 – current)
- Anna Arthaud, University of Idaho (2021 – 2022)
- Ali Abdel-Magid, Michigan State University (2018 – 2020)
- Joe Warren, Michigan State University (2016 – 2018)
- Dallas Rohraff, Grand Valley State University (2013 – 2014)

Academic Service

- Track Leader: American Society for Microbiology Microbe Junior Advisory Group, 2020-2022
- American Society for Microbiology Microbe Program Planning Committee: Ecology and Evolutionary Biology Track, 2020-2023
- Review committee for the reappointment of Dr. Victor DiRita as Microbiology and Molecular Genetics Department Chair, Michigan State University – 2020
- Departmental Representative to the College of Natural Science Diversity, Equity and Inclusion Advisory Committee, Michigan State University: 2019 – 2020
- Host-Microbe Biology Session Moderator: ASM Microbe – 2019
- Vice President: Black Student Union, Delta Community College – 2009-2010
- Student Advisory Council, Delta Community College – 2009-2010

Reviewed Manuscripts

- Evolution (1:2020)
- Molecular Biology and Evolution (1:2021)
- Nature Communications (1:2021)
- The American Naturalist (1:2021)
- Elife (1:2022)
- Microbiology Spectrum (1:2022)
- mBio (1:2023)

Academic and Community Outreach

- Guest interview on LabX presented by the National Academy of Sciences – 2022 https://labx.org/videos/in-my-element ; https://www.youtube.com/watch?v=NQIZfYxPfjE
- Panelist on Imposter Syndrome, SACNAS, University of Idaho – 2021
- Panelist at Graduate school workshop, University of Virgin Islands – 2021
- Panelist at Drew Career Connect with Microbiology & Molecular Genetics, Michigan State University – 2021
- Summer Research Opportunities Program Graduate Student Facilitator, Michigan State University – 2020
- Guest speaker at National Organization for the Professional Advancement of Black Chemists and Chemical engineers (NOBCChe) meeting where I discussed my non-traditional journey to higher education, Michigan State University – February 2020
- Legislative Advocacy: Alliance for Graduate Education and the Professoriate (AGEP), Washington DC – February 2020
- Judge: Emerging Researchers National Conference – February 2020
- Panelist: "Troubleshooting Your Undergraduate Research Experience", Michigan State University – 2019
- WKAR radio guest speaker promoting STEM studies within URM groups – January 2019
- Michigan State University Sci-Fest graduate student contact "Microbe Magic" exhibit – 2018
- Summer Research Opportunities Program Graduate Student Mentor – Summer 2018
- Panelist: "Prepping for the preliminary examination" – December 2017
- Public seminar: Astrobiology on Tap – May 2017
- Alternative Education High School PEP Talk, Mackinaw Academy – 2014
- Communities Working Together (Saginaw, MI) – 2009-2010

Professional Memberships

- American Association for the Advancement of Science
- American Society for Microbiology
- The American Naturalist

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EDUCATION

2007 **Ph.D.** Biochemistry, **Cornell University**
Dissertation: "Sigma 70-dependent RNA polymerase pausing in *E. coli* and its implications for pause-mediated transcription regulation "

2001 **M.S.** Biochemistry, **American University of Beirut**, Beirut, Lebanon.
Thesis: "Molecular mechanisms of cell cycle control in retinoic acid receptor transduced neoplastic epidermal cell lines"

1998 **B.S.** Molecular Biology, **Florida Institute of Technology**, Melbourne, FL.

RESEARCH

2020-present The University of Illinois at Urbana-Champaign, **Assistant Professor and Principal Investigator**

- Discovered a new mechanism by which anti-phage defenses horizontally spread among pathogenic staphylococci.
- Discovered a new mechanism of anti-phage defense mediated by Nhi (Nuclease-helicase immunity)
- Uncovered new mechanisms of CRISPR-Cas immunity

2014-2020 The University of Alabama, **Assistant Professor and Principal Investigator**

- Uncovered mechanisms of CRISPR-Cas10, a bacterial immune system in *Staphylococcus epidermidis*
- Developed a method for the genetic engineering of bacterial viruses (phages) using this system.
- Developed a 'theranostic' device that can detect and eliminate a mounting staphylococcal infection.

2010-2014 Rockefeller University, **Postdoctoral Associate**
Principal Investigator: Prof. Luciano A. Marraffini

- Uncovered a molecular ruler mechanism that measures small RNAs during the first step of bacterial RNA-guided interference pathway.
- Uncovered the genetic requirements for the *S. epidermidis* CRISPR-Cas system.

2007-2008 Cornell University, **Postdoctoral Associate**
Principal Investigator: Prof. Jeffrey W. Roberts

- Established that the bacterial virus protein Q mediates transcription antitermination by speeding RNA polymerase past termination signals.

2001-2007 Cornell University, **Ph.D. research**
Principal Investigator: Prof. Jeffrey W. Roberts
- Discovered that RNA polymerase frequently pauses near promoters on *E. coli* chromosomal genes in a σ^{70}-dependent manner.

1999-2001 American University of Beirut, **M.S. research**
Principal Investigator: Prof. Nadine Darwiche
- Discovered signaling pathways through which retinoic acid receptors α and γ induce growth arrest and apoptosis in neoplastic keratinocytes.

PEER-REVIEWED PUBLICATIONS AND BOOK CHAPTERS

*co-corresponding authors
# these authors contributed equally
Undergraduate co-authors underlined

1. Boyle TA and **Hatoum-Aslan, A**. (2023) "Recurring and emerging themes in prokaryotic innate immunity." *Curr Opin Micro*, accepted pending minor revisions.
2. Chou-Zheng, L and **Hatoum-Aslan A**. (2022) "Critical roles for 'housekeeping' nucleases in Type III CRISPR-Cas immunity." *eLife*, 11:e81897.
3. Hawkins NC, Kizziah JL, **Hatoum-Aslan A**, and Dokland T. (2022) "Structure and host specificity of *Staphylococcus epidermidis* bacteriophage Andhra." ***Sci Adv***, 8(48):eade0459.
4. Boyle TA and **Hatoum-Aslan, A**. (2022) "Microbial genome mining expedition unearths trove of antiviral defenses." ***Cell Host Microbe***, 30(11), 1501-1503.
5. **Hatoum-Aslan, A**. (2022) "A protein-cutting CRISPR complex caught in action." ***CRISPR J***, 5(5), 631-633.
6. Bari SMN#, Chou-Zheng L#, Howell O, Hossain M, Hill CM, Boyle TA, Cater K, Dandu VS, Thomas A, Aslan B, and **Hatoum-Aslan A**. (2022) "A unique mode of nucleic acid immunity performed by a multifunctional bacterial enzyme." ***Cell Host Microbe***, 30, 1-13.
   *Highlighted by: Huiting E and Bondy-Denomy J. (2022) "A single bacterial enzyme i(NHI)bits phage DNA replication." *Cell Host Microbe*, 30, 417-419.
7. **Hatoum-Aslan, A** (2021) "Prophages self-destruct to eliminate competitors." ***Cell Host Microbe***, 29(11), 1603-1605.
8. **Hatoum-Aslan, A** (2021) "The phages of staphylococci: Critical catalysts in health and disease." ***Trends in Microbiology***, 29(12), 1117-1129.
9. **Hatoum-Aslan, A** and Howell OG. (2021) "CRISPR-Cas Systems and Anti-CRISPR Proteins: Adaptive Defense and Counter-Defense in Prokaryotes and Their Viruses." In: Bamford, D.H. and Zuckerman, M. (eds.) ***Encyclopedia of Virology***, 4th Edition, vol. 4, pp. 242–251. Oxford: Academic Press. https://doi.org/10.1016/B978-0-12-809633-8.20962-X.
10. Hatoum-Aslan, A. (2019) "CRISPR-Cas3 adds a power saw to the toolbox for human genome engineering." ***CRISPR J***, 2, 150-152.
11. Freeman ME#, Kenny SE#, Lanier A#, Cater K, Wilhite MC, Gamble P, O'Leary CJ, **Hatoum-Aslan A***, Young R, and Liu M*. (2019) "Complete Genome Sequences of Staphylococcus epidermidis Myophages Quidividi, Terranova, and Twillingate." ***Microbiol Resour Announc,*** 8(26), e00598-19. doi: 10.1128/MRA.00598-19.

12. Marc A, Cater C, Kongari R, **Hatoum-Aslan A***, Young R, and Liu M*. (2019) "Complete genome sequence of *Staphylococcus aureus* siphophage Lorac." ***Microbiol Resour Announc,***8(27), e00586-19. doi: 10.1128/MRA.00586-19.
13. Nasef M, Muffly MC, Beckman AB, Rowe SJ, Walker FC, **Hatoum-Aslan A***, and Dunkle JA*. (2019) "Regulation of cyclic oligoadenylate synthesis by the *S. epidermidis* Cas10-Csm complex." ***RNA***, 25(8), 948-962. .
14. Chou-Zheng L and **Hatoum-Aslan A**. (2019) "A Type III-A CRISPR-Cas system employs degradosome nucleases to ensure robust immunity." ***eLife***, 8:e45393. DOI: 10.7554/eLife.45393.
    *Featured in an "*eLife* digest"
15. Culbertson EK, Bari SMN, Dandu VS, Kriznik JM, Scopel SE, Stanley SP, Lackey K, Hernandez AC, and **Hatoum-Aslan A**. (2019) "Draft genome sequences of *Staphylococcus* podophages JBug18, Pike, Pontiff, and Pabna." ***Microbiol Resour Announc***, 8, e00054-19. DOI: 10.1128/MRA.00054-19.
16. Bari SMN and **Hatoum-Aslan A**. (2019) "CRISPR-Cas10 assisted editing of virulent staphylococcal phages." ***Methods Enzymol***, 616, 385-409. DOI: 10.1016/bs.mie.2018.10.023
17. **Hatoum-Aslan A**. (2018) "CRISPR methods for nucleic acid detection herald the future of molecular diagnostics." ***Clinical Chemistry***, 64(12), 1681-1683. DOI: 10.1373/clinchem.2018.295485.
18. **Hatoum-Aslan A**. (2018) "Phage Genetic Engineering Using CRISPR–Cas Systems." ***Viruses***, 10(6), 335. DOI: 10.3390/v10060335.
19. Bari SMN, Walker FC, Cater K, Aslan B, and **Hatoum-Aslan A**. (2017) "Strategies for editing virulent staphylococcal phages using CRISPR-Cas10." ***ACS Synth Biol***, DOI: 10.1021/acssynbio.7b00240.
20. Chou-Zheng, L and **Hatoum-Aslan A**. (2017) "Expression and purification of the Cas10-Csm complex from Staphylococci." ***Bio-protocol***, 7(11), e2353.
21. Walker FC and **Hatoum-Aslan A**. (2017) "Conjugation Assay for Testing CRISPR-Cas Anti-plasmid Immunity in Staphylococci." ***Bio-protocol***, 7(9), e2293.
22. Cater K, Dandu VS, Bari SMN, Lackey K, Everett GFK, and **Hatoum-Aslan A**. (2017) "A novel *Staphylococcus* podophage encodes a unique lysin with unusual modular design." ***mSphere***, 22(2) e00040-17.
23. Walker FC, Chou-Zheng L, Dunkle JA, and **Hatoum-Aslan A**. (2017) "Molecular determinants for CRISPR RNA maturation in the Cas10-Csm complex and roles for non-Cas nucleases." ***Nucleic Acids Research***, 45(4), 2112-23.
24. Samai P, Pyenson N, Jiang W, Goldberg G, **Hatoum-Aslan A**, and Marraffini LA. (2015). "Cotranscriptional DNA and RNA cleavage during type III CRISPR-Cas immunity." ***Cell***, 161(5), 1164-74.
25. **Hatoum-Aslan A** and Marraffini, LA. (2014). "Impact of CRISPR immunity on the emergence and virulence of bacterial pathogens." ***Curr Opin Microbiol***, 17, 82-90.
26. **Hatoum-Aslan A**, Maniv I, Samai P, and Marraffini, LA. (2014). "Genetic characterization of anti-plasmid immunity by a Type III-A CRISPR-Cas System." ***J Bacteriol***, 196(2), 310-7.
27. **Hatoum-Aslan A**, Samai P, Maniv I, Jiang W, and Marraffini, LA. (2013). "A ruler protein in a complex for antiviral defense determines the length of small interfering CRISPR RNAs." ***J Biol Chem,*** 288(39), 27888-97.
    *Highlighted by: Bucci, M. (2013). "A Measure of RNA.", *Nat Chem Biol*, 9(12), 754.
28. Maniv I, **Hatoum-Aslan A**, and Marraffini, LA. (2013). "CRISPR decoys: competitive inhibitors of CRISPR immunity." ***RNA biology***, 10(5), 694-9.
29. **Hatoum-Aslan A**, Palmer KL, Gilmore MS, and Marraffini LA. (2013). "Type III CRISPR-Cas systems and roles of CRISPR-Cas in Bacterial Virulence." In R. Barrangou & J. van der Oost (Eds.), *CRISPR-Cas Systems*. Springer-Verlag Berlin Heidelberg.

30. Bikard D, **Hatoum-Aslan A**, Mucida D, and Marraffini LA (2012). "Prevention of horizontal gene transfer during bacterial infection by CRISPR interference", ***Cell Host Microbe***, 12(2), 177-86.
    *Highlighted by: Weinberger AD, Gilmore AS. (2012). "CRISPR-Cas: To take up DNA or not: That is the question." *Cell Host Microbe*, 12(2), 125-6.
31. **Hatoum-Aslan A**, Maniv I, and Marraffini, LA (2011). "Mature clustered, regularly interspaced, short palindromic repeats RNA (crRNA) length is measured by a ruler mechanism anchored at the precursor processing site", ***Proc Natl Acad Sci U S A***, 108(52), 21218-21222.
32. **Hatoum A**, Roberts JW (2008). "Prevalence of RNA polymerase stalling at *E. coli* promoters after open complex formation", ***Mol Micro***, 68(1), 17-28.
    *Highlighted by: Artsimovitch I (2008). "Post-initiation control by the initiation factor sigma", *Mol Micro*, 68(1), 1-3.
33. Shankar S, **Hatoum A**, and Roberts JW (2007). "A transcription antiterminator constructs a NusA-dependent shield to the emerging transcript", ***Mol Cell***, 27, 914-927.
34. Darwiche N, Bazzi H, El-Touni L, Abou-Lteif G, Doueiri R, **Hatoum A**, Maalouf S, Gali-Muhtasib H (2005). "Regulation of ultraviolet B radiation-mediated activation of AP1 signaling by retinoids in primary keratinocytes", ***Radiat Res***, 163(3), 296-306.
35. Kabbout M, **Hatoum A**, Abou-Lteif G, Chakroun I, Homaidan FR, Darwiche N (2004). "Stage-specific effect of N-(4-hydroxyphenyl)retinamide on cell growth in squamous cell carcinogenesis", ***Mol Carcinog***, 40(1), 12-23.
36. Darwiche N, **Hatoum A**, Dbaibo G, Kadara H, Nasr R, Abu-Lteif G, Bazzi R, Hermine O, de The H, Bazarbachi A (2004). "N-(4-hydroxyphenyl)retinamide induces growth arrest and apoptosis in HTLV-1-transformed cells", ***Leukemia***, 18(3), 607-615.
37. **Hatoum A**, El-Sabban ME, Khoury J, Yuspa SH, Darwiche N (2001). "Overexpression of retinoic acid receptors alpha and gamma into neoplastic epidermal cells causes retinoic acid- induced growth arrest and apoptosis", ***Carcinogenesis***, 22(12), 1955-1963.

PREPRINTS

1. Hossain M, Aslan B, and **Hatoum-Aslan A**[§]. (2023) Tandem mobilization of anti-phage defenses alongside SCC*mec* cassettes. *Biorxiv*, 1-44. DOI: 10.1101/2023.03.17.533233
2. Paraan M, Nasef M, Chou-Zheng L, Khweis SA, Schoeffler AJ, **Hatoum-Aslan A**, Stagg SM, Dunkle JA[§]. (2022) The structure of a Type III-A CRISPR-Cas effector complex reveals conserved and idiosyncratic contacts to target RNA and crRNA among Type III-A systems. *Biorxiv*, 1-31. DOI: 10.1101/2022.11.03.515080

PATENTS AND INTELLECTUAL PROPERTY

1. **Hatoum A**. and Rao S.S., inventors; The Board of Trustees of the University of Alabama, assignee. Methods and Devices Related to Controlled Delivery of Phages as a Theranostic Tool. US Patent Application No. 62/846,116, provisional, May 10, 2019; full, May 4, 2020.
2. **Hatoum-Aslan A**., inventor; The Board of Trustees of the University of Alabama, assignee and copyright holder. An educational kit titled "Exploring CRISPR: A Genome Editing Tool". License agreement executed April 18, 2018.
3. **Hatoum-Aslan A**., inventor; The Board of Trustees of the University of Alabama, assignee. CRISPR-Cas Systems and Methods for Phage Genome Editing. US Patent Application No. 62/465,929 provisional filed March 2, 2017; full filed March 2, 2018; awarded September 19, 2022 under U.S. Application No. 17/932,915.

HONORS AND AWARDS

2020	**PATH Award** from the Burroughs Wellcome Fund: $500,000 to study bacterial immune systems.
2018	**President's Faculty Research Award**, from the University of Alabama Office of the President and the Vice President for Research and Economic Development.
2018	**NSF CAREER Award** from the National Science Foundation: $890,261 to understand mechanisms of defense and counter-defense in *Staphylococcus* bacteria and their viruses.
2016	**College Academy of Research, Scholarship, and Creative Activity (CARSCA)** from The University of Alabama: $5,000 to discover bacterial viruses that combat *Proteus mirabilis*.
2014	**NIH K22 Career Transition Award** from the National Institutes of Allergy and Infectious Diseases of the NIH: $266,538 to understand the regulatory mechanisms of CRISPR-Cas, a bacterial immune system.
2014	**College Academy of Research, Scholarship, and Creative Activity (CARSCA)** from The University of Alabama: $4,350 to discover bacterial viruses that combat pathogenic staphylococci.
2013	**Career Development Award** from Rockefeller University: $600 to put toward a course offered at the New York Academy of Sciences.
2005	**Award of Excellence** for a poster presented at the Vincent du Vigneaud Memorial Symposium in New York, NY: $700 for personal use.

CONTRACTS AND GRANTS (Awarded)

- University of Alabama, "CARSCA" award, 11/14/2014 – 12/31/2015
  "The enemy of my enemy is my friend: Enlisting bacterial viruses to combat drug-resistant staphylococci"
  Role - Principal Investigator
  Total award: $4,350.00
- NIH/NIAID K22 (AI113106-02), 04/01/2015 - 03/31/2018
  "Understanding CRISPR-cas regulation and its impact in staphylococci"
  Role - Principal Investigator
  Total award (direct + indirect): $266,538.00
- University of Alabama, "CARSCA" award, 11/04/16 – 12/31/17
  "Biological warfare in an insect world--Understanding how insects manage microbes through viral weaponry"
  Role - Principal Investigator
  Total award: $5,000.00
- NSF/MCB CAREER Award (2054755), 01/15/2018 – 12/31/2022
  "Mechanisms of defense and counter-defense in the battle between bacteria and their viruses"
  Role - Principal Investigator
  Total award (direct + indirect): $890,263.00
- NIH/NIGMS R15 (GM129671-01), 09/01/2018 – 08/15/2020
  "Characterizing mechanisms of CRISPR-Cas10 control in a model Staphylococcus system"
  Role - Principal Investigator
  Total award (direct + indirect): $427,030.00
- Alabama Life Research Institute (ALRI) pilot award, 05/18/2020 – 05/17/2022
  "Controlled delivery of bacterial viruses to combat drug resistant infections"
  Role – co-Principal Investigator

Total award (no indirect costs allowed): $25,000.00
- Burroughs Wellcome Fund PATH Award, 11/01/20 – 12/31/25
  "Characterizing the antiviral secretome of pathogenic staphylococci"
  Role - Principal Investigator
  Total award (no indirect costs allowed): $500,000.00
- NIH/NIAID R21 (AI156636-02), 12/17/2020 – 11/30/2022
  "Engineering picoviruses with defined host range to combat drug-resistant staphylococci"
  Role - Multi-Principal Investigator (MPI); (Lead PI, Terje Dokland, UAB)
  Total Award (50% to Hatoum-Aslan, Direct + Indirect): $434,388.00
- Roy J. Carver Charitable Trust, 10/22/2021 – 11/15/2022
  "Acquisition of a Transmission Electron Microscope dedicated for biomedical research"
  Role – Lead Principal Investigator
  Total award (no indirect costs allowed): $450,000.00
- NIH/NIAID R01 (AI173022-01), 11/10/2022 – 10/31/2027
  "Mechanisms of anti-phage defenses and their mobilization in staphylococci"
  Role –Principal Investigator
  Total award: $2,492,480.00

PUBLISHED ABSTRACTS AND CONFERENCE PRESENTATIONS

Underlined, presenting author

- Motaher Hossain, Barbaros Aslan, and Asma Hatoum-Aslan: "Anti-phage immune systems in staphylococci" at the first annual EMBO workshop on the Immune System of Bacteria, Rehovot, Israel, February, 2023-**Talk**
- Asma Hatoum-Aslan: "Strategies for phage engineering using a Type III-A CRISPR-Cas system" at the 5th International Conference on CRISPR Technologies, Berkeley, CA, October-November 2022-**Talk**
- Asma Hatoum-Aslan: "Mechanisms of anti-phage immunity in pathogenic staphylococci" at the 28th Annual Midwest Microbial Pathogenesis Conference, Madison, WI, September-October 2022-**Talk**
- Asma Hatoum-Aslan: "Mechanisms of defense and counter-defense in staphylococci and their viruses" at the FASEB Virus Structure and Assembly, Southbridge, MA, June 2022-**Talk**
- Asma Hatoum-Aslan: "Critical roles for non-Cas nucleases in Type III CRISPR-Cas defense" at CRISPR 2022, Cambridge, MA, June 2022-**Talk**
- Asma Hatoum-Aslan: "CRISPR-assisted engineering of phages to combat antibiotic-resistant pathogens" at the Phages for Health and Energy Symposium, DOE, Sandia National Labs (virtual), September 2021-**Talk**
- Asma Hatoum-Aslan: "CRISPR-assisted engineering of Staphylococcal phages to combat antibiotic-resistant infections" at the Science and Regulation of Bacteriophage Therapy workshop, hosted by NIH and FDA (virtual), September 2021-**Talk**
- Nayeem Bari, Lucy Chou-Zheng, Katie Cater, Vidya Sree Dandu, Alexander Thomas, and Asma Hatoum-Aslan: "Characterizing a novel anti-phage immune system in *Staphylococcus epidermidis*" at the CRISPR 2021 conference in (virtual) Paris, June 2021-**Talk**
- Asma Hatoum-Aslan: "A unique mode of anti-phage immunity performed by a single multifunctional enzyme" at the Microbial Systems Initiative virtual symposium (UIUC), March 2021-**Talk**

- Asma Hatoum-Aslan: "Characterizing the antiviral secretome of pathogenic staphylococci" at the Burroughs Wellcome Fund new awardees conference (virtual) at Chapel Hill, NC, October 2020-**Poster**
- Asma Hatoum-Aslan and Nayeem Bari: "CRISPR-assisted engineering of bacterial viruses to combat antibiotic-resistant pathogens" at the Genome Engineering: CRISPR Frontiers (Virtual) conference at Cold Spring Harbor Laboratories, Long Island, NY, August 2020-**Talk**
- Asma Hatoum-Aslan, Nayeem Bari, Katie Cater, Vidya Dandu, and Alexander Thomas: "A unique mode of nucleic acid immunity performed by a single multifunctional enzyme" at the NSF CAREER Awardee Conference in Arlington, VA, October 2019-**Poster**.
- Asma Hatoum-Aslan, Nayeem Bari, Katie Cater, Vidya Dandu, and Alexander Thomas: "A Novel Mechanism of Anti-Phage Defense in Staphylococci" at the *Molecular Genetics of Bacteria and Phages* meeting in Madison, WI, August 2019-**Talk and session moderator.**
- S. M. Nayeemul Bari, Katie Cater, Vidya Sree Dandu, Alexander Thomas, and Asma Hatoum-Aslan: "Characterizing a Novel Anti-Phage Immune System in Staphylococcus epidermidis" at the *Molecular Genetics of Bacteria and Phages* meeting in Madison, WI, August 2019-**Poster.**
- Lucy Chou-Zheng and Asma Hatoum-Aslan: "A Type III-A CRISPR-Cas System Employs Non-Cas Nucleases to Promote Robust Immunity" at the *Molecular Genetics of Bacteria and Phages* meeting in Madison, WI, August 2019-**Poster.**
- Asma Hatoum-Aslan and Lucy Chou-Zheng. "Mechanisms of CRISPR-Cas10 in staphylococci" at the *ASM Microbe* conference in San Francisco, CA, June 2019-**Talk.**
- Asma Hatoum-Aslan and Lucy Chou-Zheng. "A Type III CRISPR-Cas system employs degradosome nucleases to ensure robust immunity" at the *CRISPR 2019* conference in Quebec, Canada, June 2019-**Talk.**
- Stefano Stracquadanio, Flavia Lo Verde, Giacoma Gabriele, Asma Hatoum-Aslan, Stefania Stefani, and Viviana Cafiso: "CRISPR-Cas System Molecular Organization and Functionality in Clinical MDR Staphylococcus epidermidis" at the *29th European Congress of Clinical Microbiology and Infectious Diseases* in Amsterdam, Netherlands, April 2019-**Poster.**
- Stefano Stracquadanio, Viviana Cafiso, Stefania Stefani, and Asma Hatoum-Aslan: "CRISPR-Cas system characterization and functionality to deeply know the Multi-Drug Resistant *S. epidermidis* strengths and weakness" at the *46th Italian Congress of Microbiology* in Palermo, Italy, September 2018-**Poster.**
- Asma Hatoum-Aslan and Lucy Chou-Zheng: "When Cas nucleases are not enough: A Type III-A CRISPR-Cas system leverages degradosome components to achieve robust immunity." *Molecular Genetics of Bacteria and Phages* at the University of Wisconsin, Madison, August 2018-**Talk**.
- Asma Hatoum-Aslan**,** S. M. Nayeemul Bari, and Forrest C. Walker: "Genome editing of virulent staphylococcal phages using CRISPR-Cas10." *Targeting Phage and Antibiotic Resistance* in Florence, Italy, May 2018- **Talk.**
- Asma Hatoum-Aslan and Lucy Chou-Zheng: "Linking CRISPR-Cas immunity with the RNA degradosome in *Staphylococcus epidermidis*." *American Society for Microbiology Southeastern Branch meeting* at the University of South Florida, St. Petersburg, FL, November 2017-**Talk**.
- S. M. Nayeemul Bari, Forrest C. Walker, Katie Cater, Barbaros Aslan and Asma Hatoum-Aslan: "Strategies for editing virulent staphylococcal phages using CRISPR-Cas10" *American Society for Microbiology Southeastern Branch meeting* at the University of South Florida, St. Petersburg, FL, November 2017-**Poster**.

- Lucy Chou-Zheng and Asma Hatoum-Aslan: "CRISPR-Cas10 Recruits PNPase to Stimulate Small RNA Maturation." *American Society for Microbiology Southeastern Branch meeting* at the University of South Florida, St. Petersburg, FL, November 2017-**Poster**.
- Asma Hatoum-Aslan, S. M. Nayeemul Bari, Forrest C. Walker, and Katie Cater: "Strategies for editing virulent staphylococcal phages using CRISPR-Cas10" *Molecular Genetics of Bacteria and Phages* at the University of Wisconsin, Madison, August 2017-**Poster**.
- Asma Hatoum-Aslan, Lucy Chou-Zheng, and Forrest Walker: "Linking CRISPR-Cas immunity with the RNA degradosome in *Staphylococcus epidermidis*." *Gordon Conference on Nucleic Acids* at the University of New England, Biddeford, Maine, June 2017-**Poster**.
- Asma Hatoum-Aslan and Forrest Walker: "Linking CRISPR-Cas immunity with Central Nucleic metabolism in *S. epidermidis*." *Molecular Genetics of Bacteria and Phages* at the University of Wisconsin, Madison, August 2016-**Poster**.
- Forrest Walker and Asma Hatoum-Aslan: "Characterizing CRISPR-Cas Regulation in Staphylococci." *Molecular Genetics of Bacteria and Phages* at the University of Wisconsin, Madison, August 2016-**Poster**.
- Katie Cater and Asma Hatoum-Aslan: "Capturing Novel Staphylococcal Phages and Characterizing their Anti-Biofilm Potential." *Molecular Genetics of Bacteria and Phages* at the University of Wisconsin, Madison, August 2016-**Poster**.
- Asma Hatoum-Aslan, Inbal Maniv, Wenyan Jiang, and Luciano Marraffini: "A ruler protein in a complex for antiviral defense determines the length of small interfering CRISPR RNAs." *Gordon Research Conference on Nucleic Acids*, June 2013-**Poster**.
- Asma Hatoum-Aslan, Inbal Maniv, Wenyan Jiang, and Luciano Marraffini: "Characterization of the genetic requirements for a small RNA interference pathway in *Staphylococcus epidermidis*." *CSHL Meeting on Bacteria, Archaea, & Phages*, August 2012-**Talk**.
- Asma Hatoum-Aslan, Inbal Maniv, and Luciano Marraffini: "CRISPR RNA Maturation in *S. epidermidis*." *CRISPR Conference* July 2011-**Talk**.
- Smita Shankar, Asma Hatoum, and Jeffrey W. Roberts: "Mechanism of Transcription Antitermination by Phage 82 Q protein". *Cornell Postdoctoral Symposium* October 2007-**Talk.**
- Asma Hatoum and Jeffrey W. Roberts: "Identification of genes with a σ^{70}-dependent promoter proximal RNA Polymerase pause in *E. coli*." *FASEB-Mechanism and Regulation of Prokaryotic Transcription* July 2005-**Talk and Poster.**
- Asma Hatoum and Jeffrey W. Roberts: "Identification of genes with a proximal RNA Polymerase pause in *E. coli*." *Vincent du Vigneaud Memorial Symposium*, May 2005-**Poster.**

INVITED EXTERNAL RESEARCH SEMINARS

November 2015 University of Alabama, Birmingham, Biology Department
Mechanisms of CRISPR-Cas Immunity in Staphylococci

September 2017 University of Alabama, Tuscaloosa, Chemical and Biological Engineering
CRISPR-Cas10 Immunity in Staphylococci: Mechanisms and Applications

October 2018 Worchester Polytechnic Institute, Dept. of Biology and Biotechnology

CRISPR-Cas10 Immunity in Staphylococci: Mechanisms and Applications

November 2018 University of Alabama, Birmingham, Microbiology Department
Mechanisms of CRISPR-Cas Immunity in Staphylococci

April 2019 University of Georgia, Microbiology Department
Mechanisms of CRISPR-Cas Immunity in Staphylococci

September 2019 Texas A&M University, Center for Phage Technology
Mechanisms of anti-phage immunity in staphylococci

October 2019 NIH National Cancer Institute
CRISPR-Cas and other bacterial immune systems: Mechanisms and Applications

January 2020 University of Illinois, Urbana-Champaign, Microbiology Department
CRISPR-Cas and other bacterial immune systems: Mechanisms and Applications

February 2020 Texas A&M University, Biology Department
CRISPR-Cas and other bacterial immune systems: Mechanisms and Applications

October 2020 University of Illinois, Urbana-Champaign, Department of Pathobiology
CRISPR-Cas and other bacterial immune systems: Mechanisms and Applications

April 2021 University of Delaware, Newark, Department of Biological Sciences
CRISPR-Cas and other bacterial immune systems: Mechanisms and Applications

February 2022 Oregon Health and Science University, Bacteriology Research Group
CRISPR-Cas and other bacterial immune systems: Mechanisms and Applications

November 2022 Iowa State University, Department of Biochemistry seminar series
Mechanisms of defense and counter-defense in the battle between bacteria and their viruses

PROFESSIONAL DEVELOPMENT

- Completed a short course titled *From Scientist to CSO* offered at the New York Academy of Sciences, October-December 2013.
- Completed a short course titled *Technology & Characterization at the Nanoscale* at Cornell University, January 2012.
- Attended the *10th Annual Case Study Conference on Case Study Teaching in Science* at the University of Buffalo, September 2009.

ACADEMIC APPOINTMENTS AND CLASSES TAUGHT

2020-present University of Illinois at Urbana-Champaign, Assistant Professor
Courses taught:
• MCB 493-REM: **Research Experience in Microbiology** (Spring 2022)

2014-2020 University of Alabama, **Assistant Professor**

Courses Taught:
• BSC 311: **Microbiology II** (Fall 2014-2019)
• BSC 398: **Undergraduate Research** (Spring 2015-2020)
• BSC 497: **Phage Discovery Lab** (Spring 2016-2020)
• BSC 497: **Current Advances in CRISPR** (Fall 2014, Spring 2015)

2008-2010 Ithaca College, **Teaching Assistant Professor**
Courses taught:
- BIOL 22700: **Genetics** (Spring 2010)
- BIOC 35400: **Biochemistry II** (Spring 2009)
- BIOC 48100: **Current Topics in Biochemistry** (Spring 2009)
- BIOL 10700: **Human Genetics** (Fall 2008, 2009)
- BIOL 11900: **Fundamentals of Biology** lab (Fall 2008, 2009)

MENTORSHIP (COMPLETE LISTING)

Graduate students

Current:
- Lucy Chou-Zheng, PhD student (2017-present)
- Motaher Hossain (2019-present)
- Courtney Hill (2020-present)
- Tori Boyle (2021-present)
- Lindsey Grady (2021-present)
- Vanessa Jones (2023-present)
- Aniritha Ramalingam Balasubramanian (2023-present)

Past:
- S. M. Nayeemul Bari, PhD student (2015-2022)
- Olivia Howell, MS student (2018-2020)
- Katie Malone, MS student (2018-2020)
- Forrest C. Walker, MS student (2016-2017)

Undergraduates

Present:
- Hannah Aegerter (2022-present)
- Emmi Frieden (2022-present)

Past:
- Hannah Hallman (2021-2022)
- Tomi Akin-Olabiyi (2021-2022)
- Christopher Harden (2019-2020)
- Sam Lilly (2019-2020)
- Quinn Cunneely (2019-2020)
- Matthew Kiszla (2016-2020)
- Colin Begley (2018-2019)
- Emma Culbertson (2015-2019)
- Cole Labhart (2016-2019)

- Alexander Thomas (2016-2019)
- Olivia Howell (2017-2018)
- Vidya Dandu (2015-2018)
- Jennie Kriznik (2015-2016)
- Forrest Walker (2015-2016)
- Katie Cater (2015-2016)
- Madeleine Hull (2015-2016)
- Irum Syed (2015-2016)
- Josh Conwill (2015-2016)
- Allyson Allman (2015)

GUEST LECTURES

September 2015 *Microbiology I*, University of Alabama
CRISPR-Cas: A Small RNA-Mediated Bacterial Immune System

February 2016 Rogers Library *Lightning Talk* series, University of Alabama
The Enemy of my Enemy is My Friend: Enlisting Bacterial Viruses to Combat Drug-Resistant Staphylococci

Summer 2016 and 2017 College of Engineering, Research Experience for Undergraduates
Introduction to the Scientific Method with a Vignette in Phage Research

Fall 2016, 2017, and 2018 *Honors Biology*, University of Alabama
The Enemy of my Enemy is My Friend: Enlisting Bacterial Viruses to Combat Drug-Resistant Staphylococci

November 2018 Blount Scholars lecture series, University of Alabama
The Enemy of my Enemy is My Friend: Enlisting Bacterial Viruses to Combat Drug-Resistant Staphylococci

July 2019 Winternitz Conference, University of Alabama
Enlisting Bacterial Viruses to Combat Drug-Resistant Infections

December 2020 Kaler Planetarium lecture series, Champaign, Illinois
The Enemy of my Enemy is My Friend: Enlisting Bacterial Viruses to Combat Drug-Resistant Staphylococci

ACADEMIC COMMITTEES AND SERVICE

Internal (Department and University)

2022-present **Microbiology Strategic Planning Committee**, UIUC
2020-present **MCB Graduate Admissions Committee**, UIUC
2021-2022 **Microbiology Curriculum Committee**, University of Illinois at Urbana-Champaign (UIUC)
2019-2020 **Diversity Committee**, University of Alabama (UA)

2019-2020	**Strategic Planning Committee**, UA Department of Biological Sciences
2018-2020	**Executive Committee**, UA Department of Biological Sciences
2018-2020	**Founding Faculty Advisor** for the American Society for Microbiology (ASM) UA Chapter
2015-2020	**Radiation Control Advisory Committee,** University of Alabama
2015-2020	**STEM Steering Committee,** University of Alabama
2015-2020	**Faculty search committees** (various)**,** UA Department of Biological Sciences.
2015-2020	Served/currently serving on 3 MS committees and 10 PhD committees as role other than Chair.
2014-2020	**Academic Advising** for 30-60 undergraduates per semester
2015-2020	Write an average of 10 **letters of recommendation** per year for students to enter into Medical School, Graduate School, Internships or other programs.
2015-2018	**Facilities and Instrumentation Committee,** UA Department of Biological Sciences

External (Academic Community)

2022-present	**Editorial Board member** of *The Journal of Bacteriology*
2022-present	**Division M. Bacteriophage Councilor**, American Society for Microbiology (ASM) Council of Microbial Sciences (COMS)
2021	**Organizing committee member**, CRISPR 2021 conference in Paris, France
2020	**Panelist** on a NASA grant review committee
2020	**Invited Editor**, *mBio*
2019	**Panelist** on an NSF/MCB grant review committee
2018-present	**Panelist** on various NIH grant review committees
2018-present	**Ad-Hoc Reviewer** for the NSF (MCB)
2018-present	**Ad-Hoc Reviewer** for the The Netherlands Organization for Scientific Research and the Biotechnology and Biological Sciences Research Council in the UK.
2017-present	**Editorial Board member** of *The CRISPR Journal*
2014-Present	**Ad-Hoc Reviewer** for peer-reviewed journals including *Science*, *Cell*, *Cell Reports*, *Molecular Cell*, *Nature*, *Nature Communications*, *Nature Reviews Microbiology*, *Nucleic Acids Research*, *mBio*, *Viruses*, *Journal of Infectious Disease*, *FEBS Letters*, *Current Opinion in Virology*, *Biology Open*, *PLOS One*, *The CRISPR Journal*, *RNA Biology*, *Communications Biology*, and *Peer J*.

COMMUNITY SERVICE AND OUTREACH

2017-2019	Developing an **active learning module** on CRISPR and phage and piloting it at local high schools in collaboration with Alabama Science in Motion
2017-2019	Developed an **educational kit** on CRISPR and phage in partnership with Carolina Biologicals for distribution to high schools and community colleges nationwide: https://www.carolina.com/biotechnology-classroom-resources/exploring-the-crispr-cas-defense-system-kit/FAM_211772.pr
2018	Developed and deployed a ***Phage Discovery*** **workshop** for high school students and their teachers for the STEM Entrepreneurship Academy Summer Camp
2013-2014	**Co-founder and Executive Member** of Women in Science at Rockefeller (WISeR)
2011-2012	**Communications Chair** on the executive board of the Rockefeller

	Postdoctoral Association.
2008-2009	**Instructor and coordinator** of a stress management course offered for PE credit at Cornell University.
2005-2007	**Secretary** on the executive Board for the Sevanna Park condominium association.

NEWS AND MEDIA

UA News

https://www.ua.edu/news/2018/02/studying-arms-race-between-bacteria-viruses-brings-career-award/

https://www.ua.edu/news/2019/04/researchers-uncover-critical-insights-into-bacterial-immune-systems/

Clinical Chemistry Podcast

http://clinchem.aaccjnls.org/content/64/12/1681

PBS NOVA interviews

https://www.pbs.org/wgbh/nova/article/chatty-bacteria-might-be-most-vulnerable-viruses/

https://www.pbs.org/wgbh/nova/article/to-save-a-girls-life-researchers-injected-her-with-genetically-engineered-viruses/

Other interviews

- Craig Wilen and Asma Hatoum-Aslan: Tales from within and without the SARS-CoV-2 Research Sphere", *Trends in Microbiology*, February 2021, Vol. 29, No. 2 https://doi.org/10.1016/j.tim.2020.10.006

- Casadio M, and Simon D. (2021) Moving a research lab during the COVID-19 pandemic. *J Cell Biol* 220 (1): e202012016. https://doi.org/10.1083/jcb.202012016

Jim Imlay (217)-333-5812
Department of Microbiology
University of Illinois
B303 CLSL, 601 S. Goodwin
Urbana, IL 61801

Education:

Duke University, B.S., 1981, chemistry.
University of California at Berkeley, Ph.D., 1987, biochemistry.

Positions held:

Professor, Department of Microbiology, University of Illinois 2003-.
Associate Director, School of Molecular and Cellular Biology, 2000-.
Associate Professor, Department of Microbiology, University of Illinois 1998-2003.
Assistant Professor, Department of Microbiology, University of Illinois, 1992-1998.
Postdoctoral fellow, Department of Biochemistry, Duke University Medical Center, 1987-1992.
Chemist, UOP, Inc., Des Plaines, IL. 1981-1982.

Honors:

Molecular & Cellular Biology Service Award, 2022.
Molecular & Cellular Biology Research Excellence Award, 2019.
Molecular & Cellular Biology Faculty Excellence Award, 2010.
Fellow, American Academy of Microbiology, 2008.
Romano Scholar, 2007.
NIH MERIT Award, 2007-2017.
Associate, Center for Advanced Studies, 2004-2005.
Helen Corley Petit Professorship, 1998-1999
Fellow, Jane Coffin Childs Fund for Medical Research, 1988-1991.
National Science Foundation Fellow, 1983-1987
University Fellow, 1982-1983

Teaching:

Microbial Physiology, 1994-1999.
Graduate Biochemistry, 2000-.
Undergraduate honors biochemistry section, 2013, 2016, 2017.
Graduate Ethics, 2018-.
Ranked excellent in teaching: 1996, 2006, 2008, 2010, 2012-2022 (various courses)

Editorial service:

Editor, Molecular Microbiology, 2009-.
Editorial board, Journal of Bacteriology, 1999-2020.
Editorial board, CRC Critical Reviews of Biochemistry and Molecular Biology, 2002.
Steering Committee, EcoCyc/Biocyc, 2018-

Current lab personnel:

Kari Imlay (Res. Assoc. ~1993-1995, 2002-)
Sergei Korshunov (Research Scientist, 2000-5; 2007-).
Sanjay Kumar Rohaun (postdoc, Sept 2017-).
Stefanie Eben (Ph.D. student, spring 2017-).
Anshika Gupta (Ph.D. student, spring 2017-).
John Schneider (Ph.D. student spring 2022-).
Jessica Hertig (Ph.D. student spring 2022-).
Simran Singh (Ph.D. student spring 2022-).

Lab personnel:

Ph.D. students: 20 degrees awarded.
M.S. students: 3 degrees awarded.
Postdoctoral students: 11 completed.

Current funding:

National Institutes of Health, 2 RO1 GM049640, July 2021-June 2025. "The physiology of oxidative stress in *Escherichia coli*." Direct costs, $370,459/yr.

National Institutes of Health, 1 RO1 GM141252, April 2021-March 2025. "Diagnosing reactive oxygen species in bacteria." Direct costs, $180,000/yr.

Publications:

Imlay, James A. and Stuart Linn. 1986. Bimodal pattern of killing of DNA-repair-defective or anoxically grown *Escherichia coli* by hydrogen peroxide. J. Bacteriol. 166: 519-527.

Imlay, James A. and Stuart Linn. 1987. Mutagenesis and stress responses induced in *Escherichia coli* by hydrogen peroxide. J. Bacteriol. 169: 2967-2976.

Linn, Stuart, and James A. Imlay. 1987. Toxicity, mutagenesis, and stress responses induced in *Escherichia coli* by hdyrogen peroxide. J. Cell Sci Suppl. 6: 289-301.

Imlay, James A. and Stuart Linn. 1988. Toxic DNA damage by hydrogen peroxide through the Fenton reaction *in vivo* and *in vitro*. Science 240: 640-642.

Imlay, James A. and Stuart Linn. 1988. DNA damage and oxygen radical toxicity. Science 240: 1302-1309.

Linn, Stuart, Sherman M. Chin, and James A. Imlay. 1988. Killing, stress responses, and mutagenesis induced in *E. coli* by hydrogen peroxide. In "DNA Damage and Repair," pp 373-376, A Castellani, ed., Plenum Press, N.Y.

Linn, Stuart, Sherman M. Chin, and James A. Imlay. 1988. Toxic DNA damage by oxyradicals via the Fenton reaction in vivo and in vitro. In "Mechanisms of DNA Damage Processing," pp. 51-56, Alan R. Liss, Inc.

Imlay, James A. and Irwin Fridovich. 1991. Assay of metabolic superoxide production in *Escherichia coli*. J. Biol. Chem. 266: 6957-6965.

Imlay, James A. and Irwin Fridovich. 1991. Superoxide production by respiring membranes of *Escherichia coli*. Free Radical Research Communications 12: 59-68.

Beyer, Wayne, James A. Imlay, and Irwin Fridovich. 1991. Superoxide dismutases. Prog. Nucl. Acid Res. Mol. Biol. 40: 221-291.

Imlay, James A. and Irwin Fridovich. 1991. Isolation and genetic analysis of a mutation that suppresses the auxotrophies of superoxide dismutase-deficient *Escherichia coli*. Molecular and General Genetics 228: 410-416.

Imlay, James A. and Irwin Fridovich. 1992. Endogenous superoxide generation threatens sensitive enzymes in *Escherichia coli*. In "Oxidative Damage and Repair: Chemical, Biological, and Medical Aspects," K.J.A. Davies, ed., Pergammon Press, N.Y.

Imlay, James A. and Irwin Fridovich. 1992. Suppression of oxidative envelope damage by pseudoreversion of an SOD mutant of *Escherichia coli*. J. Bacteriol. 174: 953-961.

Imlay, James A. and Irwin Fridovich. 1992. Exogenous quinones directly inhibit the respiratory NADH dehydrogenase in *Escherichia coli*. Arch. Biochem. Biophys. 296: 337-346.

Kargalioglu, Yahya, and James A. Imlay. 1994. Importance of anaerobic superoxide dismutase synthesis in facilitating outgrowth of *Escherichia coli* upon entry into an aerobic habitat. J. Bacteriol. 176: 7653-7658.

Imlay, James A. and Yahya Kargalioglu. 1995. A molecular etiology of superoxide stress in *Escherichia coli*. In, "The Oxygen Paradox," ed. K.J.A. Davies and F. Ursini. Cleup University Press, Padova, Italy.

Imlay, James A. 1995. A metabolic enzyme that rapidly produces superoxide: fumarate reductase of *Escherichia coli.* J. Biol. Chem. 270: 19767-19777.

Keyer, Kay, Amy S. Strohmeier, and James A. Imlay. 1995. Superoxide and the production of oxidative DNA damage. J. Bacteriol. 177: 6782-6790.

Imlay, Karin R.C., and James A. Imlay. 1996. Cloning and analysis of *sodC*, encoding the copper-zinc superoxide dismutase of *Escherichia coli*. J. Bacteriol. 178: 2564-2571.

Siegele, Deborah A., Karin R.C. Imlay, and James A. Imlay. 1996. The stationary phase-exit defect of *cydC* (*surB*) mutants is due to the lack of a functional terminal cytochrome oxidase. J. Bacteriol. 178: 6091-6096.

Keyer, Kay, and James A. Imlay. 1996. Superoxide accelerates DNA damage by elevating free-iron levels. Proc. Natl. Acad. Sci. USA 93: 13635-13640.

Keyer, Kay, and James A. Imlay. 1997. Inactivation of dehydratase [4Fe-4S] clusters and disruption of iron homeostasis upon cell exposure to peroxynitrite. J. Biol. Chem. 272: 27652-27659.

Gort, Amy S., and James A. Imlay. 1998. The balance between endogenous superoxide stress and antioxidant defenses, J. Bacteriol. 180: 1402-1410.

Gort, Amy S., Daniel M. Ferber, and James A. Imlay. 1999. The regulation and role of the periplasmic copper, zinc superoxide dismutase of *Escherichia coli*. Mol. Microbiol. 32: 179-192.

Messner, Kevin R., and James A. Imlay. 1999. The identification of primary sites of superoxide and hydrogen peroxide formation in the aerobic respiratory chain and sulfite reductase complex of *Escherichia coli*. J. Biol. Chem. 274: 10119-10128.

Storz, Gisela, and James A. Imlay. 1999. Oxidative stress. Curr. Opinion Microbiol. 2: 188-194.

Maringanti, Sujatha, and James A. Imlay. 1999. An intracellular iron chelator pleiotropically suppresses the enzymic and growth defects of SOD-deficient *Escherichia coli*. J. Bacteriol. 181: 3792-3802.

Schwartz, Christopher J., Djaman, Ouliana, Imlay, James A., and Patricia J. Kiley. 2000. The cysteine desulfurase, IscS, has a major role in in vivo Fe-S cluster formation in *Escherichia coli*. Proc. Natl. Acad. Sci. USA 97: 9009-9014.

Srinivasan, Chandra, Liba, A., Imlay, James A., Valentine, Joan S., and Edith B. Gralla. 2000. Yeast lacking superoxide dismutase show elevated levels of "free iron" as measured by whole-cell EPR. J. Biol. Chem. 275: 29187-29192.

Pan, Ning, and James A. Imlay. 2001. How does oxygen inhibit central metabolism in the obligate anaerobe *Bacteroides thetaiotaomicron*? Mol. Microbiol. 39: 1562-1571.

Seaver, Lauren Costa, and James A. Imlay. 2001. Alkyl hydroperoxide reductase is the primary scavenger of endogenous hydrogen peroxide in *Escherichia coli*. J. Bacteriol.183: 7173-7181. (Cited by Faculty of 1000.)

Seaver, Lauren Costa, and James A. Imlay. 2001. Hydrogen peroxide fluxes and compartmentalization inside growing *Escherichia coli*. J. Bacteriol. 183: 7182-7189.

Korshunov, Sergei, and James A. Imlay. 2002. A potential role for periplasmic superoxide dismutase in blocking the penetration of external superoxide into the cytosol of gram-negative bacteria. Mol. Microbiol. 43: 95-106.

Messner, Kevin R., and James A. Imlay. 2002. In vitro quantitation of biological superoxide and hydrogen peroxide generation. Methods Enzymol. 349: 354-361.

Woodmansee, Anh N., and James A. Imlay. 2002. Quantitation of intracellular free iron by electron paramagnetic resonance spectroscopy. Methods Enzymol. 349: 3-9.

Imlay, James A. 2002. How oxygen damages microbes: oxygen tolerance and obligate anaerobiosis. Adv. Microb. Physiol. 46: 111-153.

Imlay, James A. 2002. What biological purpose is served by superoxide reductase? J. Biol. Inorg. Chem. 7: 659-663.

Elgrably-Weiss, Maya, Park, Sunny, Schlosser-Silverman, Eliana, Rosenshine, Ilan, Imlay, James, and Shoshy Altuvia. 2002. *Salmonella enterica* serovar Typhimurium *hemA* mutant is highly susceptible to oxidative DNA damage. J. Bacteriol. 184: 3774-3784.

Imlay, James A. 2002. Free iron in bacteria. Electronic publication, the Oxygen Society.

Woodmansee, Anh N., and James A. Imlay. 2002. Reduced flavins deliver electrons to intracellular free iron and promote oxidative DNA damage in *Escherichia coli*. J. Biol. Chem. 277: 34055-34066. (Cited by Faculty of 1000.)

Messner, Kevin R., and James A. Imlay. 2002. Mechanism of superoxide and hydrogen peroxide formation by fumarate reductase, succinate dehydrogenase, and aspartate oxidase. J. Biol. Chem. 277: 42563-42571.

Varghese, S., Tang, Y., and James A. Imlay. 2003. Contrasting sensitivities of *Escherichia coli* aconitases A and B to oxidation and iron depletion. J. Bacteriol. 185: 221-230. (Cited by Faculty of 1000.)

Park, Sunny, and James A. Imlay. 2003. High levels of intracellular cysteine promote oxidative DNA damage by driving the Fenton reaction. J. Bacteriol. 185: 1942-1950.

Woodmansee, Anh N., and James A. Imlay. 2003. A mechanism by which nitric oxide accelerates the rate of oxidative DNA damage in *Escherichia coli*. Mol. Microbiol., 49: 11-22. (Cited by Faculty of 1000.)

Imlay, James A. 2003. Pathways of oxidative damage. Ann. Rev. Microbiol, 57: 395-418.

Smith, Alexandra H., Imlay, James A., and Roderick I. Mackie. 2003. Increasing the oxidative stress response allows *Escherichia coli* to overcome inhibitory effects of condensed tannins. Appl. Environ. Microbiol. 69: 3406-3411.

Pericone, Christopher D., Park, Sunny, Imlay, James A., and Jeffrey N. Weiser. 2003. Factors contributing to hydrogen peroxide resistance in *Streptococcus pneumoniae* include pyruvate oxidase (SpxB), also the major source of endogenous hydrogen peroxide production. J. Bacteriol. 185: 6815-6825.

Krishnakumar, Radha., Craig, Maureen., Imlay, James A., and James M. Slauch. 2004. Differences in enzymatic properties allow SodCI but not SodCII to contribute to virulence in *Salmonella enterica* serovar Typhimurium strain 14028. J. Bacteriol. 186: 5230-5238.

Djaman, Ouliana, Outten, F. Wayne, and James A. Imlay. 2004. Repair of oxidized iron-sulfur clusters in *Escherichia coli*. J. Biol. Chem. 279: 44590-44599. (Cited by Faculty of 1000.)

Outten, F. Wayne, Djaman, Ouliana, and Gisela Storz. 2004. A *suf* operon requirement for Fe-S cluster assembly during iron starvation in *Escherichia coli*. Mol. Microbiol. 52: 861-872.

Seaver, Lauren C., and James A. Imlay. 2004. Are respiratory enzymes the primary sources of intracellular hydrogen peroxide? J. Biol. Chem. 279: 48742-48750. (Cited by Faculty of 1000.)

Park, Sunny, and James A. Imlay. 2005. Substantial DNA damage from submicromolar intracellular hydrogen peroxide detected in Hpx^- mutants of *Escherichia coli* Proc. Natl. Acad. Sci. USA 102: 9317-9322. (Cited by Faculty of 1000.)

Hassett, Daniel J., and James A. Imlay. 2006. Antioxidant systems in *Escherichia coli* and *Pseudomonas aeruginosa*. Molecular paradigm of infectious disease: a bacterial perspective. Eds., C. Nickerson and M.J. Schurr. Klewer Academic-Plenum Publishers, N.Y.-Boston-Dordrecht-London-Moscow.

Imlay, James A. 2006. Iron-sulfur clusters and the problem with oxygen. Mol. Microbiol. 59: 1073-1082.

Gakh, Oleksandr, Park, Sungjo, Liu, Gang, Macomber, Lee, Imlay, James A., Ferreira, Gloria, C., and Grazia Isaya. 2006. Mitochondrial iron detoxification is a primary function of frataxin that limits oxidative damage and preserves cell longevity. Human Mol. Genet. 15: 467-479.

Korshunov, Sergei, and James A. Imlay. 2006. Detection and quantification of superoxide formed within the periplasm of *Escherichia coli*. J. Bacteriol. 188: 6326-6334. (Cited by Faculty of 1000.)

Jacques, Jean-Francois, Jang, Soojin, Prevost, Karine, Desmarais, Maxime, Imlay, James, and Eric Masse. 2006. RyhB small RNA modulates the free intracellular iron pool and is essential for normal growth during iron limitation in *Escherichia coli*. Mol. Microbiol. 62: 1181-1190.

Wu, Pinggui, Xie, R. C., Imlay, James A., and Jian Ku Shang. 2006. Visible-light photocatalytic fibers for inactivation of *Pseudomonas aeruginosa*. Ceramic. Engng. Sci. Proc. 27:.

Macomber, Lee, Rensing, Christopher, and James A. Imlay. 2007. Intracellular copper does not catalyze the formation of oxidative DNA damage in the model organism *Escherichia coli*. J. Bacteriol. 189: 1616-1626.

Jang, Soojin, and James A. Imlay. 2007. Micromolar intracellular hydrogen peroxide disrupts metabolism by damaging iron-sulfur enzymes. J. Biol. Chem. 282: 929-937.

Varghese, Shery, Wu, Amy, Park, Sunny, Imlay, Karin R. C., and James A. Imlay. 2007. Submicromolar H_2O_2 disrupts the ability of Fur protein to control iron levels in *Escherichia coli*. Mol. Microbiol. 64: 822-830.

Krishnakumar, Radha, Mollo, Elizabeth A., Kim, Byoungkwan, Imlay, James A., and James M. Slauch. 2007. Structural properties of periplasmic SodCI that correlate with virulence in *Salmonella enterica* serovar Typhimurium. J. Bacteriol. 189: 4343-4352.

Munroe, William, Kingsley, Carolyn, Durazo, Armando, Gralla, Edith B., Imlay, James A., Srinivasan, C., and Joan S. Valentine. 2007. Only one of a wide assortment of manganese-containing SOD mimicking compounds rescues the slow aerobic growth phenotypes of both *Escherichia coli* and *Saccharomyces cerevisiae* strains lacking superoxide dismutase enzymes. J. Inorg. Biochem. 101: 1875-1882.

Hassett, Daniel J., and James A. Imlay. 2007. Bactericidal antibiotics and oxidative stress: a radical proposal. ACS Chem. Biol. 2: 708-710.

Imlay, James A. 2008. Cellular defenses against superoxide and hydrogen peroxide. Annu. Rev. Biochem. 77: 755-776.

Imlay, James A. 2008. How obligatory is anaerobiosis? Mol. Microbiol. 68: 801-804.

Imlay, James A. 2009. "Oxidative Stress." In "*Escherichia coli* and *Salmonella*: Cellular and Molecular Biology. F.C. Neidhardt *et al.*, editors. ASM Press.

Macomber, Lee, and James A. Imlay. 2009. The iron-sulfur clusters of dehydratases are primary intracellular targets of copper toxicity. Proc. Natl. Acad. Sci. USA 106: 8344-8349. PMCID PMC2688863. (Cited by Faculty of 1000.)

Anjem, Adil, Shery Varghese, and James A. Imlay. 2009. Manganese import is a key element of the OxyR response to hydrogen peroxide in *Escherichia coli*. Mol. Microbiol. 72: 844-858. PMCID: PMC2776087 (Cited by Faculty of 1000.)

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Wu, Pinggui, Rongcai Xie, Kari Imlay, and Jian Ku Shang. 2009. Monolithic ceramic foams for ultrafast photocatalytic inactivation of bacteria. J. Amer. Ceramic Society 92: 1648-1654.

Korshunov, S., and James A. Imlay. 2010. Two sources of endogenous H_2O_2 in *Escherichia coli*. Mol. Microbiol. 75: 1389-1401. PMCID: PMC3049997.

Yeom, Jinki, James A. Imlay, and Woojun Park. 2010. Iron homeostasis affects antibiotic-mediated cell death in *Pseudomonas* species. J. Biol. Chem. 285: 22689-22695. PMCID: PMC2903419

Imlay, James A. Redox pioneer: Irwin Fridovich. 2011. Antioxidants & Redox Signaling14: 335-340. PMCID: PMC3026652.

Arenas, Felipe A., Waldo A. Diaz, Carolina A. Leal, Jose M. Perez-Donoso, James A. Imlay, and and Claudio C. Vasquez. 2010. The *Escherichia coli btuE* gene encodes a glutathione peroxidase that is induced under oxidative stress conditions. Biochem. Biophys. Res. Commun. 398: 690-694. PMCID: PMC3057470.

Wu, Pinggui, James A. Imlay, and Jian-Ku Shang. 2010. Mechanism of *Escherichia coli* inactivation on palladium-modified nitrogen-doped titanium dioxide. Biomaterials 31: 7526-7533. PMCID: PMC3051420.

Salvail, Hubert, Pascale Lanthier-Bourbonnais, Jason Michael Sobota, Melissa Caza, Julie-Anna M. Benjamin, Martha Eugenia Sequeira Mendieta, Jean-Francois Jacques, Francois Lepine, Charles M. Dozois, James A. Imlay, and Eric Masse. 2010. A small RNA promotes siderophore production through transcriptional and metabolic remodeling. Proc. Natl. Acad. Sci USA 107: 15223-15228. PMCID: PMC2930555. (Cited by Faculty of 1000.)

Wu, Pinggui, Rongcai Xie, Kari Imlay, and Jian-Ku Shang. 2010. Visible-light-induced bactericidal activity of titanium dioxide codoped with nitrogen and silver. Environ. Sci. Technol. 44: 6992-6997.

Jang, Soojin, and James A. Imlay. 2010. Hydrogen peroxide inactivates the *Escherichia coli* Isc iron-sulfur assembly system, and OxyR induces the Suf system to compensate. Mol. Microbiol. 78: 1448-1467. PMCID: PMC3051806.

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Imlay, James A., and Hassett, Daniel J. 2011. Oxidative and nitrosative stress defence systems in *Escherichia coli* and *Pseudomonas aeruginosa*: A model organism of study versus a human opportunistic pathogen. *Chapter 1 in,* "Stress Response in Pathogenic Bacteria," Stephen Kidd, editor.

Martin, Julia E., and James A. Imlay. 2011. The alternative aerobic ribonucleotide reductase of *Escherichia coli*, NrdEF, is a manganese-dependent enzyme that enables cell replication during periods of iron starvation. Mol. Microbiol. 80: 319-334. (Cited by Faculty of 1000.)

Liu, Yuanyuan, Sarah C. Bauer, and James A. Imlay. 2011. The YaaA protein of the *Escherichia coli* OxyR regulon lessens hydrogen peroxide toxicity by diminishing the amount of intracellular unincorporated iron. J. Bacteriol. 193: 2186-2196.

Sobota, Jason M., and James A. Imlay. 2011. The iron enzyme ribulose-5-phosphate 3-epimerase in *E. coli* is rapidly damaged by hydrogen peroxide but can be protected by manganese. Proc. Natl. Acad. Sci. USA 108: 5402-5407. (Cited by Faculty of 1000.)

Carey, James, Kenneth Suslick, Keren Hulkower, James A. Imlay, Karin R. C. Imlay, Crystal Ingison, Jennifrer Ponder, Avijit Sen, and Aaron Wittrig. 2011. Rapid identification of bacteria with a disposable colorimetric sensing array. J. Amer. Chem. Soc., J. Amer. Chem. Soc. 133: 7571-7576. (Cited by Faculty of 1000.)

Imlay, James A., and Mianzhi Gu. 2011. Many plants and bacteria excrete redox-cycling compounds (reply to letter to editor). Free Rad. Biol. Med., 50: 1814-1815.

Xu, Fang Fang, and James A. Imlay. 2012. Silver(I), mercury(II), cadmium(II), and zinc(II) target exposed enzymic iron-sulfur clusters when they toxify *Escherichia coli*. Environ. Appl. Microbiol. 78: 36124-3621.

Anjem, Adil, and James A. Imlay. 2012. Mononuclear iron enzymes are primary targets of hydrogen peroxide stress. J. Biol. Chem. 287: 15544-15556.

Mishra, Surabhi, and James A. Imlay. 2012. Why do bacteria use so many enzymes to scavenge hydrogen peroxide? Arch. Biochem. Biophys. 525: 145-160. (One of 5 most down-loaded ABB articles, 2013.)

Liu, Aedan, and James A. Imlay. 2013. Cell death from antibiotics without the involvement of reactive oxygen species. Science 339: 1210-1213. (Cited by Faculty of 1000.). Commentaries: Chemistry World, Chemical & Engineering News, Nature Medicine, Nature Biotechnology, J. Bacteriol., Scientific American.

Gu, Mianzhi and James A. Imlay. 2013. Superoxide poisons mononuclear iron enzymes by causing mismetallation. Mol. Microbiol. 89: 123-134.

Imlay, James A. 2013. The molecular mechanisms and physiological consequences of oxidative stress: lessons from a model bacterium. Nature Reviews Microbiol. 11: 443-454.

Kumar, Sripriya R. and James A. Imlay. 2013. How *Escherichia coli* tolerates profuse hydrogen peroxide formation by a catabolic pathway. J. Bacteriol. 195: 4569-4579.

Singh, Atul K., J.H. Shin, K. L. Lee, James A. Imlay, and Jung-Hye Roe. 2013. Comparative study of SoxR activation by redox-active compounds. Mol. Microbiol. 90: 983-996.

Mishra, Surabhi, and James A. Imlay. 2013. An anaerobic bacterium, *Bacteroides thetaiotaomicron*, uses a consortium of enzymes to scavenge hydrogen peroxide. Mol. Microbiol. 90: 1356-1371.

Sobota, Jason M., Mianzhi Gu, and James A. Imlay. 2014. Intracellular hydrogen peroxide and superoxide poison 3-deoxy-D-arabinoheptulosonate 7-phosphate synthase, the first committed enzyme in the aromatic biosynthetic pathway of *Escherichia coli*. J. Bacteriol. 196: 1980-1991. (Cited by Faculty of 1000.)

Imlay, James A. 2014. The mismetallation of enzymes during oxidative stress. J. Biol. Chem. 289: 28121-28128.

Imlay, James A. 2015. Common mechanisms of bacterial metal homeostasis. In: Trace Metals and Infectious Diseases, edited by Jerome O. Nriagu and Eric P. Skaar. The MIT Press, Cambridge, MA and London, UK.

Cavet, Jennifer S., Robert D. Perry, Sascha Brunke, K. Heran Darwin, Carol A. Fierke, James A. Imlay, Michael E. P. Murphy, Anthony B. Schryvers, Dennis J. Thiele, and Jeffrey N. Weiser. 2015. Trace metals in host-microbe interactions: the microbe perspective. In: Trace Metals and Infectious Diseases, edited by Jerome O. Nriagu and Eric P. Skaar. The MIT Press, Cambridge, MA and London, UK.

Imlay, James A. 2015. Diagnosing oxidative stress in bacteria: not as easy as you might think. Curr. Opin. Microbiol. 24: 124-131.

Martin, Julia E., Lauren S. Waters, Gisela Storz, and James A. Imlay. 2015. The *Escherichia coli* small protein MntS and exporter MntP collaborate to keep intracellular manganese at sufficient but sub-inhibitory levels. PLoS Genetics 11:e1004977.

Mancini, Stefano, and James A. Imlay. 2015. The induction of two biosynthetic enzymes helps *Escherichia coli* to sustain heme synthesis and activate catalase during hydrogen peroxide stress. Mol. Microbiol. 96: 744-763.

Imlay, James A. 2015. Transcription factors that defend bacteria against reactive oxygen species. Annu. Rev. Microbiol. 69: 93-108.

Imlay, Karin R.C., Sergey Korshunov, and James A. Imlay. 2015. The physiological roles and adverse effects of the two cystine importers of Escherichia coli. *J. Bacteriol.* 197: 3629-3644. (Accompanied by commentary.)

Mancini, Stefano, and James A. Imlay. 2015. Bacterial porphyrin extraction and quantification by LC/MS/MS analysis. Bioprotocols 5: e1616.

Korshunov, Sergey, Karin R.C. Imlay, and James A. Imlay. 2016. The cytochrome *bd* oxidase of *Escherichia coli* prevents respiratory inhibition by endogenous and exogenous hydrogen sulfide. Mol. Microbiol. 101: 62-77. (Accompanied by commentary.)

Kim, Jisun, Chulwoo Park, James A. Imlay, and Woojun Park. 2017. Lineage-specific SoxR-mediated regulation of an endoribonuclease protects non-enteric bacteria from redox-active compounds. J. Biol. Chem. 292: 121-133.

Lu, Zheng, and James A. Imlay. 2017. The fumarate reductase of *Bacteroides thetaiotaomicron,* unlike that of *Escherichia coli*, is configured so that it does not generate reactive oxygen species. mBio 8: e01873-16.

Khademian, Maryam, and James A. Imlay. 2017. *Escherichia coli* cytochrome c peroxidase is a respiratory oxidase that enables the use of hydrogen peroxide as a terminal electron acceptor. Proc. Natl. Acad. Sci. USA 114: e6922-e6931.

Shin, Bora, Chulwoo Park, James A. Imlay, and Woojun Park. 2018. 4-hydroxybenzaldehyde sensitizes *Acinetobacter baumannii* to amphenicols. Appl. Microbiol. Biotechnol. 102: 2323-2335.

Lu, Zheng, Ramakrishnan Sethu, and James A. Imlay. 2018. Endogenous superoxide is a key effector of the oxygen sensitivity of a model obligate anaerobe. Proc. Natl. Acad. Sci. USA 115: e8266-e3275.

Li, Xin, and James A. Imlay. 2018. Improved measurements of scant hydrogen peroxide enable experiments that define its threshold of toxicity for *Escherichia coli*. Free Rad. Biol. Med. 120: 217-227.

Korshunov, Sergey, and James A. Imlay. 2018. Quantification of hydrogen sulfide and cysteine excreted by bacterial cells. Bio-protocol 8: e2847.

Imlay, James A. 2019. Where in the world do bacteria experience oxidative stress? Environ. Microbiol. 21: 521-530.

Imlay, James A., Ramakrishnan Sethu, and Sanjay K. Rohaun. 2019. Evolutionary adaptations that enable enzymes to tolerate oxidative stress. Free Rad. Biol. Med. 140: 4-13.

Lu, Zheng, and James A. Imlay. 2019. A conserved motif liganding the [4Fe-4S] cluster in [4Fe-4S] fumarases prevents irreversible inactivation of the enzyme during hydrogen peroxide stress. Redox Biology 26: 101296.

Korshunov, Sergey, Karin R. Chonoles Imlay, and James A. Imlay. 2019. Cystine import is a valuable but risky process whose hazards *Escherichia coli* minimizes by inducing a cysteine exporter. Mol. Microbiol. 113: 22-39.

Imlay, James A. 2020. In Memoriam: Irwin Fridovich. Free Rad. Biol. Med. 148: 3-6.

Khademian, Maryam, and James A. Imlay. 2020. Do reactive oxygen species or does oxygen itself confer obligate anaerobiosis? The case of *Bacteroides thetaiotaomicron*. Mol. Microbiol. 114: 333-347.

Zhou, Yidan, and James A. Imlay. 2020. *Escherichia coli* K-12 lacks a high-affinity assimilatory cysteine importer. mBio 11: e01072-20.

Sen, Ananya, Yidan Zhou, and James A. Imlay. 2020. During oxidative stress the Clp proteins of *Escherichia coli* ensure that iron pools remain sufficient to reactivate oxidized metalloenzymes. J. Bacteriol. 202: e00235-20.

Khademian, Maryam, and James A. Imlay. 2020. How microbes evolved to tolerate oxygen. Trends Microbiol. 29: 428-440.

Sen, Ananya, and James A. Imlay. 2021. How microbes defend themselves from incoming hydrogen peroxide. Front. Immunol. 12: 667343.

Lu, Zheng, and James A. Imlay. 2021. When anaerobes encounter oxygen: mechanisms of oxygen toxicity, tolerance, and defence. Nat. Rev. Microbiol. 19: 774-785.

Gupta, Anshika, and James A. Imlay. 2021. *Escherichia coli* induces DNA repair enzymes to protect itself from low-grade hydrogen peroxide stress. Mol. Microbiol. On-line ahead of print.

Zhou, Yidan, and James A. Imlay. 2022. *Escherichia coli* uses a dedicated importer and desulfidase to ferment cysteine. mBio 13: e0296521.

Giannakis, Stefanos, Anshika Gupta, Cesar Pulgarin, and James A. Imlay. 2022. Identifying the mediators of intracellular *E. coli* inactivation under UVA light: the (photo)Fenton process and singlet oxygen. Water Research 221: 118740.

Rohaun, Sanjay K., and James A. Imlay. 2022. The vulnerability of radical SAM enzymes to oxidants and soft metals. Redox Biology 57: 102495.

Padron, Gilberto C., Alexander M. Shuppara, Anuradha Sharma, Matthias D. Koch, Jessica-Jae S. Palalay, Jana N. Radin, Thomas Kehl-Fie, James A. Imlay, and Joseph E. Sanfilippo. 2023. Shear rate sensitizes bacterial pathogens to H_2O_2 stress. Proc. Natl. Acad. Sci. USA 120: e2216774120.

Eben, Stefanie S., and James A. Imlay. 2023. Excess copper catalyzes protein disulfide bond formation in the bacterial periplasm but not in the cytoplasm. Mol. Microbiol., online ahead of print.

Thomas Everett Kehl-Fie

Associate Professor of Microbiology

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Urbana, IL 61801
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Research and Academic Appointments:

2000-2001 Undergraduate Research Assistant, University of Washington Department of Pathobiology Advisor: Dr. Sheila Lukehart, Research Professor of Medicine, University of Washington

2001-2002 Research Scientist, University of Washington Department of Microbiology Advisor: Dr. James Champoux, Professor of Microbiology, University of Washington

2002-2008 Graduate Student, Program in Microbial Pathogenesis and Molecular Microbiology, Washington University in St. Louis Advisor: Dr. Joseph St. Geme, Professor of Pediatrics and Molecular Microbiology, Washington University in St. Louis. Professor of Pediatrics and Molecular Genetics and Microbiology, Duke University Medical Center

2009-2013 Postdoctoral Fellow, Department of Pathology, Microbiology, and Immunology, Vanderbilt University Advisor: Dr. Eric Skaar, Associate Professor of Pathology, Microbiology, and Immunology, Vanderbilt University

2013-2020 Assistant Professor of Microbiology, University of Illinois at Urbana-Champaign

2017-Present Affiliate Member Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign

2020-Present Associate Professor of Microbiology, University of Illinois at Urbana-Champaign

Education and Training:

1996-1999 A.A. Seattle Central Community College, Seattle, WA

1999-2001 B.S. Microbiology and Biochemistry with Honors, University of Washington, Seattle, WA

2002-2008 Ph.D. Washington University in St. Louis, St. Louis, MO. Division of Biological and Biomedical Sciences: Program in Microbial Pathogenesis and Molecular Microbiology, Washington University in St. Louis. Mentor: Dr. Joseph St. Geme III

2009-2013 Postdoctoral Fellowship Vanderbilt University, Nashville, TN Department of Pathology, Microbiology and Immunology. Mentor: Dr. Eric Skaar

Research Support:

Current Research Support:

National Institutes of Health R21 AI149115 In No Cost Extension 02/01/2020-01/31/2022
Total Direct Costs $275,000
"Phosphate homeostasis and uptake in *Staphylococcus aureus"*
Role: PI

FACE Foundation 09/01/2021-08/31/2023
Total Direct Costs: $10,000
"Adapting to Survive: Understanding how pathogens overcome starvation to cause infection"
Role: Co-PI (with Dr. Lalaouna)

National Institutes of Health R01 AI155611 05/19/2021-04/30/2026
Total Direct Costs: $1,990,519

Leveraging host-imposed metal starvation to elucidate the molecular and environmental factors that dictate metal utilization by the iron/manganese superoxide dismutase family.
Role: PI

National Institutes of Health R01 AI148241 06/04/2021-05/31/2026
Total Direct Costs: $39,020
Iron Independent role for yersiniabactine in *Yersinia pestis*
Role: Co-Investigator (Subcontract) (PI: Lawrenz)

National Institutes of Health R01 DK131990 04/01/2022-02/28/2027
Total Direct Costs: $40,195
Gut bacterial metallophores in the development and severity of inflammatory bowel disease
Role: Co-Investigator (Subcontract) (PI Samuelson)

Completed Research Support:
National Institutes of Health R21 AI159040 03/16/2021-02/28/2023
Total Direct Costs: $42,067
Calprotectin modulates Group B streptococcal colonization and disease
Role: Co-Investigator (Subcontract) (PI: Doran)

National Institutes of Health R21 AI159369 02/02/2021-01/31/2023
Total Direct Costs: $54,446
Identifying the contribution of zinc limitation to antibiotic tolerance during *S. aureus* infection
Role: Co-Investigator (Subcontract) (PI: Conlon)

Bert L & N Kuggie Vallee Foundation 09/01/2017-08/31/2022
Total Direct Costs $225,000
“Harnessing Nutritional Immunity to Combat Infection”
Role: PI

National Institutes of Health R01 AI118880 06/01/2016-05/31/2022
Total Direct Costs $1,250,000
“Overcoming nutritional immunity: Staphylococcal adaptation to host-imposed manganese and zinc starvation”
Role: PI

March of Dimes Basil O’Conner Starter Scholar Award 02/01/2015-01/31/2018
Total Direct Costs $126,000
“Contribution of phosphate homeostasis to staphylococcal pathogenesis”
Role: PI

National Institutes of Health R13 AI126805 07/01/2016-06/30/2017
Total Direct Costs $8,000
“The 23rd Annual Midwest Microbial Pathogenesis Conference”
Role: Co-PI (with Dr. James Slauch)

National Institutes of Health K22 AI104805 03/01/014-02/29/2016
Total Direct Costs $247,345
“Adaptation of *Staphylococcus aureus* to Mn and Zn starvation imposed by the host”
Role: PI

National Institutes of Health F32 AI100480 07/01/2012-10/30/2013
“Adaptation of *Staphylococcus aureus* to Mn limitation imposed by the host”
Principle Investigator: Thomas E. Kehl-Fie
Role: PI

American Heart Association Postdoctoral Fellowship 10POST3420041 07/01/2010-6/30/2012
"The impact of calprotectin-mediated manganese chelation on staphylococcal pathogenesis"
Primary Investigator: Thomas E. Kehl-Fie
Role: PI

National Institutes of Health T32 HL094296-02 07/01/2009-06/30/2010
"Interdisciplinary Training Program in Lung Research"
Primary Investigator: Timothy Blackwell
Role: Trainee Fellow

Academic Honors and Awards:

1999-2001	Dean's List University of Washington
2000	Mary Gates Research and Training Fellowship
2001	Phi Lambda Upsilon National Chemistry Honor Society
2001	Phi Beta Kappa
2004-2005	Infectious Diseases Scholars Program, Washington University in St. Louis
2009	Fellow, Interdisciplinary Training Program in Lung Research NIH T-32 Training Grant
2010-2012	American Heart Association Postdoctoral Fellowship
2011	Best Poster in Microbiology and Immunology VUMC Postdoctoral Research Symposium
2012	Best Poster in Microbiology and Immunology VUMC Postdoctoral Research Symposium
2012-2013	NIH Ruth L. Kirschtein Postdoctoral Fellowship
2012	Sidney P. Colowick Outstanding Postdoctoral Fellow Award, Department of Pathology, Microbiology, and Immunology, Vanderbilt University
2016	Campus Nominee for the Pew Biomedical Scholars Fellowship
2016-Present	List of teachers ranked as excellent by their students - University of Illinois at Urbana-Champaign
2017	Vallee Scholar – Bert L & N Kuggie Vallee Foundation

Other Experience

2015	Session Chair 2015 Cell Biology of Metals Gordon Research Conference
2016	Co-Organizer 23rd Annual Midwest Microbial Pathogenesis Conference
2016-Present	Editorial Advisory Board Molecular Microbiology
2016	Mobile Summer Institute on Undergraduate STEM Education
2016-2021	Ad hoc Member NIH Topics in Bacterial Pathogenies Study Section – IDM (80, 81 etc)
2016	Session Co-Chair 6th International Conference of Gram Positive Pathogens
2017	Session Chair 2017 Staphylococcal Diseases Gordon Research Conference
2018-Present	Editorial Board Journal of Bacteriology
2020	Member, Combating Antibiotic Resistant Bacteria Interdisciplinary Research Units (CARBIRU) Panel, NIAID Study Section.
2021	Ad hoc Member NIH Fellowship review panel F07 (A, C etc)
2022	Ad hoc Member, Infectious Diseases and Immunology B (IDIB) NIH Fellowship Review Panel
2023- Present	Editorial Board Infection and Immunity

Membership in Professional Societies:

2014-Present	American Society for Microbiology
2014-Present	International Biometals Society

National and International Seminars:

2022 University of Notre Dame
University of South Florida
Microbial Cell Stress Response Gordon Research Conference, South Hadley, MA
University of North Carolina Chapel Hill

2020 University of Houston

2019 Ohio University
Loyola University
University of Colorado School Medicine
The Bert L & N Kuggie Vallee Foundation Annual Meeting, Boston, MA
Cell Biology of Metals Gordon Research Conference, Barcelona Spain

2018 Michigan State University
University of Nebraska Medical Center
Trinity College Dublin the University of Dublin
Microbiology Society Focused Meeting: Microbes and Mucosal Surfaces Dublin, Ireland
National University of Ireland Galway
University of Illinois at Chicago
University of Wisconsin Madison
University of Kentucky

2017 Indiana University Purdue University Indianapolis
Cell Biology of Metals Gordon Research Conference West Dover, VT
24th Annual Midwest Microbial Pathogenesis Conference Notre Dame, IN
BacPath 14 Hahndorf, Australia
Combio 2017 Adelaide, Australia
University of Queensland (Trainee Invited Speaker)
Johns Hopkins University

2016 6th International Conference of Gram-Positive Pathogens Omaha, NE

2015 Southern Illinois University Carbondale
Indiana University School of Medicine Northwest
Metal-related Antimicrobials Event, Durham United Kingdom

2014 FASEB Trace Elements in Biology and Medicine Steamboat Springs, CO
9th International BioMetals Symposium Durham, NC
16th International Symposium on Staphylococci and Staphylococcal Infections Chicago, Il

2012 19th Annual Midwest Microbial Pathogenesis Conference Milwaukee, WI
3rd Annual International Symposium on Autoinflammatory Syndromes in Munster, Germany
13th Annual Meeting of the Network on Antibiotic Resistant *Staphylococcus aureus* Washington, DC

2010 International Conference on Gram-positive Pathogens Omaha, NE

2009 Cold Spring Harbor Meeting on Microbial Pathogenesis and Host Response Cold Spring Harbor, NY

University of Illinois Urbana-Champaign Seminars:

2017 Undergraduate Affiliate Network (UIUC Chapter) of the American Society of Biochemistry and Molecular Biology

2015 Microbiology @ Illinois Group

2013 Infection Biology Working Group

2020 UIUC Biosciences Journal Club (student organization)
Guest Lecturer “The Genomes and Health” Institute for Genomic Biology OLLI Course
Chicago Council on Science and Technology public outreach seminar series.

2021 Chambana Science Cafe

Teaching:

University of Illinois Urbana-Champaign:

2015-2020 Course Director MCB 429: Cellular Microbiology & Infectious Disease
2015-2020 Course Director MCB 539: Advanced Cellular Microbiology
2014-2016 Lecturer MCB 585: Current Topics in Microbiology
2016-Present Course Director MICR 595: Microbiology Graduate Seminar
2017-Present Course Director MCB 585: Current Topics in Microbiology
2021-Present Course Director MCB 426 Bacterial Pathogenesis

Other Universities:

2004 Instructor, Young Scientist Program Summer Focus Writing Course, Washington University in St. Louis, St. Louis, MO
2004 Teaching Assistant, Introductory Biology, Washington University in St. Louis, Department of Biology, St. Louis, MO
1999-2001 Teaching Assistant, General Chemistry, University of Washington Department of Chemistry, Seattle, WA

Trainees:

Undergraduates Past:

Name	Program	Period	Subsequent Position
Elizabeth Grass	None	Summer 2006-07	Research Technician Duke University
Carlos Garcia	NSF REU	Summer 2009	
Laura Hench	NSF REU	Summer 2010	Medical Student University of Kentucky
Marilyn Holt	NSF REU	Summer 2011	Graduate Student Vanderbilt University
Wesley Murphy	NSF REU	Summer 2012	
Angela Shupe	UIUC MCB	2014-2015	Wolfram Alpha
• Awarded an MCB Summer Research Fellowship			
• 2015 Francis M. and Harlie M. Clark for Research in Microbiology Awardee			
• Graduated with High Distinction			
Omar Zaki	UIUC MCB	2014-2015	Medical Student Ohio State University
• 2015 Awarded a Jenner Summer Research Internship			
Kevin Grudzinski	UIUC MCB	2014-2016	Graduate School Loyola University
• Graduated with High Distinction			
Jamie Zhu	UIUC MCB	2014-2016	Research Associate, Medical Devices as
• 2015 Awarded an MCB Summer Research Fellowship			NSF International
• 2015 Preble Summer Research Award			
• Graduated with High Distinction			
Philp Kim	UIUC MCB	2015-2017	
• 2016 Alice Helm Undergraduate Research Award			
• Graduated with High Distinction			
Shruti Srikumar	UIUC MCB	2016	
Aleeza Macek	UIUC IB	2016-2017	
• Graduated with Highest Distinction			
Ying Zhou	UIUC MCB	2017-2018	
• 2017 Helen Alford Hays Undergraduate Research Award			
• 2018 Jenner Family Summer Research Fellowship			
• Graduated with High Distinction			
Kundan Joshi	UIUC MCB	2017-2019	
• 2018 MCB Summer Research Fellowship			
Caroline Vermilya	UIUC MCB	2019-2020	

- 2020 MCB Summer Research Fellowship
- Graduated with High Distinction

Matthew Gao UIUC MCB 2019-2021
- 2019 MCB Summer Research Fellowship
- 2020 MCB Summer Research Fellowship
- Graduated with High Distinction

Destiny Henning UIUC MCB 2019-2021
- 2020 IGB Undergraduate Research Fellowship
- Graduated with High Distinction

Fatima Mubarik UIUC MCB 2021-2023
George Delis UIUC MCB 2021-2023

Graduate Students Past:

Name	Program	Period
Jessica Kelliher	Microbiology-PhD	2013-2018

- 2015 James R. Beck Graduate Research Fellowship in Microbiology
- 2015 Best Oral Presentation Department of Microbiology Retreat
- Subsequent Position Postdoctoral Fellowship University of Wisconsin Madison
- Subsequent Position Assistant Professor Medical College of Wisconsin

Yuritzi Garcia Microbiology-PhD 2013-2019
- 2017 Alice Helm Graduate Accomplishment Fellowship
- 2017 Best Poster Department of Microbiology Retreat
- 2018 URM Graduate Student Excellence Award

Talina Bastille Microbiology-MS 2017-2019
Kyle Grim Microbiology-PhD 2014-2020
- 2016 James R. Beck Graduate Research Fellowship in Microbiology
- 2019 Carl Deboer Accomplishment Fellowship

Eliot Joya Microbiology-MS 2018-2021
Paola Parraga-Solorzano Microbiology-PhD 2015-2022
- 2018 Helm Graduate Student Research Fellowship
- 2020 Microbiology Graduate Student Accomplishment Fellowship
- Subsequent Position Postdoctoral Fellowship University of Texas Southwestern

Katie Frye Microbiology -PhD 2017-2022
- 2019 Francis M. and Harlie M. Clark Microbiology Fellowship

Saika Hossain Microbiology -M.S. 2019-2023
- 2022 Chester W. and Nadine C. Houston Endowment Fellowship

Trainees Current:

Undergraduates:

Name	Program	Period
Clyde John	UIUC MCB	2022-Present
Zoe Daniel	UIUC MCB	2023-Present
Tyler Defort	UIUC IB	2023-Present

Graduate Students Current:

Name	Program	Period
Caroline Vermilya	Microbiology	2021-Present

- 2023 Houston Graduate Student Fellowship

Riley McFarlane Microbiology 2021-Present
Keegan Schoeller Microbiology 2022-Present

Service and Committees:

University of Illinois Urbana-Champaign Service and Committees:

Committees-Current

2015-Present Chair, MCB Distinction Committee
2017-Present MCB Communications Committee
2021-Present Campus Rodent Gnotobiotic Facility Advisory Committee
2022-Present Department of Microbiology Strategic Planning Committee

Committees-Past

2014-2021 Microbiology Outreach Committee
2014-2015 MCB Distinction Committee
2016-2021 Chair, Microbiology Seminar Committee
2017 College of Veterinary Medicine Department of Pathobiology Faculty Search Committee
2018 College of Veterinary Medicine Department of Pathobiology Faculty Search Committee
2018-2020 MCB Graduate Admissions Committee
2019-2021 College of Liberal Arts and Sciences Academic Standards Committee

Grant Review

2014 Reviewer, University Research Board
2017 Reviewer, University Research Board
2020 UIUC Vallee Foundation Application Reviewer
2021 Reviewer, University Research Board
2022 Internal Reviewer Vallee Foundation Limited Competition opportunity.

External Service and Committees:

Editorial Boards:

2016-Present Editorial Advisory Board Molecular Microbiology
2018-Present Editorial Board Journal of Bacteriology
2023-Present Editorial Board Infection and Immunity

Editor:

2021 Guest Editor mBio
2021-2022 Guest Editor (Special Collection) Fronters

Ad hoc journal reviewer:

PloS Pathogens, PNAS, Science Translational Medicine, Science Advances, Molecular Microbiology, Journal of Bacteriology, BioMetals, PloS One, Frontiers in Cellular and Infection Microbiology, mSphere, Nature Chemical Biology, mBio, Infection and Immunity, Journal of Invertebrate Pathobiology, Scientific Reports, Applied and Environmental Microbiology, Microbiology, *Biochemical Society Transactions*, *Biochemistry, eLife, Nature Microbiology, RCS Biology, ACS Infection, mSpectrum, Helion;* Journal of Inorganic Chemistry

Grant and Thesis Review:

2015 External Reviewer, Durham University, Junior Research Fellowship Program
2016-2021 Member, Topics in Bacterial Pathogenies Study Section – IDM (80, 81 etc)
2016 External Thesis Reviewer, University of Adelaide
2017 External Reviewer, Instituto Serrapilheira, Brazil
2017 Reviewer, British Medical Research Council
2018 Reviewer, NWO Netherlands Organization for Scientific Research
2018 Reviewer, Deutsche Forschungsgemeinschaft (DFG)
2019 Reviewer, Wellcome Trust
2019 Reviewer, Deutsche Forschungsgemeinschaft (DFG)
2020 Member, Combating Antibiotic Resistant Bacteria Interdisciplinary Research Units (CARBIRU) Panel, NIAID Study Section.
2020 Ohio University Research Council Ad Hoc Reviewer
2021 Reviewer, Netherlands Organization for Scientific Research (NWO)
2021 Czech Science Foundation, Ad hoc Reviewer

2021 Ad hoc Member NIH Fellowship review panel F07 (A, C, etc)
2021 External Thesis Reviewer, University of University of Tasmania
2021 Reviewer, Netherlands Organization for Scientific Research (NWO)
2022 Member, Infectious Diseases and Immunology B (IDIB) NIH Fellowship Review Panel
2022 Marsden Fund Reviewer New Zealand

Committees:

2003-2005 Young Scientist Program Summer Focus Planning Committee, Washington University in St. Louis, St. Louis, MO
2004-2005 Young Scientist Program Endowment and Finance Board, Washington University in St. Louis, St. Louis, MO
2004-2005 Co-Director, Summer Focus Young Scientist Program, Washington University in St. Louis, St. Louis, MO

Meetings:

Session Chair 2015 Cell Biology of Metals Gordon Research Conference
Co-Organizer 2016 Midwest Pathogenesis Meeting
Session Co-Chair 6th International Conference of Gram Positive Pathogens
Session Chair 2017 Staphylococcal Diseases Gordon Research Conference

Publications:

Research Articles:

1. Sexton JA, Miller JL, Yoneda A, **Kehl-Fie TE**, Vogel JP. *Legionella pneumophila* DotU and IcmF are required for stability of the Dot/Icm complex. Infect Immun 2004; 72:5983-5992.

2. Interthal H, Chen HJ, **Kehl-Fie TE**, Zotzmann J, Leppard JB, Champoux JJ. SCAN1 mutant Tdpl accumulates the enzyme-DNA intermediate and causes camptothecin hypersensitivity. EMBO J 2005; 24:2224-2233.

3. Surana NK, Buscher AZ, Hardy GG, Grass S, **Kehl-Fie T**, St Geme JW, III. Translocator proteins in the two-partner secretion family have multiple domains. J Biol Chem 2006; 281:18051-18058.

4. **Kehl-Fie TE**, St Geme JW, III. Identification and characterization of an RTX toxin in the emerging pathogen *Kingella kingae*. J Bacteriol 2007; 189:430-436.

5. **Kehl-Fie TE**, Miller SA, St Geme JW, III. *Kingella kingae* expresses type IV pili that mediate adherence to respiratory epithelial and synovial cells. J Bacteriol 2008; 190:7157-7163.

6. **Kehl-Fie TE**, Porsch EA, Miller SA, St Geme JW, III. Expression of *Kingella kingae* type IV pili is regulated by σ54, PilS, and PilR. J Bacteriol 2009; 191:4976-86.

7. **Kehl-Fie TE**, Porsch EA, Yagupsky P, Grass EA, Olbert C, Benjamin D, St. Geme JW, III. Examination of type IV pilus expression and pilus associated phenotypes in *K. kingae* clinical isolates. Infect Immun 2010; 78:1692-9.

8. **Kehl-Fie TE**, Skaar EP. Nutritional immunity beyond iron: A role for manganese and zinc. Curr Opin Chem Biol 2010; 14:218-24

9. *Grossoehme N**, *Kehl-Fie TE**, Ma Z, Adams KW, Cowart DM, Scott RA, Skaar EP, Giedroc DP. Control of copper resistance and inorganic sulfur metabolism by paralogous regulators in *Staphylococcus aureus*. J Biol Chem 2011; 286:13522-31
***These authors contributed equally to this work.**

10. **Kehl-Fie TE**, Chitayat S, Hood MI, Damo S, Restrepo N, Garcia C, Munro KA, Chazin WJ, Skaar EP.

Nutritional metal sequestration by calprotectin enhances neutrophil killing of *Staphylococcus aureus* through inhibition of superoxide defense. Cell Host and Microbe 2011; 10:158-64
***Featured in Nature Reviews Microbiology, Nat Rev Microbiology 2011 9:700**

11. Damo S, Chazin WJ, Skaar EP, **Kehl-Fie TE**. Inhibition of bacterial superoxide defense: A new front in the struggle between host and pathogen. Virulence 2012; 3:325-8

12. *****Liu JZ, Jellbauer S, Poe AJ, Ton V, Pesciaroli M, **Kehl-Fie TE**, Restrepo NA, Hosking MP, Edwards RA, Battistoni A, Pasquali P, Lane TE, Chazin WJ, Vogl T, Roth J, Skaar EP, Raffatellu M. Zinc sequestration by the neutrophil protein calprotectin enhances *Salmonella* growth in the inflamed gut. Cell Host and Microbe 2012; 11:227-39
***Featured in Nature Reviews Microbiology, Nat Rev Microbiology 2012 10:309**

13. Porsch EP, **Kehl-Fie TE**, St. Geme JW, III. Modulation of *Kingella kingae* adherence to respiratory epithelial cells by type IV pili, capsule, and a novel trimeric autotransporter. mBio 2012; 3:e00372-12

14. Hood MI, Mortensen BL, Moore JL, Zhang Y, **Kehl-Fie TE**, Sugitani N, Chazin WJ, Caprioli RM, Skaar EP. Identification of an *Acinetobacter baumannii* zinc acquisition system that facilitates resistance to calprotectin-mediated zinc sequestration. PloS Pathogens 2012; 8:e1003068

15. *****Damo SM, ***Kehl-Fie TE**, Sugitani N, Holt ME, Rathi S, Murphy WJ, Zhang Y, Betz C, Hench L, Fritz, G Skaar EP, Chazin WJ. Molecular basis for manganese sequestration by calprotectin and roles in the innate immune response to invading bacterial pathogens. Proc Natl Acad Sci USA 2013 110:3841-6
***These authors contributed equally to this work**

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17. Lee K, Boyd KL, Parekh DV, **Kehl-Fie TE**, Baldwin HS, Brakebusch C, Skaar EP, Boothby M, Zent R. Cdc42 promotes host defenses against fatal infection. Infect Immun 2013; 81:2714-23.

18. ***Kehl-Fie TE,** Zhang Y, Moore JL, Farrand AJ, Hood MI, Rathi S, Chazin WJ, Caprioli RM, Skaar EP. MntABC and MntH Contribute to Systemic *Staphylococcus aureus* Infection by Competing with Calprotectin for Nutrient Manganese. Infect Immun 2013; 81:3395-405
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19. Luebke JL, Shen J, Bruce KE, **Kehl-Fie TE**, Peng H, Skaar EP, Giedroc DP. The CsoR-like sulfurtransferase repressor (CstR) is a persulfide sensor in *Staphylococcus aureus*. Mol Microbiol. 2014; 94:1343-60

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21. Johnson MD, **Kehl-Fie TE**, Klein R, Kelly J, Burnham C, Mann B, Rosch JW. Role of Copper Efflux in Pneumococcal pathogenesis and resistance to macrophage-mediated immune clearance. Infect Immun 2015; 83:1684-94.

22. Johnson MD, **Kehl-Fie TE**, Rosch JW. Copper intoxication inhibits aerobic nucleotide synthesis in *Streptococcus pneumoniae*. Metallomics 2015; 7:786-94

23. Jacqueline M, *McDevitt CA, ***Kehl-Fie TE**. Host-imposed manganese starvation of invading pathogens: two routes to the same destination. Biometals 2015; 28:509-19

***Co-Corresponding Author**

24. Radin JN, Kelliher JL, Parraga Solorzano PK, **Kehl-Fie TE**. The two-component system ArlRS and alterations in metabolism enable *Staphylococcus aureus* to resist calprotectin-induced manganese starvation. PLoS Pathogens 2016; 12:e1006040.

25. #Garcia YM, Barwinska-Sendra A, Tarrant E, Skaar EP, *Waldron KJ, ***Kehl-Fie TE**. A superoxide dismutase capable of functioning with iron or manganese promotes the resistance of *Staphylococcus aureus* to calprotectin and nutritional immunity. PLoS Pathogens 2017; 13:e1006125.
#Featured on the University of Illinois at Urbana-Champaign Home Page
***Co-Corresponding Authors**

26. Peng H, Shen J, Edmonds KA, Luebke JL, Hickey AK, Palmer LD, Chang FJ, Bruce KA, **Kehl-Fie TE**, Skaar EP, and Giedroc DP. Sulfide homeostasis and nitroxyl intersect via formation of reactive sulfur species (RSS) in *Staphylococcus aureus*. mSphere 2017; 2e00082-17

27. Peng H, Zhang Y, Palmer LD, **Kehl-Fie TE**, Skaar EP, Trinidad JC, Giedroc DP. Hydrogen Sulfide and Reactive Sulfur Species Impact Proteome S-Sulfhydration and Global Virulence Regulation in *Staphylococcus aureus*. ACS Infectious Diseases. 2017; 3:744-755

28. Juttukonda LJ, Berends ETM, Zackular JP, Moore JL, Stier MT, Zhang Y, Schmitz JE, Beavers WN, Wijers CD, Gilston BA, **Kehl-Fie TE**, Atkinson J, Washington MK, Peebles RS, Chazin WJ, Torres VJ, Caprioli RM, Skaar EP. Dietary manganese promotes staphylococcal infection of the heart. Cell Host and Microbe 2017; 4:531-542.e8.

29. #Grim KP, San Francisco B, Radin JN, Brazel EB, Kelliher JL, Párraga Solórzano PK, Kim PC, McDevitt CA, **Kehl-Fie TE**. The metallophore staphylopine enables *Staphylococcus aureus* to compete with the host for zinc and overcome nutritional immunity. mBio 2017; 5:e01281-17.
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30. Kelliher JL, Radin JN, Grim KP, Párraga Solórzano PK, Degnan PH, **Kehl-Fie TE.** Acquisition of the phosphate transporter NptA enhances *Staphylococcus aureus* pathogenesis by improving phosphate uptake in divergent environments. Infect Immun. 2018; 86:1 e00631-17

31. Besold AN, Gilston BA, Radin JN, Ramsoomair C, Li CX, Cormack BP, Chazin WJ, **Kehl-Fie TE**, Culotta VC. The role of calprotectin in withholding zinc and copper from *Candida albicans*. Infection and Immunity 2018; 86:2 e00779-17

32. Kelliher JL, Radin JN, **Kehl-Fie TE.** PhoPR contributes to *Staphylococcus aureus* growth during phosphate starvation and pathogenesis in an environment specific manner. Infect Immun 2018; 86:10 e00371-18

33. Radin JN, Zhu J, Brazel E, McDevitt CA, **Kehl-Fie TE**. Synergy between nutritional immunity and independent host defenses contributes to the importance of the MntABC manganese transporter during *Staphylococcus aureus* infection. 87:1 e00642-18

34. Radin JN, Kelliher JL, Párraga Solórzano PK, Grim KP, Ramezanifard R, Slauch JM, **Kehl-Fie TE**. Metal-independent variants of phosphoglycerate mutase promote resistance to nutritional immunity and retention of glycolysis during infection. PloS Pathogens 2019; 15:7 e1007971.

35. Párraga Solórzano PK, Yao J, Rock CO, **Kehl-Fie TE**. Disruption of glycolysis by nutritional immunity activates a two-component system that coordinates a metabolic and anti-host response by *Staphylococcus aureus*. mBio 2019; 10:4 e01321-19.

36. Grim KP, Radin JN, Solórzano PKP, Morey JR, Frye KA, Ganio K, Neville SL, McDevitt CA, **Kehl-Fie TE**. Intracellular Accumulation of Staphylopine Can Sensitize *Staphylococcus aureus* to Host-Imposed Zinc Starvation by Chelation-Independent Toxicity. J Bacteriol. 2020; 202:9 JB.00014-20. PMID: 32071094; PMCID: PMC7148132.

37. Schurig-Briccio LA, Parraga Solorzano PK, Lencina AM, Radin JN, Chen GY, Sauer JD, **Kehl-Fie TE**, Gennis RB. Role of respiratory NADH oxidation in the regulation of *Staphylococcus aureus* virulence. EMBO Rep. 2020; 21:5 e45832. PMID: 32202364; PMCID: PMC7202225.

38. Kelliher JL, Brazel EB, Radin JN, Joya ES, Párraga Solórzano PK, Neville SL, McDevitt CA, Kehl-Fie TE. Disruption of Phosphate Homeostasis Sensitizes *Staphylococcus aureus* to Nutritional Immunity. Infect Immun. 2020; 88:6 IAI.00102-20. PMID: 32205403; PMCID: PMC7240092.

39. Barwinska-Sendra A, Garcia YM, Sendra KM, Baslé A, Mackenzie ES, Tarrant E, Card P, Tabares LC, Bicep C, Un S, ***Kehl-Fie TE**, *Waldron KJ. An evolutionary path to altered cofactor specificity in a metalloenzyme. Nat Commun. 2020 11:1 2738 PMID: 32483131; PMCID: PMC7264356.
***Co-Corresponding Authors**

40. Morey JR, **Kehl-Fie TE**. Bioinformatic Mapping of Opine-Like Zincophore Biosynthesis in Bacteria. mSystems. 2020; 5:4 mSystems.00554-20. PMID: 32817386; PMCID: PMC7438024.

41. Kelliher JL, Leder Macek AJ, Grudzinski KM, Radin JN, **Kehl-Fie TE**. *Staphylococcus aureus* Preferentially Liberates Inorganic Phosphate from Organophosphates in Environments where This Nutrient Is Limiting. J Bacteriol. 2020; 202:22 JB.00264-20. PMID: 32868400; PMCID: PMC7585055.

42. Burcham LR, Le Breton Y, Radin JN, Spencer BL, Deng L, Hiron A, Ransom MR, Mendonça JDC, Belew AT, El-Sayed NM, McIver KS, **Kehl-Fie TE**, Doran KS. Identification of Zinc-Dependent Mechanisms Used by Group B Streptococcus To Overcome Calprotectin-Mediated Stress. mBio. 2020; 11:6 mBio.02302-20. PMID: 33173000; PMCID: PMC7667036.

43. Price, SL, Vadyvaloo V, DeMarco JK, Brady A, Gray PA, **Kehl-Fie T**, Garneau-Tsodikova S, Perry RD, Lawrenz MB. Yersiniabactin Contributes to Overcoming Zinc Restriction during Yersinia pestis Infection of Mammalian and Insect Hosts. PNAS 2021 118(44):e2104073118. PMID: 34716262 PMCID: PMC8612365

44. Párraga Solórzano PK, Shupe AC, **Kehl-Fie TE**. The sensor histidine kinase ArlS is necessary for Staphylococcus aureus to activate ArlR in response to nutrient availability. J Bacteriol. 2021 203(24):e0042221. PMID: 34606376 PMCID: PMC8604075

45. Frye KA, Sendra KM, *Waldron KJ, ***Kehl-Fie TE**. Old dogs, new tricks: New insights into the iron/manganese superoxide dismutase family. J Inorg Biochem. 2022 230:111748. PMID: 35151099; PMCID: PMC9112591.
***Co-Corresponding Authors**

46. Burcham LR, Akbari MS, Alhajjar N, Keogh RA, Radin JN, **Kehl-Fie TE**, Belew AT, El-Sayed NM, McIver KS, Doran KS. Genomic Analyses Identify Manganese Homeostasis as a Driver of Group B Streptococcal Vaginal Colonization. mBio. 2022 Jun 28;13(3):e0098522. PMID: 35658538; PMCID: PMC9239048.

47. Charbonnier M, González-Espinoza G, **Kehl-Fie TE**, Lalaouna D. Battle for Metals: Regulatory RNAs at the Front Line. Front Cell Infect Microbiol. 2022;12:952948. PubMed PMID: 35865816; PubMed Central PMCID: PMC9294342.

48. Párraga Solórzano PK, Bastille TS, Radin JN, **Kehl-Fie TE**. A Manganese-independent Aldolase Enables *Staphylococcus aureus* To Resist Host-imposed Metal Starvation. mBio. 2023 14(1):e0322322. doi: 10.1128/mbio.03223-22 PMID: 36598285 PMCID: PMC9973326

49. Padron GC, Shuppara AM, Sharma A, Koch MD, Palalay JS, Radin JN, **Kehl-Fie TE**, Imlay JA, Sanfilippo JE. Shear rate sensitizes bacterial pathogens to H2O2 stress. Proc Natl Acad Sci U S A. 2023 120(11):e2216774120. doi:10.1073/pnas.2216774120. PMID: 36888662 PMCID: PMC10089187

50. Sendra KM, Barwinska-Sendra A, Mackenzie ES, Baslé A, ***Kehl-Fie TE**, *Waldron KJ. An ancient metalloenzyme evolves through metal preference modulation. Nature Ecology and Evolution. 2023 (5):732-744. doi: 10.1038/s41559-023-02012-0. PMID: 37037909 PMCID: PMC10172142
***Co-Corresponding Author**

51. Akbari MS*, Keogh RA*, Radin JN, Sanchez-Rosario Y, Johnson MD,L Horswill AR, Kehl-Fie TE, Burcham LR, and Doran KS. The impact of nutritional immunity on Group B streptococcal pathogenesis during wound infection. mBio 2023 Accepted In press.
***These authors contributed equally**

Book Chapters

1. Damo S, **Kehl-Fie TE**. Metal sequestration: An efficient strategy of antimicrobial peptides in nutritional immunity. *Antimicrobial Peptides - Role in Human Health and Disease*. Ed Harder J, Schroeder JM. Springer; 2016

2. Kelliher, JL **Kehl-Fie TE,** Competition for Manganese at the Host–Pathogen Interface. *Progress in Molecular Biology and Translational Science*. *Progress in Molecular Biology and Translation Science – Host Microbe Interactions* Vol 142 Elsevier; 2016

MCB DEPARTMENT OF Microbiology SCHOOL OF MOLECULAR & CELLULAR BIOLOGY

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Education

Ph.D. December 2008
University of Utah – Department of Biochemistry
Dissertation Title: VPS4 Recognition of ESCRT– III Substrates
Advisor: Dr. Wesley I. Sundquist

B.S. – Natural Sciences, May 1998
University of Wisconsin - Madison
Major: Bacteriology Major: Genetics

Appointments

University of Illinois at Urbana-Champaign, Department of Microbiology, School of Molecular and Cellular Biology, Urbana, IL
Assistant Professor, November 2018-present.
Research Topic: Application of advanced microscopy methods to understand interactions between viruses (HIV, SARS-CoV-2, Influenza A) and the immune system in tissues from animal models and humans.

University of Illinois at Urbana-Champaign, Carl R. Woese Institute for Genomic Biology, Urbana, IL
Theme Affiliate, *Infection Biology for One Health (IGOH),* November 2018-present.
Research Topic: Visualization of infectious microbial populations in their native environments.

University of Illinois at Urbana-Champaign, Department of Bioengineering, Urbana, IL
Affiliate faculty, June 2022 - present
Research Topic:

California Institute of Technology, Division of Biology and Biological Engineering, Pasadena, CA
Post-Doctoral Scholar, 2011-2018.
Advisor: Dr. Pamela J. Bjorkman
Research Topic: Multiscale imaging of HIV transmission in lymphoid tissues from animal models.

University of Utah, Department of Oncological Sciences, Salt Lake City, UT
Post-Doctoral Scholar, 2008-2010.
Advisor: Dr. Bryan Welm
Research Topic: Chemical genetic screening of mouse models of breast cancer to identify small molecule inhibitors of biological pathways required for tumorigenesis and normal development.

University of Utah, Department of Biochemistry, Salt Lake City, UT
Ph.D., 2003-2008.
Advisor: Dr. Wesley I. Sundquist
Research Topic: The role of the AAA ATPase Vps4 in terminal membrane fission events, including HIV-1 budding, multivesicular body biogenesis, and cytokinesis.

University of Utah, Molecular Biology Program, Salt Lake City, UT
Graduate Research Assistant, 2002-2003.

Advisors: Wes Sundquist Laboratory – HIV-1 budding
Michael Kay Laboratory – HIV-1 host-cell entry
Chris Hill Laboratory – Structural biology of nucleosome remodeling
Alejandro Sánchez-Alvarado Laboratory – Planarian regeneration

Eragen Biosciences, Madison, WI
Research Scientist, 2000-2002.
Supervisor(s): Dr. James Prudent and Dr. Jennifer Grenier
Research Topic: Development of DNA and RNA detection assays using non-standard DNA nucleotides incorporated by mutant *Taq* polymerases and reverse transcriptases.

University of Wisconsin – Food Research Institute, Madison, WI
Research Technician, 1998-2000.
Advisor: Dr. Fun Sun Chu (Retired)
Research Topic: Immunochemistry – Development of detection assays for mycotoxins found in human foods and animal feeds.

University of Wisconsin – Department of Pathobiological Sciences, Madison, WI
Independent Study, 1997-1998.
Advisor: Dr. Susan West
Research topic: Bacterial Pathogenesis – Determination of the genetic organization of *Pseudomonas aeruginosa* virulence pathways.

University of Wisconsin – Department of Biomolecular Chemistry, Madison, WI
Student Laboratory Assistant, 1995–1996.
Advisor: Dr. Betty Craig
Research topic: Yeast Genetics – Evaluating heat shock protein expression in Saccharomyces cerevisiae under environmental stress conditions.

Honors and Awards

2021 COVID-19 Impact Award, University of Illinois at Urbana-Champaign, 2021
2016-2018 IDEA Award, (PI: Bjorkman PJ), California HIV/AIDS Research Program
2014-2016 Rosalind Alcott Post-Doctoral Fellowship Award, California Institute of Technology
2012-2014 Post-Doctoral Fellowship Award, Ragon Institute of MGH, MIT, and Harvard
2011-2012 Division of Biology Post-Doctoral Fellowship Award, California Institute of Technology

Current Funding

2022-2025 NSF CAREER 1943740; PI: Kieffer, C; "Viral control of cell migration in diverse host-cell types"

2022-2026 NIAID P01A169609; PI: Smith, D (Sub-award: Kieffer, C); "Leaving, Coming, and Staying HIV Obligate Microenvironments (HOME)"

2022-2024 Cancer Center at Illinois Seed Grant; PI: Gaulke, C; "Targeting the Bidirectional Crosstalk Between Gut Microbial Metabolism and Bile Acids to Alleviate Intestinal and Liver Tumorigenesis"

Publications

Tan TJC, Mou Z, Lei R, Ouyang WO, Yuan M, Song G, Andrabi R, Wilson IA, **Kieffer C**, Dai X, Matreyek KA, Wu NC. High-throughput identification of prefusion-stabilizing mutations in SARS-CoV-2 spike. Nat Commun.

2023 Apr 10;14(1):2003. doi: 10.1038/s41467-023-37786-1. PubMed PMID: 37037866; PubMed Central PMCID: PMC10086000.

Tan TJC, Mou Z, Lei R, Ouyang WO, Yuan M, Song G, Andrabi R, Wilson IA, **Kieffer C**, Dai X, Matreyek KA, **Wu NC**. High-throughput identification of prefusion-stabilizing mutations in SARS-CoV-2 spike. *bioRxiv* DOI: 10.1101/2022.09.24.509341

Ouyang WO, Tan TJC, Lei R, Song G, **Kieffer C**, Andrabi R, Matreyek KA, Wu NC. Probing the biophysical constraints of SARS-CoV-2 spike N-terminal domain using deep mutational scanning. *Science Advances*, 2022. doi: 10.1126/sciadv.add7221.

Hoffman MAG, **Kieffer C**, Bjorkman PJ. In vitro Characterization of engineered red blood cells as potent viral traps against HIV-1 and SARS-CoV-2. *Molecular Therapy – Methods & Clinical Development*, 2021. doi: 10.1016/j.omtm.2021.03.003

Nguyen JT, Reissen RR, Zhang T, **Kieffer C**, Anakk S. Deletion of intestinal SHP impairs short-term response to cholic acid challenge in male mice. *Endocrinology, 2021.* doi.org/10.1210/endocr/bqab063.

Zhang T, Gupta A, Frederick D, Layman L, Smith, DM, Gianella S, **Kieffer C.** 3D Visualization of Immune Cell Populations in HIV-Infected Tissues via Clearing, Immunostaining, Confocal, and Light Sheet Fluorescence Microscopy. *Journal of Visualized Experiments*, 2021. doi: 10.3791/62441.

Ventura, JD, Beloor, J, Allen, E, Zhang, T, Haugh, KA, Uchil, PD, Ochsenbauer, C, **Kieffer, C**, Kumar, P, Hope, TJ, Mothes, W. Longitudinal bioluminescent imaging of HIV-1 infection during antiretroviral therapy and treatment interruption in humanized mice. *PLoS Pathog,* 2019, 15(12): e1008161.

Ladinsky MS, Khamaikawin W, Jung Y. Lin S, Lam J, An DS, Bjorkman PJ, **Kieffer C**. Mechanisms of virus dissemination in bone marrow of HIV-1–infected humanized BLT mice. *eLife* 2019; 8:e46916. doi:10.7554/eLife.46916

Kieffer, C, Ladinsky MS, Bjorkman, PJ Multiscale imaging of HIV-1 transmission in humanized mice. *AIDS Res Hum Retroviruses, 2017*. doi:10.1089/AID.2017.0142
***Cover Article**

Kieffer C, Ladinsky MS, Ninh A, Galimidi RP, Bjorkman PJ. Longitudinal imaging of HIV-1 spread in humanized mice with parallel 3D immunofluorescence and electron tomography. *eLIFE*, 2017. DOI: http://dx.doi.org/10.7554/eLife.23282.

Basham, KJ, Leonard, CJ, **Kieffer, C**, Shelton, DN, Bhonde, VR, Looper, RE, and Welm, BE. Dioxin Exposure Blocks Lactation Through a Direct Effect on Mammary Epithelial Cells Mediated by the Aryl Hydrocarbon Receptor Repressor, Toxicol Sci, 2014. doi:10.1093/toxsci/kfu203

Basham, KJ, Bhonde, VR, **Kieffer, C**, Mack, JBC, Welm, BE, and Looper RE. Bis-aryloxadiazoles as effective activators of the aryl hydrocarbon receptor. Bioorganic & Medicinal Chemistry Letters, 2014 Jun 1;24(11):2473-6. doi: 10.1016/j.bmcl.2014.04.013.

Ladinsky, MS, **Kieffer C**, Olson, G, Deruaz, M, Vrbanac, V, Tager, AM, Kwon, DS, Bjorkman, PJ. Electron Tomography of HIV-1 Infection in Gut-Associated Lymphoid Tissue. PLoS Pathog 2014, Jan 10(1): e1003899. DOI: 10.1371/journal.ppat.1003899

*Basham, KJ, ***Kieffer, C,** Shelton, DN, Leonard, CJ, Bhonde, VR, Vankayalapati, H, Milash, B, Bearss, DJ, Looper, RE, Welm, BE. Chemical Genetic Screen Reveals a Role for Desmosomal Adhesion in Mammary Branching Morphogenesis. J Biol Chem 2013 Jan 25; 288(4):2261-70.
*** Authors contributed equally**

Smith, BA, Shelton, DN, **Kieffer, C**, Milash, B, Usaqry, J, Perou, CM, Bernard, PS, Welm, BE Targeting the PyMT Oncogene to Diverse Mammary Cell Populations Enhances Tumor Heterogeneity and Generates Rare Breast Cancer Subtypes. Genes & Cancer, 2012, Sep; 3(9-10):550-63

Gonciarz, MD, Whitby, F, Eckert, DM, **Kieffer, C**, Heroux, H, Sundquist, WI, Hill, CP. Biochemical and structural studies of yeast VPS4 oligomerization. J Mol Biol, 2008, Dec 26; 384(4):878-95.

Kieffer, C, Skalicky, JJ, Morita, E, De Domenico, I, Ward, DM, Kaplan, J, Sundquist, WI. Two distinct modes of ESCRT-III recognition are required for VPS4 functions in lysosomal protein targeting and HIV-1 budding. Developmental Cell, 2008 Jul; 15(1):62-73.

Stuchell-Brereton, MD, Skalicky JJ, **Kieffer, C**, Karren, MA, Ghaffarian S, Sundquist, WI. ESCRT-III recognition by VPS4 ATPases. Nature, 2007 Oct 11;449(7163):740-4.

Wright, ER, Schooler, JB, Ding, HJ, **Kieffer, C**, Fillmore, C, Sundquist, WI, Jensen, GJ Electron cryotomography of immature HIV-1 virions reveals the structure of the CA and SP1 Gag shells. *EMBO Journal*, 2007 Apr 18;26(8):2218-26.

Moser, MJ, Marshall, DJ, Grenier, JK, **Kieffer, CD**, Killeen, AA, Ptacin, JL, Richmond, CS, Roesch, EB, Scherrer, CW, Sherrill, CB, Van Hout, CV, Zanton, SJ, Prudent, JR. Exploiting the enzymatic recognition of an unnatural base pair to develop a universal genetic analysis system. *Clinical Chemistry,* 2003 Mar; 49(3):407-14.

Selected Seminars, Conference Talks, and Posters

2023 Denver University, Molecular and Cellular Biophysics Program and Biological Sciences, Invited Speaker.
2022 American Society for Virology Annual Meeting, Talk
2021 Keystone Symposia, HIV Pathogenesis and Cure, Talk
2021 University of Wisconsin – Madison, Institute for Molecular Virology Seminar Series, Invited Speaker.
2020 Keystone Symposia, HIV Pathogenesis and Cure, Talk (Cancelled due to COVID19)
2019 University of California - San Diego, Center for AIDS Research Seminar Series, Invited Speaker
2019 Midwest Microbial Pathogenesis Conference, Invited Speaker
2019 Loyola School of Medicine, Microbiology and Immunology Seminar Series, Invited Speaker
2019 Cold Spring Harbor Retroviruses Meeting, Talk
2019 Keystone Symposia, Imaging Across Scales: Leveraging the Revolution in Resolution, Talk
2018 National Institute of Mental Health, Role of Neuroimaging and HIV Workshop, Invited Speaker
2018 Cold Spring Harbor Retroviruses Meeting, Talk
2018 Palm Springs Symposium on HIV/AIDS, Talk
2018 Oregon National Primate Research Center, Invited Speaker
2017 NIH Structural Biology Related to HIV/AIDS Conference, NIAID Invited Speaker
2017 Cold Spring Harbor Retroviruses Meeting, Poster
2016 University of Wisconsin Global Infectious Diseases Seminar Series, Invited Speaker
2016 Cold Spring Harbor Retroviruses Meeting, Talk
2016 Keystone Symposia, HIV Persistence: Pathogenesis and Eradication, Talk
2016 Biophysical Society Annual Meeting, Poster
2008 Cold Spring Harbor Retroviruses Meeting, Talk

Teaching Experience

University of Illinois at Urbana-Champaign, Department of Microbiology, Urbana, IL. Assistant Professor, MCB 100 (Introductory Microbiology, instructor), Fall 2019 - present. MCB 585 (Microbiology Journal Club, guest lecturer). MCB 436 (Global Biosecurity, guest lecturer).

Westminster College, Department of Biology, Salt Lake City, UT. Adjunct Teaching Professor, Biology 420 (Senior Seminar – Scientific Writing and Communication), fall 2009.

Westminster College, Department of Biology, Salt Lake City, UT. Adjunct Teaching Professor, Biology 105 (Introductory Biology), spring 2009.

University of Utah, Department of Nutrition. Guest lecturer, Nutrition 6450 (Graduate Level Nutrition Biochemistry), fall 2005, 2006, 2007, 2008.

University of Utah, Department of Biochemistry. Teaching Assistant, Molecular Biology 6410 (Graduate Level Biochemistry), fall 2003.

Supervision and Leadership positions

Assistant Professor – UIUC: Management of ~10-person research lab, MCB Distinction Committee, MCB BEST Scholars Program, MCB Graduate Admissions Committee.

Post-Doctoral Researcher - California Institute of Technology: Management of several technicians, graduate students, and undergraduates working on current fellowship projects. Interviewed and evaluated candidates for the Caltech/USC MD-PhD graduate program, 2011-17.

Post-Doctoral Researcher – University of Utah: Direct mentor to 12 undergraduates, graduate rotation students, graduate students, technicians, and research assistants working on diverse research projects, several of which resulted in co-authored publications.

Ph.D. - University of Utah: Supervision of several graduate rotation students. Publication of multiple successful collaborative projects with other graduate students, postdoctoral fellows, and research faculty.
University of Utah Bioscience Program Graduate Student President (2005-2007)
University of Utah Molecular Biology Program Steering Committee, Student Representative (2005-2007)
University of Utah Molecular Biology Program Curriculum Committee (2003-2004)

Eragen Biosciences: Management of research technicians working on diverse aspects of a research project that culminated in successful publication and marketing of technology. Company representative for several technology displays for large pharmaceutical companies including Bayer and Perkin-Elmer.

Food Research Institute – University of Wisconsin: Supervision of multiple undergraduate students.

References

Pamela J. Bjorkman, Ph.D. (Post-Doctoral Advisor)
Centennial Professor of Biology
California Institute of Technology, Division of Biology and Bioengineering
bjorkman@caltech.edu

Bryan Welm, Ph.D. (Post-Doctoral Advisor)
Associate Professor, Huntsman Cancer Institute, University of Utah
Bryan.Welm@hci.utah.edu

Wesley I. Sundquist, Ph.D. (Thesis Advisor)
H.A. and Edna Benning Presidential Endowed Chair
Professor & Co-Chair, Department of Biochemistry, University of Utah
wes@biochem.utah.edu

CURRICULUM VITAE

2023-04

Name: Andrei Kuzminov

Address: Department of Microbiology
University of Illinois, Urbana-Champaign
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Education

Year	Degree	Field and School
1985	M.A., *cum laude*	Biochemistry, University of Novosibirsk (Russia)
1990	Ph.D.	Molecular Genetics, Institute of Cytology and Genetics, Novosibirsk (Russia)

Research and Professional Experience

1984 - 1985 University of Novosibirsk, USSR (Russia)
Senior thesis research with Dr. Alexander V. Mazin
Topic: "Mechanisms of deletion formation by directed mutagenesis in *E. coli*"

1985 - 1990 Institute of Cytology and Genetics, Novosibirsk, USSR (Russia)
Doctoral thesis research with Dr. Grigory L. Dianov
Topic: "Molecular genetics of homologous recombination in *E. coli* plasmids"

1991 - 2000 Institute of Molecular Biology, University of Oregon, Eugene, Oregon
Postdoctoral Research Associate with Dr. Franklin W. Stahl
Topic: "Molecular genetics of homologous recombination in *E. coli* and phage λ"
Topic: "In vivo biochemistry of DNA replication and recombinational repair"

2000 - 2006 Department of Microbiology, University of Illinois, Urbana-Champaign.
Assistant professor
Theme: “Chromosomal Lesions: Formation, Avoidance, Repair"
Topics: “Replication-Dependent Chromosomal Fragmentation”
"Non-canonical DNA precursors"
“Mechanisms of DNA replication”

2006 - 2013 Department of Microbiology, University of Illinois, Urbana-Champaign.
Associate professor
Theme: “Chromosomal Lesions: Formation, Avoidance, Repair and Applications”
Topics: “Replication-dependent chromosomal fragmentation”
“Contamination and disbalance of the DNA precursor pools”
Additional interests: “Mechanisms of DNA replication in vivo”
“Advanced genetic analysis: synthetic lethals and their suppressors”
"Mechanisms of genetic lethality"
"Laboratory as a niche: breaking through human-imposed barriers to cross-contamination"

2013 - present Department of Microbiology, University of Illinois, Urbana-Champaign.
Professor
Theme: “Chromosomal Lesions: Formation, Avoidance, Repair and Applications”
Topics: Thymineless death
The mechanisms and potentiation of oxidative DNA damage
The nature of the chromosomal RNA-containing lesions
Mechanisms of DNA replication in vivo
Mechanisms and consequences of chromosomal fragmentation
Contamination and disbalance of the DNA precursor pools
Misrepair and disrepair of chromosomal lesions
Chromosomal replication complexity
The nucleoid vs the "riboid": the role of phase separation in the structure and function of the prokaryotic cell.

Peer-reviewed Publications

(as of 2023-04, starting with the most recent one)

73. Mahaseth T and Kuzminov A (2022) Catastrophic chromosome fragmentation probes the nucleoid structure and dynamics in Escherichia coli. Nucleic Acids Res. 50: 11013-11027. PMID: 36243965, PMCID: PMC9638926

72. Rao TVP and Kuzminov A (2022) Robust linear DNA degradation supports replication-initiation-defective mutants in Escherichia coli. G3 (Bethesda) 12:jkac228. PMID: 36165702, PMCID: PMC9635670

71. Khan SR and Kuzminov A (2022) Thymine-starvation-induced chromosomal fragmentation is not required for thymineless death in *Escherichia coli*. Mol. Microbiol., 117: 1138-1155, PMID: 35324030, DOI: 10.1111/mmi.14897 PMC Journal – In Process

70. Agashe P and Kuzminov A (2022) Nitric oxide precipitates catastrophic chromosome fragmentation by bolstering both hydrogen peroxide and Fe(II) Fenton reactants in *E. coli*. J. Biol. Chem. 298: 101825. PMID: 35288189, PMCID: PMC9018393

69. Rao TVP and Kuzminov A (2022) Oxidative damage blocks thymineless death and trimethoprim poisoning in *Escherichia coli*. J. Bacteriol. 204: e00370-21. PMID: 34633866, PMCID: PMC8765444

68. Rao TVP and Kuzminov A (2021) Electron microscopy reveals unexpected cytoplasm and envelope changes during thymineless death in *Escherichia coli*. J. Bacteriol., 203: e0015021. PMID: 34152201, PMCID: PMC8351628

67. Agashe P and Kuzminov A (2021) Catalase inhibition by nitric oxide potentiates hydrogen peroxide to trigger catastrophic chromosome fragmentation in *Escherichia coli*. Genetics, 218: iyab057. PMID: 34027548, PMCID: PMC8225348

66. Kouzminova EA and Kuzminov A (2021) Ultraviolet-induced RNA:DNA hybrids interfere with chromosomal DNA synthesis. Nucleic Acids Res. 49: 3888-3906. PMID: 33693789, PMCID: PMC8053090

65. Rao TVP and Kuzminov A (2020) Exopolysaccharide defects cause hyper-thymineless death in *Escherichia coli* via massive loss of chromosomal DNA and cell lysis. Proc. Natl. Acad. Sci. USA, 117: 33549-33560. PMID: 33318216, PMCID: PMC7777189

64. Kuzminov A (2019) Half-Intercalation Stabilizes Slipped Mispairing and Explains Genome Vulnerability to Frameshift Mutagenesis by Endogenous "Molecular Bookmarks". BioEssays, 41(9):e1900062. PMID: 31379009, PMCID: PMC6707839

63. Khan SR and Kuzminov A (2019) Thymineless death in *Escherichia coli* is unaffected by the chromosomal replication complexity. J. Bacteriol. 209: e00797-18. PMID: 30745374, PMCID: PMC6456860

62. Rao TVP and Kuzminov A (2019) Sources of thymidine and analogs fueling futile damage-repair cycles and ss-gap accumulation during thymine starvation in *Escherichia coli*. DNA Repair, 75: 1-17. PMID: 30684682, PMCID: PMC6382538

61. Cronan GE, Kouzminova EA and Kuzminov A (2019) Near-continuously synthesized leading strands in Escherichia coli are broken by ribonucleotide excision. Proc. Natl. Acad. Sci. USA, 116: 1251-1260. PMID: 30617079, PMCID: PMC6347710

60. Kuzminov A (2018) When DNA Topology Turns Deadly - RNA Polymerases Dig in Their R-Loops to Stand Their Ground: New Positive and Negative (Super)Twists in the Replication-Transcription Conflict. Trends Genet. 34: 111-120. PMID: 29179918, PMCID: PMC5967978

59. Khan SR and Kuzminov A (2017) Degradation of RNA during lysis of *Escherichia coli* cells in agarose plugs breaks the chromosome. PLOS ONE 12(12): e0190177. PMID: 29267353, PMCID: PMC5739488

58. Kouzminova EA, Kadyrov FF and Kuzminov A (2017) RNase HII saves *rnhA* mutant *Escherichia coli* from R-loop-associated chromosomal fragmentation. J. Mol. Biol. 429: 2873-2894. PMID: 28821455; PMCID: PMC5610948

57. Khan SR and Kuzminov A (2017) Pulsed-field gel electrophoresis does not break *E. coli* chromosome undergoing excision repair after UV irradiation. Anal. Biochem., 526: 66-68. PMID: 28351616; PMCID: PMC5497846

56. Mahaseth T and Kuzminov A (2017) Potentiation of hydrogen peroxide toxicity: From catalase inhibition to stable DNA-iron complexes. Mutat. Res.: Rev. Mutat. Res., 773: 274-281. PMID: 28927535, PMCID: PMC5607474

55. Kuzminov A (2016) Chromosomal replication complexity: a novel DNA metrics and genome instability factor. PLOS Genet., 12(10):e1006229. PMID: 27711112, PMCID: PMC5053440, doi: 10.1371/journal.pgen.1006229

54. Mahaseth T and Kuzminov A (2016) Prompt repair of hydrogen peroxide-induced DNA lesions prevents catastrophic chromosomal fragmentation. DNA Repair, 41: 42-53. PMID: 27078578, PMCID: PMC4851570

53. Khan SR, Mahaseth T, Kouzminova EA, Cronan GE and Kuzminov A. (2016) Static and dynamic factors limit chromosomal replication complexity in *Escherichia coli*, avoiding dangers of runaway overreplication. Genetics, 202: 945-960. PMID: 26801182, PMCID: PMC4788131

52. Mahaseth T. and Kuzminov A. (2015) Cyanide enhances hydrogen peroxide toxicity by recruiting endogenous iron to trigger catastrophic chromosomal fragmentation. Mol. Microbiol., 96: 349-367. PMID: 25598241, PMCID: PMC4414041

51. Rotman E., Khan SR, Kouzminova EA and Kuzminov A. (2014) Replication fork inhibition in *seqA* mutants of *Escherichia coli* triggers replication fork breakage. Mol. Microbiol., 93: 50-64. PMID: 24806348, PMCID: PMC4078979

50. Kuzminov A. (2014) The precarious prokaryotic chromosome. J. Bacteriol. 196: 1793-1806. PMID: 24633873, PMCID: PMC4011006

49. Kuzminov A. (2013) The chromosome cycle of prokaryotes. Mol. Microbiol., 90: 214-227. PMID: 23962352, PMCID: PMC3800152

48. Amado L. and Kuzminov A. (2013) Low-molecular-weight DNA replication intermediates in *Escherichia coli*: mechanism of formation and strand specificity. J. Mol. Biol., 425: 4177-4191. PMID: 23876705, PMCID: PMC3812275

47. Khan S.R. and Kuzminov A. (2013) Trapping and breaking of in vivo nicked DNA during pulsed-field gel electrophoresis. Anal. Biochem., 443: 269-281. PMID: 23770235. PMCID: PMC3865863

46. Kuzminov A. (2013) Inhibition of DNA synthesis facilitates expansion of low-complexity repeats: is strand slippage stimulated by transient local depletion of specific dNTPs? BioEssays, 35: 306-313. PMID: 23319444, PMCID: PMC3763825

45. Rotman E., Kouzminova E., Plunkett III G. and Kuzminov A. (2012) Genome of enterobacteriophage Lula/phi80 and insights into its ability to spread in the laboratory environment. J. Bacteriol., 194: 6802-6817. PMID: 23042999, PMCID: PMC3510586

44. Kuong K.J and Kuzminov A. (2012) Disintegration of nascent replication bubbles during thymine starvation triggers RecA- and RecBCD-dependent replication origin destruction. J. Biol. Chem., 287: 23958-23970. PMID: 22621921, PMCID: PMC3390671

43. Kouzminova E.A. and Kuzminov A. (2012) Chromosome demise in the wake of ligase-deficient replication. Mol. Microbiol., 84: 1079-1096. **Cover story.** PMID: 22582878, PMCID: PMC3370103

42. Khan S.R. and Kuzminov A. (2012) Replication forks stalled at UV-lesions are rescued via RecA- and RuvABC-catalyzed disintegration in *Escherichia coli*. J. Biol. Chem., 287: 6250–6265. PMID: 22194615, PMCID: PMC3307332

41. Kuzminov A. (2011) Homologous Recombination—Experimental Systems, Analysis, and Significance. EcoSal Plus, pii: 7.2.6. PMID: 25309934, PMCID: PMC4190071
Used to be: Kuzminov A. (2011) Chapter 7.2.6, Homologous Recombination—Experimental Systems, Analysis, and Significance. *In* A. Böck, R. Curtiss III, J. B. Kaper, P. D. Karp, F. C. Neidhardt, J. M. Slauch, and C. L. Squires (ed.), EcoSal—*Escherichia coli* and *Salmonella*: Cellular and Molecular Biology. ASM Press, Washington, DC. http://www.ecosal.org. doi: 10.1128/ecosal.7.2.6.

40. Rotman E., Amado L. and Kuzminov A. (2010) Unauthorized Horizontal Spread in the Laboratory Environment: The Tactics of Lula, a Temperate Lambdoid Bacteriophage of *Escherichia coli*. PLoS ONE, 5: 1-13 (e11106). PMID: 20559442, PMCID: PMC2885432

39. Kuong K.J. and Kuzminov A. (2010) Stalled replication fork repair and misrepair during thymineless death in *Escherichia coli*. Genes-to-Cells, 15: 619–634. PMID: 20465561, PMCID: PMC3965187

38. Budke B. and Kuzminov A. (2010) Production of clastogenic DNA precursors by the nucleotide metabolism in *Escherichia coli*. Mol. Microbiol., 75: 230-245. PMID: 19943897, PMCID: PMC4433007

37. Amado L. and Kuzminov A. (2009) Polyphosphate Accumulation in *Escherichia coli* in response to defects in DNA metabolism. J Bacteriol. 191: 7410-7416. PMID: 19837803, PMCID: PMC2786612

36. Kuong K.J. and Kuzminov A. (2009) Cyanide, Peroxide and Nitric Oxide Formation in Solutions of Hydroxyurea Causes Cellular Toxicity and May Contribute to Its Therapeutic Potency. J. Mol. Biol. 390: 845-862. PMID: 19467244, PMCID: PMC2728359

35. Rotman E., Bratcher P. and Kuzminov A. (2009) Reduced LPS phosphorylation in *Escherichia coli* lowers the elevated ori/ter ratio in *seqA* mutants. Mol. Microbiol. 72: 1273-1292. PMID: 19432803, PMCID: PMC2691451

34. Ting H., Kouzminova E.A. and Kuzminov A. (2008) Synthetic lethality with the *dut* defect in *Escherichia coli* reveals layers of DNA damage of increasing complexity due to uracil incorporation. J. Bacteriol. 190: 5841-5854. PMID: 18586941, PMCID: PMC2519533

33. Kouzminova E.A. and Kuzminov A. (2008) Patterns of chromosomal fragmentation due to uracil-DNA incorporation reveal a novel mechanism of replication-dependent double-strand breaks. Mol. Microbiol., 68: 202-215. PMID: 18312272, PMC Journal – In Process

32. Rotman E. and Kuzminov A. (2007) The *mutT* defect does not elevate chromosomal fragmentation in *Escherichia coli* because of the surprisingly low levels of MutM/MutY-recognized DNA modifications. J. Bacteriol., 189: 6976-6988. PMID: 17616589, PMCID: PMC2045204

31. Budke B. and Kuzminov A. (2006) Hypoxanthine incorporation is non-mutagenic in *Escherichia coli*. J. Bacteriol., 188: 6553-6560. PMID: 16952947, PMCID: PMC1595496

30. Amado L. and Kuzminov A. (2006) The replication intermediates in *Escherichia coli* are not the product of DNA processing or uracil excision. J. Biol. Chem., 281: 22635-22646. PMID: 16772291, PMC Journal – In Process

29. Lukas L. and Kuzminov A. (2006) Chromosomal fragmentation is the major consequence of the *rdgB* defect in *Escherichia coli*. Genetics, 172: 1359-1362. PMID: 16322510, PMCID: PMC1456232

28. Kouzminova E.A. and Kuzminov A. (2006) Fragmentation of replicating chromosomes triggered by uracil in DNA. J. Mol. Biol. 355: 20-33. PMID: 16297932, PMC Journal – In Process

27. Shi I.Y., Stansbury J. and Kuzminov A. (2005) Defect in acetyl-CoA<—>acetate pathway poisons recombinational repair-deficient mutants of *Escherichia coli*. J. Bacteriol. 187: 1266-1275. PMID: 15687190, PMCID: PMC545612

26. Kuzminov A. and Stahl F.W. (2005) Chapter 19. Overview of Homologous Recombination and Repair Machines. *In*: The Bacterial Chromosome. ed: Higgins N.P., Washington, D.C.: ASM Press, 349-367.

25. Kouzminova E.A., Rotman E, Macomber L., Zhang J. and Kuzminov A. (2004) RecA-dependent mutants in *Escherichia coli* reveal strategies to avoid chromosomal fragmentation. Proc. Natl. Acad. Sci. USA, 101: 16262-16267. PMID: 15531636, PMCID: PMC528955

24. Kouzminova E.A. and Kuzminov A. (2004) Chromosomal fragmentation in dUTPase-deficient mutants of *Escherichia coli* and its recombinational repair. Mol. Microbiol. 51(5): 1279-1295. PMID: 14982624, PMC Journal – In Process

23. Bradshaw J.S. and Kuzminov A. (2003) RdgB acts to avoid chromosome fragmentation in *Escherichia coli*. Mol. Microbiol. 48(6): 1711-1725. PMID: 12791149, PMC Journal – In Process

22. Miranda A. and Kuzminov A. (2003) Chromosomal lesion suppression and removal in *Escherichia coli* via linear DNA degradation. Genetics 163: 1255-1271. PMID: 12702673, PMCID: PMC1462524

21. Kuzminov A. (2001) DNA replication meets genetic exchange: Chromosomal damage and its repair by homologous recombination. Proc. Natl. Acad. Sci. USA 98(15): 8461-8468. PMID: 11459990, PMCID: PMC37458

20. Kuzminov A. (2001) Single-strand interruptions in replicating chromosomes cause double-strand breaks. Proc. Natl. Acad. Sci. USA 98(15): 8241-8246. PMID: 11459959, PMCID: PMC37427

Postdoctoral Research (Institute of Molecular Biology, University of Oregon)

19. Kuzminov A. (1999) Recombinational repair of DNA damage in *Escherichia coli* and bacteriophage λ. Microbiol. Mol. Biol. Rev. 63(4): 751-813. PMID: 10585965, PMCID: PMC98976

18. Kuzminov A. and Stahl F.W. (1999) Double-strand end repair via the RecBC pathway in *Escherichia coli* primes DNA replication. Genes Dev. 13(3): 345-356. PMID: 9990858, PMCID: PMC316432

17. Stahl M.M., Thomason L., Poteete A.R., Tarkowski T., Kuzminov A., Stahl F.W. (1997) Annealing *vs*. invasion in phage λ recombination. Genetics 147(3): 961-977. PMID: 9383045, PMCID: PMC1208271

16. Kuzminov A., Schabtach E. and Stahl F.W. (1997) Study of plasmid replication in *Escherichia coli* with a combination of 2D gel electrophoresis and electron microscopy. J. Mol. Biol. 268(1): 1-7. PMID: 9149135

15. Kuzminov A. and Stahl F.W. (1997) Stability of linear DNA in *recA* mutant *Escherichia coli* cells reflects ongoing chromosomal DNA degradation. J. Bacteriol. 179(3): 880-888. PMID: 9006046, PMCID: PMC178773

14. Kuzminov A. (1996) Unraveling the late stages of recombinational repair: metabolism of DNA junctions in *Escherichia coli*. BioEssays 18(9): 757-765. PMID: 8831292

13. Kuzminov A. (1996) Mutant fixation via plasmid dimerization and its relation to human diseases. Trends in Genetics 12(7): 246-249. PMID: 8763494

12. Kuzminov A. (1996) Recombinational Repair of DNA Damage. Austin: R.G. Landes Company, 210 p. ISBN: 0-412-10671-X — **This is a monograph**

11. Kuzminov A. (1995) A mechanism for induction of the SOS response in *E. coli*: Insights into the regulation of reversible protein polymerization *in vivo*. J. Theor. Biol. 177: 29-43. PMID: 8551748

10. Kuzminov A. (1995) Instability of inhibited replication forks in *E. coli*. BioEssays 17(8): 733-741. PMID: 7661854

9. Myers R.S., Kuzminov A., Stahl F.W. (1995) The recombination hot spot χ activates RecBCD recombination by converting *Escherichia coli* to a *recD* mutant phenocopy. Proc. Natl. Acad. Sci. USA 92: 6244-6248. PMID: 7603978, PMCID: PMC41494

8. Kuzminov A. (1995) Collapse and repair of replication forks in *Escherichia coli*. Mol. Microbiol. 16(3): 373-384. PMID: 7565099

7. Kuzminov A., Schabtach E., Stahl F.W. (1994) χ sites in combination with RecA protein increase the survival of linear DNA in *Escherichia coli* by inactivating exoV activity of RecBCD nuclease. EMBO J. 13: 2764-2776. PMID: 8026461, PMCID: PMC395156

6. Kuzminov A. (1993) RuvA, RuvB and RuvC proteins: cleaning-up after recombinational repairs in *E. coli.* BioEssays 15: 355-358. PMID: 8393667

Graduate Research (Institute of Cytology and Genetics, Novosibirsk, Russia)

5. Mazin A.V., Kuzminov A.V., Dianov G.L., Salganik R.I. (1991) Mechanisms of deletion formation in *Escherichia coli* plasmids. II. Short direct repeats mediated deletions. Mol. Gen. Genet. 228: 209-214. PMID: 1679526

4. Dianov G.L., Kuzminov A.V., Mazin A.V., Salganik R.I. (1991) Molecular mechanisms of deletion formation in *Escherichia coli* plasmids. I. Deletion formation mediated by long direct repeats. Mol. Gen. Genet. 228: 153-159. PMID: 1679524

3. Dianov G.L., Timchenko T.V., Sinitsina O.I., Kuzminov A.V., Medvedev O.A., Salganik R.I. (1991) Repair of uracil residues closely spaced on the opposite strands of plasmid DNA results in double-strand break and deletion formation. Mol. Gen. Genet. 225: 448-452. PMID: 2017139

2. Mazin A.V., Kuzminov A.V., Dianov G.L., Salganik R.I. (1989) New reagent for discrimination of single-stranded and double-stranded regions in DNA. FEBS Letters 258/2: 244-246. PMID: 2599091

1. Mazin A.V., Kuzminov A.V., Saparbaev M.K., Dianov G.L., Salganik R.I. (1986) Induction of deletions in plasmid pBR322 predetermined by DNA primary structure. Dokl. Acad. Nauk SSSR 239: 503-506 (Russian)

Other Publications

Kuzminov A (2013) Module 1283. Recombination, Models of. In: Maloy S and Hughes K (eds). *Brenner's Encyclopedia of Genetics*, 2nd edn. San Diego: Academic Press. 6: 99-103

Kuzminov A (2013) Module 1284. Recombinational repair. In: Maloy S and Hughes K (eds). *Brenner's Encyclopedia of Genetics*, 2nd edn. San Diego: Academic Press. 6: 104-108

Manuscripts under review

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Manuscripts in preparation:

— Cronan GE and Kuzminov A. Developing a reliable degron system in *E. coli*.

— Kouzminova EA and Kuzminov A. Chromosome profiling of cell recovering from UV-damage: the *rnhAB* mutants develop replication choking points.
— Khan SR and Kuzminov A. Suppressors of thymineless death.

— Khan SR and Kuzminov A. The role of SOS in chromosomal fragmentation after UV irradiation.
— Khan SR and Kuzminov A. Replication fork collapse after UV irradiation.
— Budke B and Kuzminov A. Detection of rare non-canonical DNA precursors: dHTP in the *rdgB* mutants of *E. coli*.
— Rotman E and Kuzminov A. Suppressors of the *seqA recA* colethality in *E. coli*.

Seminar Presentations
as of 2023-04

2019 Institut Gustave Roussy (Paris, France) — Okazaki fragments

2018 Cold Spring Harbor Advanced Bacterial Genetics Course — TLD
Umeå University (Sweden), Dept. of Medical Biochemistry and Biophysics — TLD

2017 Institut Gustave Roussy (Paris, France)
CNRS, Centre de Génétique Moléculaire, Gif-sur-Yvette (Paris, France)
University of Wisconsin - Madison, Department of Bacteriology — TLD

2015 University of Illinois at Chicago, College of Pharmacy (Rockford, IL)
UIUC, Department of Microbiology, (replacement of a cancelled seminar)
SIU-Carbondale, Department of Biochemistry and Molecular Biology

2014 Institut Gustave Roussy (Paris, France)
CNRS, Centre de Génétique Moléculaire, Gif-sur-Yvette (Paris, France)
UT-Austin, Department of Molecular Biosciences

2012 University of Washington in Seattle, Department of Microbiology
UIUC, Department of Microbiology, (replacement of a cancelled seminar)
UIUC, Department of Microbiology, (another replacement of a cancelled seminar)

2010 Institut Gustave Roussy (Paris, France)
Niels Bohr Institute, University of Copenhagen (Denmark)
Department of Cell Biology, University of Oslo (Norway)
University of Minnesota, Department of Biochemistry, Molecular Biology & Biophysics

2009 Institut Gustave Roussy (Paris, France)

2008 University of California at Davis, Department of Microbiology
Institut Gustave Roussy (Paris, France)
CNRS, Centre de Génétique Moléculaire, Gif-sur-Yvette (Paris, France)

2007 U-Mass Medical, Department of Molecular Biology and Microbiology, Worcester, MA

2005 Northwestern University School of Medicine, Department of Microbiology-Immunology
UIUC, Department of Microbiology, (replacement of a cancelled seminar)
University of Miami School of Medicine, Biochem. & Molecular Biology (Student-invited)

2004 University of Nebraska Medical Center (Eppley Institute), Omaha (NE)
University of Iowa (Iowa City), Department of Microbiology

2003 NCI-Frederick, Gene Regulation and Chromosome Biology Laboratory

2001 Southern Illinois University, Department of Microbiology
University of Massachusetts at Amherst, Department of Microbiology
Northern Illinois University, Department of Biological Sciences
University of Texas at Austin, Department of Molecular Genetics & Microbiology

2000 SUNY Stony Brook, Department of Biochemistry and Cell Biology
University of Illinois at Urbana-Champaign, Department of Microbiology
New York University School of Medicine, Department of Microbiology
Cornell University, Department of Microbiology
Thomas Jefferson University, Biochemistry and Molecular Pharmacology
Midwest Prokaryotic Molecular Genetics and Physiology Meeting, UIUC

1999 University of Pittsburgh, Department of Biology
University of Minnesota, Twin Cities, Biochemistry, Molecular Biology and Biophysics
Emory University, Department of Biology
University of Oregon, Institute of Molecular Biology
University of Chicago, Biochemistry, Genetics, Cell and Developmental Biology

Conference Presentations
as of 2023-04

2019 XX Albany Conversation (talk)
71st Molecular Genetics of Bacteria and Phages (Madison, WI) (talk)

2018 XIII Analytical Genetics meeting, San Diego (CA) (two talks)
70th Molecular genetics of Bacteria and Phages (Madison, WI) (poster)
DNA Transactions XV, Egmond-aan-Zee (Netherlands) (talk)

2017 GRC "Chromosome Dynamics", Il Ciocco, Italy (poster)

2015 GRC “Chromosome Dynamics”, Waterville Resort NH (talk + poster)
FASEB "Genetic Recombination & Genome Rearrangements", Steamboat CO (poster)

2014 FASEB "Dynamic DNA Structures in Biology" Chicago (talk)
"DNA Transactions XIV", Ile d'Oleron, France (talk)

2013 Genome Instability, Evolution and Human Diseases, St. Petersburg, Russia (talk + poster)
FASEB "Genetic Recombination & Genome Rearrangements", Steamboat CO (poster)
XI Analytical Genetics Meeting, Alta UT (talk)

2012 FASEB "Dynamic DNA Structures in Biology", Vermont Academy (talk + poster)
GRC "Mutagenesis", Salve Regina University, RI (two posters)

2011 FASEB "Genetic Recombination & Genome Rearrangements", Steamboat CO (poster)

2010 EMBO Recombinational Repair conference, Il Ciocco, Italy (talk + poster)
“Genome Maintenance and Consequences”, Copenhagen, Denmark (talk)
Zing "Bacterial Cell Biology", Puerto Morelos, Mexico (poster)

2009 GRC “Chromosome Dynamics”, Il Ciocco, Italy (talk + poster)
IX Analytical Genetics meeting, Asilomar (CA) (talk)

2008 “DNA Repair and Epigenetic regulation of genome Stability”, St. Petersburg, Russia (talk)

2007 VIII Analytical Genetics meeting, Sweden (talk)
107th ASM General Meeting, Toronto, CA (talk)

2005 VII Analytical Genetics Meeting, San Diego, CA (talk)
FASEB “Genetic Recombination and Genome Rearrangements”, Snowmass CO (posters)
Keystone Symposium “Mechanisms of DNA Replication and Recombination”, Keystone, CO (posters)

2004 ASM Conference on DNA Repair and Mutagenesis, Bermuda (posters)

2002 EMBO Workshop “Genetic Recombination and the Maintenance of Genome Stability”, Seillac (France) (talk) — declined
Gordon Research Conference “Mutagenesis and Carcinogenesis”, Ventura, CA (talk)

2000 NAS "Links between Recombination and Replication", Irvine, CA (talk)

1999 NCI "Translational Opportunities in/from DNA Repair", Chicago, IL (talk)

1995 FASEB Summer Conference "Genetic Recombination and Chromosome Rearrangements", Snowmass, CO (co-talk)

Professional Services

Eco-Sal III (ASM) Section Editor (ecosal.org) — conceived the contents, solicited chapters, helped authors to formulate plans of chapters, edited every chapter twice (these chapters average ~350 citations each), organized final deposition with ASM:

Section 7.2. Mutation, Recombination, and Repair (on-line 2012)

Chapter # and Title	Author
7.2.1. Mutagenesis	Jeffrey Miller
7.2.2. Translesion DNA Synthesis	Roger Woodgate
7.2.3. Stress-induced Mutagenesis	Patricia Foster
7.2.4. DNA Damage Reversal and Excision Repair	Murat Saparbaev
7.2.5. Mismatch Repair	Martin Marinus
7.2.6. Homologous Recombination	Andrei Kuzminov
7.2.7. Recombinational Repair — Enzymes and Pathways	Benedicte Michel
7.2.8. λ Recombination and Recombineering	Kenan Murphy

Reviewer of manuscripts for: **as of 2023-04**

Journal	Total number of reviews
Biochemistry	1
Biochimie	1
BioEssays	9
BMC Genetics	1
BMC Microbiology	1
Cell Reports	1
Communications Biology	1
DNA Repair	14
eLife	3
EMBO Journal	12
EMBO Reports	1
Expert Review of Anti-infective Therapy	1
FEMS-IMM	1
FEMS-Reviews	1
Frontiers in Microbiology	6
GENE	1
Genes and Development	2
Genetics	29
Genome Biology and Evolution	1
Journal of Bacteriology	37
Journal of Biological Chemistry	4
Journal of Biomedicine and Biotechnology	2
Journal of Molecular Biology	6
mBio	2
Microbiology	2
Microbiology and Molecular Biology Reviews	8
Molecular Biology and Evolution	1
Molecular and Cell Biology	2
Molecular and General Genetics	1
Molecular Microbiology	77
Molecular Systems Biology	2
Mutation Research	2
Mutation Research Reviews	1

Nature	4
Nature Communications	1
Nucleic Acids Research	16
PeerJ	1
PLoS-Biology	3
PLoS-Genetics	24
PLoS-ONE	4
Proceedings of the National Academy of Sciences, USA	22
Science	3
Science Advances	3
Scientific Reports	1
Trends in Biochemical Sciences	1
Trends in Genetics	1
Trends in Microbiology	1

External reviewer of applications for: **(as of 2023-04)**

Granting agency	Total number of reviews
ANR (Agence Nationale de la Recherche)	1
BBSRC (UK)	1
Dutch Cancer Society	1
Dynasty (Russia)	1
Health Research Council of New Zealand	1
UIUC Research Board	2
United States — Israel Binational Science Foundation	1
US Army (ARO)	2
NSF	8
Wellcome Trust.	3

University Committees:

2001	School of Life Sciences Fellowship Committee
2002-2010	Department of Microbiology Seminar Coordinator
2002-present	Member, MCB Distinction Committee
2003-2004	Departmental Faculty Search Committee
2011-present	Member, MCB Academic Integrity Committee
2017-pesent	Member, MCB TA appointment representative

Grant panels

2007-01	(ad hoc) The American Cancer Society, Genetic Mechanisms of Cancer (GMC)
2007-06	(ad hoc) The American Cancer Society, Genetic Mechanisms of Cancer (GMC)
2008-02	(ad hoc) NIH IDM-A 03M (phone panel)
2022	(ad hoc) NIEHS Board of Scientific Counselors Review (Schaaper)

Grant Support

as of 2023-04

Past

Agency and #	Title		PI and period
NSF MCB-0196020	Disintegration of Replication Forks and their Recombinational Repair		Kuzminov 09/2000 — 08/2004
ACS RSG-05-135-01-GMC	Chromosomal fragmentation: Role of DNA Replication and Pathways of Repair		Kuzminov 07/2005 — 06/2009
NIH / PCMB 1RO1 GM073115-01A2	Base analog toxicity and detoxification		Kuzminov 06/2007 — 05/2013
NIH / PCMB	Chromosomal consequences of DNA precursor pools imbalances and contamination		Kuzminov
2 R01 GM073115-06 A1			07/2014 — 06/2018
Direct Amount	$170,015	Total Amount	$254,648
NIH / PCMB	Chromosomal death due to misincorporation of wrong material into DNA (currently in no-cost extension)		Kuzminov
5 R01 GM073115-11			01/2019 — 12/2022
Direct per year	$200,000	Total project	$800,000

Current

Agency and #	Title		PI and period
NIH / PCMB	Synergistic toxicity of reactive oxygen species		Kuzminov
1R01GM132484-01A1			03/2020 — 02/2024
Direct per year	$200,000	Total project	$800,000

Pending

NIH / PCMB	Mechanisms of chromosomal death		Kuzminov
Renewal of GM073115			01/2024 — 12/2028
Direct per year	$250,000	Total project	$1,250,000

Planned

Teaching

MCB 421 Microbial Genetics

MCB 421 (CRN 30506) (45 contact hours) is an upper level undergraduate / graduate course in Microbial Genetics that focuses on key holistic experiments (treating bacterial cell as a black box) and observations forming the basis for our understanding of reproduction and metabolism organization of prokaryotic cells. The emphasis is on evaluation of conflicting ideas, comprehension of the logic behind experiments, familiarization with diverse

experimental techniques and interpretation of experimental data. A major course objective is to encourage students to derive their own interpretations and conclusions from raw experimental data, rather than memorizing "facts" of the field. All lectures are in the chalk-talk style.

Class size:
2022 FA 12 signed up, 11 finished

MCB 502A Advanced Molecular Genetics

Graduate core course, taught in the Fall semester to the first year graduate students. Total of 45 contact hours, almost evenly split between lectures/exams (502L) and discussions of classic and current literature (502D). Lecture content: the first 14 lectures of MCB 430 (see below), now significantly expanded to 15 90-minute lectures, with three exams. Basically, DNA-Chromosomes-Genomes, with emphasis on the key questions and experiments addressing them.

Class size:

Fall 2010	48 signed up, 42 finished	
Fall 2011	45 signed up, 39 finished	
Fall 2012	39 signed up, 35 finished	
Fall 2013	60 signed up, 59 finished	
Fall 2014	28 signed up, 25 finished	
Fall 2015	45 signed up, 41 finished	
Fall 2016	40 signed up, 39 finished	
Spring 2017	~30 signed up, 16 finished	(this was in Novosibirsk)
Fall 2017	50 signed up, 46 finished	
Fall 2018	36 signed up, 28 finished	
Fall 2019	52 signed up, 52 finished	
Fall 2020	45 signed up, 42 finished	

MCB 297C Evaluation of Scientific Inquiry and Writing

8 Journal Club-format meetings for advanced undergrads (the honor section of MCB 354). We discuss classic and modern papers on DNA metabolism.

Class size

Fall 2016	11
Fall 2017	18

MCB 430 Molecular Microbiology
(before 2005 called µ330 Molecular Biology of Microorganisms)

Spring 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
27 90-minute lectures
Class composition (1st day rosters): 40-45 students total, of them 5-10 graduate students

MCB 590B Discussion Section Supplement for MCB 430 Molecular Microbiology

(a requirement for Microbiology graduate students, other students admitted at the consent of instructor)

Spring 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010

15 90-minute discussions of primary literature, 5-10 students.

MCB 585 Discussion supplement

the seminar series supplement for the 1st year graduate students (the Fall semesters only, discussions are led by the hosts of that week seminar speakers).

My presentations:

2002 Fall	Sue Lovett		
2003 Fall	Makkuni Jayram	Stephen Kowalczykowski	
2004 Fall	Nancy Kleckner	John Hellmann	Steve Sandler
2005 Fall	John Roth	Jeffrey Miller	
2006 Fall	Martin Marinus	Mike Cox	
2007 Fall	Kirill Lobachov	Arkady Khodursky	
2008 Fall	Patrick Higgins		
2011 Spring	Reuben Harris	David Sherratt	
2012 Spring	Jade Wang		
2013 Spring	Michael Glickman		
2014 Spring	Houra Merrikh		
2015 Spring	Anca Segall		
2017 Spring	Rodrigo Reyes-Lamothe		
2018 Spring	Dhruba Chattoraj		
2019 Spring	Dhruba Chattoraj (a different paper)		
2020 Spring	(cancelled by COVID-19)		
2021-02-03	Kowalczykowski and Marians (DNA replication)		
2023-04-05	Matich (NAR) The optimal number of *rrn* operons		

MCB 412 Advances in Microbiology

Fall 2001
13 Journal Club-format meetings, all papers were about Recombinational Repair in *E. coli*
Class composition: 12 graduate students

GUEST LECTURE:
MCB 421 (former μ316) Microbial Genetics: "Homologous Recombination" (2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009)

Teaching honors

Listed in an incomplete list of teachers ranked as excellent by their students
2005 590B
2006 590B

Students Trained or in Training

Graduate students (PhD in bold)

Name	Level	Dates	Current status
Bradshaw, Jill S.	PhD	Jan 2001 - Feb 2004	Left without degree
Schlesinger, David	PhD	Sep 2002 - Dec 2004	Was asked to transfer

Rotman, Ella PhD Jan 2004 - August 2009 Postdoc, Northwestern U., UW-Madison, currently Research Associate at the University of Chicago
Thesis title: "Chromosomal fragmentation in *E. coli*: its absence in *mutT* mutants and its mechanisms in *seqA* mutants"

Amado, Luciana MD/PhD Jan 2004 - April 2010 Scientist in Peru (?)
F31 NIH graduate research fellowship
Thesis title: "In vivo studies of DNA synthesis in *Escherichia coli* are consistent with the discontinuous model of DNA replication"

Budke, Brian PhD Jan 2005 - August 2009 Postdoc, U. Chicago
Thesis title: "The in vivo roles of the RdgB enzyme in *Escherichia coli* and the detection of rare non-canonical DNA precursors"

Ting, Helen MS Jun 2005 - August 2007 Nurse in Chicago
Thesis title: " Synthetic lethality with the *dut* defect in *Escherichia coli* reveals layers of DNA damage of increasing complexity due to uracil incorporation"

Ka Wai Kuong PhD January 2006 - June 2011
Postdoc, U Washington, — South Seattle Community College — Adaptive Biotechnology — Amazon (Seattle)
2008 UIUC Graduate College Conference Travel Grant Award
2009 Teaching award: Teachers Ranked as Excellent by Their Students for Molecular and Cellular Biology/Life Sciences and College of Medicine courses in UIUC
2010 Francis and Harlie Clark Graduate Research Award in Microbiology, UIUC
2010 Best Oral Presentation Award, Annual Microbiology Departmental Conference, UIUC
2011 Macau Postgraduate Studies Scholarship, Macau SAR government
2011 James R. Beck Award in Microbiology, UIUC
Thesis Title: "The role of recombinational repair in the mechanism of killing during thymine starvation in *Escherichia coli*."

Tulip Mahaseth PhD January 2011 - June 2015
Northwestern U Law School, — IP & Corporate Counsel at Synthego — Associate Director at 4DMT (Bay Area)
2015 James R. Beck Graduate Research Fellowship in Microbiology, UIUC
Thesis title: "The iron-dependent cyanide and hydrogen peroxide co-toxicity in *Escherichia coli* and its catastrophic consequences for the chromosome"

Pritha Rao PhD January 2012 - April 2021
Postdoc UW-Madison — Research Scientist at PPD (still in Madison)
2016 James R. Beck Graduate Research Fellowship in Microbiology, UIUC (stipend for the Fall semester)

2017 — recognized as an outstanding teaching assistant of Cellular and Molecular Biology
Thesis Title: "Study of mechanisms of genetic death in *Escherichia coli* in response to A) dTTP starvation and B) combination of temperature-sensitive defects in replication initiation and double-strand break repair"

Pooja Agashe PhD March 2016 - February 2022
Currently Intellectual property and Business Analyst at Cour Pharmaceuticals (Chicago)
2020 Francis and Harlie Clark Graduate Research Fellowship in Microbiology, UIUC
Thesis Title: "The nature of synergistic lethality of nitric oxide and hydropgen peroxide in *Escharichia coli* and its effect on chromosome fragmentation"

Sneha Das PhD January 2018 - present

Suhail Chhakara PhD April 2023 — present

Undergraduate research assistants

Name	Category	Dates	Comments, *publications*
John Stansbury	292 (thesis)	06/2001 - 04/2002	*J. Bacteriol. (2005)*
Idina Shi (then a PhD student in Yale (graduated in 2009))	292 (thesis)	07/2002 - 05/2004	Clark Thesis Award *J. Bacteriol. (2005)*
Lisa Lukas (then a UIUC veterinary student)	292 (thesis)	09/2003 - 07/2005	Clark Summer Award (2004), MCB High Distinction (2005), MCB Thesis award (2005), Clark Summer Award (2005) *Genetics (2006)*
Kerri McKiou	290	05/2004 - 11/2004	
Scott Horrell	290	06/2004 - 05/2005	
Preston Bratcher (became a PhD student in UAB)	292	06/2005 - 05/2007	Clark Summer Award (2006)
Maksym Bobrovskyy (became a PhD student in MCB, UIUC, Cari Vanderpool lab, finished 10/2016)	492 (thesis)	06/2008 - 05/2009	no distinction because GPA=3
Matt Novak	290	03/2010 - 04/2011	
Eileen Hou	290	03/2010 - 12/2011	Summer Research Award (2011)
Ritesh Ghandi	290	03/2010 - 12/2011	Summer Research Award (2011)
Paritosh Gangaramani	492 (thesis)	06/2011 - 05/2014	Summer Research Award (2012) Summer Research Award (2013) MCB High Distinction (2014)

(currently a PhD student at MIT, Wendy V. Gilbert lab)

Farid Kadyrov	492 (thesis)	02/2014 - 05/2016	Summer Research Award (2014) Summer Research Award (2015) MCB High Distinction (2016)

(was a technician at Washington University School of Medicine, St. Louis, Humphreys lab, currently in Wash U graduate school — regenerative medicine)

Jonathan Forrest	290	02/2020 - 08/2021	Summer Research Award (2020) Summer Research Award (2021)
Shashank Hirani	290	2022-05	Summer μ-Research Award (2022) Summer μ-Research Award (2023)
Kavishka Fernando	290	2022-05	Summer μ-Research Award (2022) Summer μ-Research Award (2023)

GRADUATE COMMITTEES

Current membership (underlined are students that are yet to pass their prelim, my students in bold, students with undefined status are highlighted in grey):

Marcus Rushing (2007)
Jesse Grenz (2009)
Sneha Das (2018)
Ruben Sanchez Nieves (2018)
Laura Suttenfield (2019)
Lucy Zheng (Zheng Chou) (2020)
Deborah Frederick (2020)
Daniel Joo (2021)
John Schneider (2021)
Tori Boyle (2021)
Lindsey Grady (2022)
Jessica Hertig (2022)
Ezza Khan (2022)
Morgan Letzkus (2022)
Vanessa Jones (2023)

Past membership: (in bold are PhDs, indented are students who dropped out)

Buonpane, Rebecca (2001)
Gus, Adam (2001)
Romero, Melanie C. (2001)
Rivera, Angel (2001) (added after prelim)
Maureen Craig (2001) (added after prelim)
Bradshaw, Jill Susan (2001)

Valentine, Nathan (2002)
Schlesinger, David (2002)
Zhang Jian (2002)
Golubeva, Yekaterina (2002)

Macomber, Lee (2003)

Amado, Luciana (2004)
Bose, Arpita (2004)
Malanowska, Karolina (2004)
Nair, Nikhil (2004) (Chemical Engineering)
Rotman, Ella (2004)
Thomas, Jacob (2004)
Wu, Ann (2004)
Bender, Jennifer (2004)
Rajeev, Lara (2004)
Jang, Soojin (2004)

Budke, Brian (2005)
Kulkarni, Gargi (2005)
Davis, James (2005)
Ting, Helen (2005)
Barnhart, David (2005)
Mather, Cheryl (2005)

Massengo-Tiasse, Prisca (2006)
McKenna, Sarah (2006) (master student, scheduled for prelim)
Martin, Stefani (2005)
Anjem, Adil (2006)
Koung, Kawai (2006)
Laprise, Jennifer (2006)
Gu, Mianzhi (2006)

Yuanyuan Liu (2008)
Tulip Mahaseth (2011)
Chakravartty, Vandana (2006)
Kenneth Ringwald (2009)
Rimpa Ghosh (2010)
Katie Molohon (2010)
David Krause (2011)
Miglena Manandhar (2011)

Yuritzi Garcia (2015)?
Kyle Grim (2014)?
Danielle Campbell (2015)?
Pritha Rao (2012)
Zhou Yidan (2013)

Sabrina Abdulla (2015)?
Pooja Agashe (2016)
Katie Frye (2016)
Anshika Gupta (2017)
Alexander Polidore (2018)

PAMELA P. MARTINEZ

pamelapm@illinois.edu ⋄ 383 Morrill Hall
University of Illinois at Urbana Champaign

EDUCATION

Ph.D, Ecology & Evolution. University of Chicago. *Advised by* Mercedes Pascual 2017
M.S., Ecology and Evolutionary Biology. University of Michigan 2014
B.S., Biochemistry Universidad de Chile 2009

ACADEMIC APPOINTMENTS

Assistant Professor. University of Illinois at Urbana Champaign (UIUC) 2020–Present
Joint appointment: Department of Microbiology (67%) & Department of Statistics (33%)
Affiliations: Department of Ecology, Evolution, and Behavior; Program in Ecology, Evolution, and Conservation Biology; Carl R. Woese Institute for Genomic Biology; Center for Latin American and Caribbean Studies.

Department Associate. Harvard T.H. Chan School of Public Health. 2023–Present
Center for Communicable Disease Dynamics

Visiting Scientist. Harvard T.H. Chan School of Public Health. 2020–2023
Center for Communicable Disease Dynamics

Postdoctoral Research Fellow. Harvard T.H. Chan School of Public Health 2018–2020
Center for Communicable Disease Dynamics.
Advised by Caroline Buckee and Marc Lipsitch.

Laboratory Assistant II. Howard Hughes Medical Institute 2011–2012
University of Michigan. Department of Ecology and Evolutionary Biology

Project Assistant. Institute of Ecology and Biodiversity, Chile 2010
P. Universidad Catolica de Chile. Departamento de Ecologia

HONORS AND AWARDS

Rose Travelling Fellowship, Harvard School of Public Health 2019
Biological Sciences Division Travel Recruitment Award, University of Chicago 2015
Rackham Conference Travel Grant, University of Michigan 2013–2014
Beca Doctorado Nacional, Graduate Research Fellowship, Chilean govt. (*declined*) 2011
Becas Chile, International Graduate Research Fellowship, Chilean govt. (*declined*) 2010
Undergraduate Fellowship, Santa Fe Institute, REU Program 2009

PROFESSIONAL ACTIVITIES

Steering Committee, MIDAS Coordination Center 2021–Present
Modeling of Infectious Disease Agent Study (MIDAS), NIGMS (NIH)
Vice-chair, Disease Ecology Section. Ecological Society of America 2021–2022
Chair, Disease Ecology Section. Ecological Society of America 2022–Present
Associate Editor. Epidemics 2022–Present

GRANTS

SHIELD Illinois, UIUC ($100,000). Role: PI 2023
Gert Ehrlich Cross-field Innovation Fund, UIUC ($50,000). Role: PI 2023
The World Health Organization ($24,500). Role: PI 2022
The World Health Organization ($24,500). Role: co-PI 2022
COVID-19 Mobility Data Network, Seed Grant, Crisis Ready ($27,610). Role: PI 2020

PUBLICATIONS

(underlined: trainees, asterisk*: equal contribution, *italic*: corresponding author)

Larsen S.L., Shin I., Joseph J., West H., Anorga R., Mena G.E., Mahmud A.S., ***Martinez, P.P.***. Quantifying the impact of SARS-CoV-2 temporal vaccination trends and disparities on disease control. *Under review at Science Advances*

Mahmud A.S., **Martinez, P.P.**, Baker R.E. The impact of current and future climates on spatiotemporal dynamics of influenza in a tropical setting. *Under review at PNAS Nexus*

Martinez, P.P., Li J., Cortes C.P., Baker R.E., Mahmud A.S. *2022.* The return of wintertime respiratory virus outbreaks and shifts in the age structure of incidence in the Southern Hemisphere. *Open Forum Infect Dis*, ofac650, https://doi.org/10.1093/ofid/ofac650

Ke, R.*, **Martinez, P.P.***, Smith, R.L., L Gibson, L., Achenbach C., et al. *2022* Longitudinal analysis of SARS-CoV-2 vaccine breakthrough infections reveal limited infectious virus shedding and restricted tissue distribution. *Open Forum Infect Dis*, ofac192, https://doi.org/10.1093/ofid/ofac192

Ke, R., **Martinez, P.P.**, Smith, R.L., L Gibson, L., Mirza, A., Conte, M., et al. *2022.* Daily longitudinal sampling of SARS-CoV-2 infection reveals substantial heterogeneity in infectiousness. *Nat Microb*, 7(5):640-52. https://doi.org/10.1038/s41564-022-01105-z

Santos–Vega, M., **Martinez, P.P.**, Vaishnav, K.G., Kohli, V., Desai, V., Bouma, M.J., Pascual, M. *2022.* The neglected climate variable of relative humidity explains the interannual variability of urban malaria in Indian cities. *Nat Commun*, 13, 533, https://doi.org/10.1038/s41467-022-28145-7

Smith, R.L., Gibson, L.L., **Martinez, P.P.**, Ke, R., Mirza, A., Conte, M., et al, *2021.* Longitudinal Assessment of Diagnostic Test Performance Over the Course of Acute SARS-CoV-2 Infection. *The J. Infect. Dis.*, jiab337, https://doi.org/10.1093/infdis/jiab337

*Mena, G. E.**, ***Martinez, P.P.****, Mahmud, A. S., Marquet, P A., Buckee, Caroline O. Santillana, M. *2021.* Socioeconomic status determines COVID-19 incidence and related mortality in Santiago, Chile. *Science*, eabg5298, https://science.sciencemag.org/content/early/2021/05/04/science.abg5298.

Rodo, X., **Martinez, P.P.**, Siraj, A., Pascual, M. *2021.* Malaria trends in Ethiopian highlands track the 2000 'slowdown' in global temperatures *Nat Commun*, 12, 1555, https://doi.org/10.1038/s41467-021-21815-y

Kishore, N.*, Kahn, R.*, **Martinez, P.P.**, De Salazar, P.M., Mahmud, A.S. and Buckee, C.O. *2021.* Lockdowns result in changes in human mobility which may impact the epidemiologic dynamics of SARS-CoV-2. *Scientific reports*, 11(1), pp.1-12.

Azarian, T*., **Martinez, P.P.***, Arnold, B.J., Grant, L.R., Corander, J., Fraser, C., Croucher, N.J., Hammitt, L.L., Reid, R., Santosham, M. and Weatherholtz, R.C., Bentley, S.D., O'Brien K.L., Lipsitch, M., Hanage, W. P. *2020.* Frequency-dependent selection can forecast evolution in *Streptococcus pneumoniae. Plos Biology,* 18(10), p.e3000878, https://doi.org/10.1371/journal.pbio.3000878

Mahmud, A.S., **Martinez, P.P.**, He, J., Baker, R.E. *2020.* The impact of climate change on vaccine-preventable diseases: insights from current research and new directions *Current Environmental Health Reports,* pp. 1-8, https://doi.org/10.1007/s40572-020-00293-2

Martinez, P.P.*, Mahmud A.S.*, Yunus, M., Faruque, A.S.G., Ahmed T., Pascual, M., Buckee, C.O., *2019.* Tube Well Use as Protection Against Rotavirus Infection During the Monsoons in an Urban Setting, *The J. Infect. Dis.*, jiz436, https://doi.org/10.1093/infdis/jiz436

Martinez, P.P., Reiner Jr, R.C., Cash, B.A., Rod, X., Mondal, M.S., Roy, M., Yunus, M., Faruque, A.S., Huq, S., King, A.A., Pascual, M., *2017.* Cholera forecast for Dhaka, Bangladesh, with the 2015-2016 El Nino: lessons learned. *PloS one*, 12(3), p.e0172355

Martinez, P.P., King, A.A., Yunus, M., Faruque, A.S.G., Pascual, M., *2016*. Differential and enhanced response to climate forcing in diarrheal disease due to rotavirus across a megacity of the developing world. *Proceedings of the National Academy of Sciences*, 113(15), pp. 4092-4097.

Santos–Vega, M., **Martinez, P.P.**, Pascual, M., *2016*. Climate forcing and infectious disease transmission in urban landscapes: integrating demographic and socioeconomic heterogeneity. *Annals of the New York Academy of Sciences*, 1382(1), pp. 44-55.

WORKING GROUPS AND SYMPOSIUMS

Institute for Sustainability, Energy, and Environment Congress, UIUC *Organizer*.	2023
Multiscale Microbial Communities. IMSI, US. *Organizer*.	2022
Aging and Adaptation in Infectious Diseases. Santa Fe Institute, US.	2018–2020
Irreversibility in Ecological Evolution. Santa Fe Institute, US.	2019

INVITED TALKS AT INSTITUTIONS

World Health Organization. IVIR-AC session. *Virtual*	2023
International Centre for Theoretical Physics. ICTP-SAIFR, Brazil. *Virtual*	2022
University of Illinois at Chicago. Department of Biological Sciences.	2022
Pennsylvania State University. Center for Infectious Disease Dynamics.	2021
Stony Brook University. Department of Ecology and Evolution. *Virtual*	2021
Max Planck Institute for Infection Biology. New Voices in Infection Biology. *Virtual*	2021
Models of Infectious Disease Agent Study (MIDAS) Seminar series. *Virtual*	2021
University of Texas at Austin. COVID-19 Modeling Consortium. *Virtual*	2021
Crisis Ready https://crisisready.io. *Virtual*	2021
Emory University. Department of Biology.	2020
University of Vermont. Translational Global Infectious Diseases Research Center	2020
University of Illinois at Urbana Champaign. Microbial Systems Initiative.	2020
Harvard. Department of Epidemiology. Works-in-Progress Seminar Series.	2019
Harvard. Center for Communicable Disease Dynamics.	2017

PRESENTATIONS AT CONFERENCES, WORKSHOPS, AND SYMPOSIUMS

Invited panelist – Institute for Sustainability, Energy, and Environment Congress, UIUC.	2023
Invited talk – Data and displacement in Sao Paulo – Crisis Ready	2023
Invited talk – Regional coordination, data and human mobility workshop – Coordination Centre for the Prevention of Natural Disasters in Central America	2023
Invited talk – Workshop: Modelamiento Matematico de Sistemas Biologicos, Chile. *Virtual*	2022
Invited talk – Congreso Sociedad Chilena de Infectologa, Chile. *Virtual*	2021
Talk – Models of Infectious Disease Agent Study Meeting (MIDAS). *Virtual*	2021
Talk – Epidemics Meeting. Charleston, SC	2019
Talk – Ecology and Evolution of Infectious Diseases Meeting (EEID). Princeton, NJ	2019
Poster – Models of Infectious Disease Agent Study Meeting (MIDAS). Bethesda, MD	2019
Invited talk – Institute for Disease Modeling (IDM) Annual Symposium. Bellevue, WA	2019
Talk – Annual Meeting of the Ecological Society of America (ESA). New Orleans, LA	2018
Poster – Models of Infectious Disease Agent Study Meeting (MIDAS). Bethesda, MD	2018
Talk – Annual Meeting of the Ecological Society of America (ESA). Portland, OR	2017
Poster – International Rotavirus Symposium. Melbourne, Australia	2016
Invited talk – International Conference Stochastic Analysis and Mathematical Physics. Chile	2015
Poster – Annual Meeting of the Ecological Society of America (ESA). Baltimore, MD	2015
Talk – Annual Meeting of the Ecological Society of America (ESA). Sacramento, CA	2014
Poster – Ecology and Evolution of Infectious Diseases Meeting (EEID). State College, PA	2013
Invited talk – Complex Systems Summer School. Valparaiso, Chile	2011

Poster – Bi-national Meeting of Ecology of Argentina and Chile. Buenos Aires, Argentina 2010
Talk – Annual Meeting of the Chilean Society of Microbiology. Colchagua, Chile 2009

MENTORING

Graduate Students

Nancy Li. Master. Infectious Disease Epidemiology. Harvard 2019–2020
Adriana Morales Miranda. PhD. Mathematics. UIUC 2021–2023
Sophie Larsen. PhD. Program Ecology, Evolution, and Conservation Biology. UIUC. 2021–Present
Suvanthee Gunasekera. PhD. Microbiology. UIUC 2021–Present
Junya Li. PhD. Microbiology. UIUC 2021–Present

Rotations at UIUC:

Xin Chen. PhD in Biophysics and Quantitative Biology. Fall 2021
Sierra Bedwell. PhD in Microbiology. Fall 2021

Graduate Student Committees at UIUC:

David Vereau Gorbitz. PhD. Microbiology. 2021–Present
Mireille Fargo. PhD. Microbiology. 2021–Present
Sierra Bedwell. PhD. Microbiology. 2022–Present
Jiayue Yang. PhD. Microbiology – Committee Chair. 2022–Present
Tara Prezioso. PhD. Veterinary School. 2022–Present
Juliana Soto. PhD. Program Ecology, Evolution, and Conservation Biology. 2023–Present

Undergraduate Students at UIUC:

Chloe Yang. Department of Statistics. Summer 2023 - Present
Yayan Jiang. Department of Statistics. Summer 2023 - Present
Daivi Patel. School of Molecular and Cellular Biology. Spring 2023 - Present
Ikgyu Shin. Department of Statistics. Spring 2022–Spring 2023
Haylee West. School of Molecular and Cellular Biology. Fall 2021–Spring 2023
Jefrin Joseph. School of Molecular and Cellular Biology. Spring 2021–Spring 2023
Eliana Chandra. Department of Statistics. Fall 2022
Atlas Karm. Department of Mathematics. Summer 2022–Fall 2022
Rafael Anorga. School of Integrative Biology. Spring 2022–Summer 2022
Arman Sandhu. School of Molecular and Cellular Biology. Spring 2021–Fall 2021

TEACHING

Instructor. STAT430 'Infectious Diseases Modeling and Epidemiology' Spring 2022, 2023
Department of Statistics, University of Illinois at Urbana Champaign
Guest Lecture. 'Dynamics of Infectious Diseases' Winter 2019, 2020
Department of Epidemiology, Harvard School of Public Health
Workshop 'Big Data and Infectious Disease Epidemiology.' *Organizer* Fall 2019
Dhaka, Bangladesh
Teaching Assistant. 'Evolutionary and Genomic Medicine' Winter 2016, 2017
Department of Ecology and Evolution, University of Chicago
Graduate Student Instructor. 'Population and Community Ecology' Fall 2014
Department of Ecology and Evolutionary Biology, University of Michigan
Graduate Student Instructor. 'Introduction to Biology Laboratory' Fall 2012
Department of Ecology and Evolutionary Biology, University of Michigan

REVIEWER SERVICE

Proceedings of the National Academy of Sciences; eLife; Nature Communications; Proceedings of the Royal Society B; The Lancet Planetary Health; Ecology Letters; The American Naturalist; PLOS Computational Biology; PLOS Medicine; PLOS Neglected Tropical Diseases; Evolutionary Applications; Mathematical Biosciences; Advances in Water Resources; Environmental International; Scientific Reports.

OUTREACH

Invited panelist. *Women in STAT Workshop at UIUC.* 2023

Invited speaker. *Osher Lifelong Learning Institute (OLLI) at UIUC.* 2022

Invited speaker. *American Society for Biochemistry and Molecular Biology* 2021, 2022
Registered Student Organizations at UIUC.

Invited speaker. UIUC IGI Summer 2021 *Global Educators Workshop.* 2021
Education in Uncertain Times: How to Prepare for the New Normal Around the World.

Invited speaker. *Annual Conference to Increase Diversity in Mathematical Modeling and* 2019, 2021
Public Health. MIDAS and Center for Communicable Disease Dynamics.

HerStory: Famous Women in Science History. Museum of Science and Industry. Chicago, IL. 2016

WORKSHOPS AND SUMMER SCHOOLS ATTENDED

Workshop, Ecology and Evolution of Infectious Disease meeting, University of Michigan, US 2012

Complex Systems Summer School, Instituto de Sistemas Complejos de Valparaiso, Chile 2011

Discrete Mathematics Summer School, Instituto de Sistemas Complejos de Valparaiso, Chile 2010

Paola E. Mera

Assistant Professor • Microbiology Department
University of Illinois at Urbana-Champaign
(217) 300-6548 • pmera@illinois.edu

Education

❖ Post-doctoral Fellow | *Stanford University* | Developmental Biology Department (Jun. 2015)

❖ Ph. D. Microbiology | *University of Wisconsin-Madison* | Bacteriology Department (Dec. 2009)

❖ Bachelor of Science | *University of Colorado-Denver* | Chemistry Major & Math Minor. (Dec. 2003)

Professional Experience

2020 – present	**Assistant Professor**. Microbiology Department University of Illinois at Urbana-Champaign
2015 – 2020	**Assistant Professor**. Department of Chemistry and Biochemistry. New Mexico State University
2010 – 2015	**Post-doctoral Fellow** Stanford University Mentor: Dr. Lucy Shapiro
2004 – 2009	**Research Assistant** (Ph.D. candidate) University of Wisconsin-Madison Mentor: Dr. Jorge Escalante-Semerena

Peer-reviewed Publications

1. Puentes-Rodriguez, S.G., Norcross, J.D., **Mera, P.E.** (2023) To let go or not to let go: how ParA can impact the release of chromosomal anchoring in Caulobacter crescentus. *BioRxiv*. DOI: https://doi.org/10.1101/2023.04.12.536610. (under review)

2. Gade, P., Erlandson, A., Chen X., Mathews I., *__Mera P. E.__ and *Kim C. Y. (2023) Structural and functional analysis of the echinomycin resistance conferring protein Ecm16 from *Streptomyces lasalocidi*. *co-corresponding authors. (waiting for final decision from Scientific Reports).

3. Menikpurage IP, Puentes-Rodriguez SG, Elaksher RA, **Mera P.E.** (2023) ParA and its functions that go beyond chromosome segregation in *Caulobacter crescentus*. J. of Bacteriology, 205, e0029622.

4. Erlandson A., Gade P., *Kim C.Y., *__Mera P.E__. (2022) Class II UvrA protein Ecm16 requires ATPase activity to render resistance against echinomycin. Mol. Micro. 117(6): 1434-1446. *co-corresponding authors.

5. Menikpurage IP, Woo K, **Mera P.E.** (2021) Transcriptional activity of the bacterial replication initiator DnaA. Frontiers in Microbiology. Review 12:662317. PMID 34140937.

6. *Langen, T.A., Cannon, C. H., Blackburn, D.C., Morgan, E. L., **Mera, P. E**. (2021) Discovering and Applying the Urban Rules of Life to Design Sustainable and Healthy Cities. Journal of Integrative and Comparative Biology., 61(4):1237-1252. PMID: 34140937. *corresponding author.

7. **Mera, P.E**., mSphere of Influence: Communication Is Complicated-Just Ask a Bacterial Cell. mSphere, 2020. **5**(4).

8. Melendez AB, Menikpurage IP, **Mera P.E.** (2019) Chromosome dynamics in bacteria: triggering replication at opposite location and segregation in opposite direction. mBio; PubmeD PMID: 30628887

9. Menikpurage IP, Barraza D, Melendez AB, Strebe S, **Mera P.E.** (2019) The B12 receptor BtuB alters the membrane integrity of *Caulobacter crescentus*. Microbiology; PubMed PMID: 30628887.

10. Park, K., **Mera, P. E.,** Escalante-Semerena, J. C., and Brunold, T. C. (2016) Resonance Raman spectroscopic study of the interaction between Co(II)rrinoids and the ATP-corrinoid adenosyltransferase PduO from *Lactobacillus reuteri*. J. Biol. Inorg. Chem. 21(5-6), 669-8

11. Park, K., **Mera, P. E**., Escalante-Semerena, J. C., and Brunold, T. C. (2015) Unprecedented mechanism employed by the Salmonella enterica EutT ATP:Co(I)rrinoid adenosyltransferase precludes adenosylation of incomplete Co(II)rrinoids. Angew Cgen Int Ed Engl. 54(24), 7158-

12. **Mera, P.E**., Kalogeraki, V.S., and Shapiro, L. (2014) The DnaA replication initiator binds at the *Caulobacter* centromere and enables bacterial chromosome segregation. Proc. Natl. Acad. Sci. 111(45), 16100-16105

13. Moore, T.C., **Mera, P. E**., and Escalante-Semerena, J. C. (2014) The EutT enzyme *Salmonella enterica* is a unique ATP:Cob(I)alamin adenosyltranferase metalloprotein that requires ferrous ions for maximal activity. J. Bacteriol. 196(4), 903-910.

14. Park, K., **Mera, P. E**., Escalante-Semerena, J. C., and Brunold, T. C. (2012) Spectroscopic Characterization of Active Site Variants of the PduO-type ATP:Corrinoid Adenosyltransferase from *Lactobacillus reuteri*: Insights into the Mechanism of four-coordinate Co(II)corrinoid formation. J Inorganic Chem. 51, 4482-94.

15. **Mera, P. E**. and Escalante-Semerena, J. C., (2010) Dihydroflavin-driven adenosylation of 4-coordinate Co(II) corrinoids: are cobalamin reductases enzymes or electron transfer proteins?, J Biol Chem, 285, 2911-2917.

16. **Mera, P. E**. and Escalante-Semerena, J., (2010) Multiple Roles of ATP:Cob(I)alamin Adenosyltransferases in the Conversion of B12 to Coenzyme B12. Review, Applied Microbiology and Biotechnology, 88, 41-48

17. **Mera, P. E**., St. Maurice, M., Rayment, I., and Escalante-Semerena, J. C. (2009) Residue Phe112 of the human-type corrinoid adenosyltransferase (PduO) enzyme of *Lactobacillus reuteri* is critical to the formation of the four-coordinate Co(II)rrinoid substrate and to the activity of the enzyme. Biochemistry 48, 3138-3145

18. **Mera, P. E**., Rayment, Ivan, and Escalante-Semerena, Jorge C. (2009) Corrinoid Adenosyltransferases. Review, in Handbook of Metalloproteins Online Edition (Messerschmidt, A., Ed.), John Wiley & Sons, Ltd.

19. Park, K., **Mera, P. E**., Escalante-Semerena, J. C., and Brunold, T. C. (2008) Kinetic and spectroscopic studies of the ATP:corrinoid adenosyltransferase PduO from *Lactobacillus reuteri*: substrate specificity and insights into the mechanism of Co(II)corrinoid reduction. Biochemistry 47, 9007-15

20. St. Maurice, M., **Mera, P.E**., Park, K., Brunold, T. C., Escalante-Semerena, J. C., and Rayment, I. (2008) Structural characterization of a human-type corrinoid adenosyltransferase confirms that coenzyme B12 is synthesized through a four-coordinate intermediate. Biochemistry 47, 13829-13836.

21. **Mera, P. E**., St. Maurice, M., Rayment, I., and Escalante-Semerena, J. C. (2007) Structural and functional analyses of the human-type corrinoid adenosyltransferase (PduO) from *Lactobacillus reuteri*. Biochemistry 46, 13829-13836.

22. St. Maurice*, M., **Mera***, **P. E.,** Taranto, M. P., Sesma, F., Escalante-Semerena, J. C., and Rayment, I. (2007) Structural characterization of the active site of the PduO-type ATP:Co(I)rrinoid adenosyltransferase from *Lactobacillus reuteri*. J. Biol. Ch

Honors and Awards

- UIUC Teachers Ranked as Excellent by their Students (Fall 2022)
- Star of Chemistry and Biochemistry Department Award. New Mexico State University (Apr 2020)
- EL Paso Community College Arts & Science Research Symposium – Keynote Speaker. (Jul 2019)
- Research Spotlight - American Society for Biochemistry and Molecular Biology (Jan. 2017)
- Science and Medicine Graduate Research Scholars - University of Wisconsin-Madison Recruiting Weekend – Keynote Speaker (Sep. 2016)
- Ruth L. Kirschstein National Research Service Award. NIH (2011-2013)
- Best Oral Presentation Award at Wind River Conference on Prokaryotic Biology (2009)
- Howard Hughes Medical Institute Teaching Fellow (2008)
- Herman A. Smythe Research Excellence Award (2008)
- Ruth L. Kirschstein National Research Service Award. NIH (2008-2010)
- Chemical-Biology Interface Training Award (2006-2007)
- Outstanding Undergraduate from College of Liberal Arts and Sciences (CLAS), UC-Denver (2003)
- Outstanding Graduating Senior in the Department of Chemistry, UC-Denver (2003)
- Marti Barrett Scholarship (2001)

Funding Sources

Ongoing Research Support

NIH NIGMS R01 (1R01GM133833-01) $1,504,500 08/2019 – 07/2024
Mera, Paola (PI)
Deciphering the molecular circuitry that controls cell cycle progression in bacteria
The goal of this project is to determine the coordination between the onset of chromosome replication, segregation, and cytokinesis.

Under-Review Research Support

NSF STC (Science and Technology Centers) $29,781,067 2024 – 2028
Zaida Luthey-Schulten (PI), Martin Gruebele (Co-PI), Paola Mera + total of ~30 colleagues (Co-I)
Title: *Science and Technology Center for Quantitative Cell Biology*
Funds allocated to me: 0.25 summer salary & 1 graduate student salary for 5 years
Stage: proposal selected for NSF on-site visit scheduled for February 07, 2023.

Honorable Mention – not funded

Chan Zuckerberg Science Initiative $1,149,998 2023 – 2028

Title: *Identifying and exploiting weaknesses of antibiotic resistant bacteria*

The goal of this work was to define how cell shape regulation in bacteria is impacted by antibiotic resistance

Completed Research Support

UIUC

NIH NIGMS R01 Diversity Supplement $117,638 1/2021 – 12/2022

Supplement funding for two years for graduate student Stephanie Puentes. Stephanie is a co-first author on one published manuscript and we are writing her second paper to be submitted this month, March 2023. She is first author and her undergraduate student second author.

NMSU

NIH NIGMS SCORE SC2 (1SC2GM121180-01)

Mera, Paola (PI) $444,000 08/2017 – 07/2020

Regulatory circuitry controlling the cell cycle of Helicobacter pylori

The goal of this project is to identify the molecular regulators that coordinate the progression of the cell cycle in *H. pylori*.

C4CR, NM Cowboys for Cancer Research Foundation

Mera, Paola (PI) $50,000 08/2016 - 07/2017

Transcriptional Regulation of the Replication Initiator in Helicobacter pylori

The goal of this project was to delineate the promoter region of the gene *dnaA* in *Helicobacter pylori*

NCGR NM-INBRE, Sequencing and Bioinformatics Award Mera, Paola (PI) 2016

Defining DnaA's transcriptional regulon in Caulobacter crescentus.

The goal of this sequencing pilot award was to identify transcriptional profiles of DnaA variants.

NMSU Mini Grant. College of Arts and Science. Mera, Paola (PI) 04/2016 – 06/2017

The goal was to fund the RNA-Seq of *C. crescentus* strains expressing DnaA variants.

Invited Presentations

- 2024 Sensory Transduction in Microorganisms (STIM) Gordon Research Conference. January 21 – 26, 2024
- Johns Hopkins University. Department of Biological Chemistry Seminar Series. September 26, 2023.
- 2023 Molecular Genetics of Bacteria and Phages Meeting. UW-Madison. August 7 – 11, 2023. Session Chair & Presenter.
- Indiana University. Microbiology Seminar Series. April 5, 2023.
- Washington University in St. Louis. Department of Biology Seminar Series. March 6, 2023.
- Biological Physics (iPoLs) Seminar Series. UIUC. February 24, 2023.
- Annual Conference of Illinois Association of Community College Biologist. November 11, 2022. Title: It's all about communication: Coordinating the life cycle of bacteria

- Wayne State University. Department of Biological Sciences Seminar Series. April 12, 2021. Title: It's all about communication: coordinating the lifestyles of bacteria.
- University of Colorado-Denver. Chemistry Department Seminar Series. March 19, 2021. Title: It's all about communication: coordinating the lifestyles of bacteria.
- University of Wisconsin-Madison. Microbiology Seminar Series. October 29, 2020. Title: The complexities of coordinating the life cycle of bacteria.
- CauloCon Virtual International Conference. April 22, 2020. Title: The coordination between chromosome replication and segregation.
- University of Georgia. Department of Microbiology Seminar. January 23, 2020. Title: Uncovering the mechanisms of cell cycle regulation: The link between DnaA and ParA.
- EPCC's Summer Art & Science Research Symposium, El Paso Community College, El Paso, TX. July 26, 2019. Title: The three skills I learned in my journey to science.
- American Society for Biochemistry and Molecular Biology NMSU Club, NMSU. September 6, 2018. Title: Bacteria and their life cycles.
- University of Texas at El Paso. Department of Chemistry and Biochemistry Seminar Series. October 2017. Title: Coordinating the life cycle of bacteria.
- New Mexico State University. Department of Biology Seminar Series. October 2016. Title. How a DNA-binding protein got to regulate the cell cycle of bacteria
- New Mexico Institute of Mining and Technology. Chemistry Department Seminar Series. September 9, 2016. Title: DnaA, the Swiss army knife of the bacterial cell cycle controls DNA replication and segregation

Ad-Hoc Reviewer

- National Advisory General Medical Sciences (NAGMS) Council. May 18, 2023.
- NIGMS R35 MIRA NIH. February 2023
- R01& R21 NIH. Prokaryotic and Molecular Biology Study Section (PCMB). June 2022
  After session, invited to become a permanent member for PCMB. Declined offer until completion of tenure process
- R15 NIH Special Emphasis Panel. July 2021
- New Mexico IDeA Network of Biomedical Research Excellence (NM-INBRE). December 2018

Scientific Journals: mBio, PloS Genetics, Journal of Bacteriology, G3, mSphere

On-Campus Service

UIUC

- Member in 10 Ph.D. thesis committees (chair 3)
- Microbiology Curriculum Committee (2021 – present)
- Microbiology Seminar Series Coordinator (2021 – present)
- Microbiology Salyers ECR Selection Committee (2021 – present)
- Microbiology graduate program review committee (2022 – present)
- MCB DEI committee (2020 – present)
- MCB Retreat & Seminar organizing committee (2023 – present)
- MCB BEST Scholarship selection committee (for incoming freshman students) (2022)

- 2023 MSI Annual Conference organizing committee (co-chair)
- I-MMAS (Illinois Mexican/Mexican American Student) Mentoring and Extended Support Committee (2021 – present)

NMSU

- Graduate awards committee
- Graduate recruitment committee
- Graduate outcomes assessment committee (chair)
- Chemistry Olympia organizing committee

Leadership Positions

President of American Society for Microbiology Rio Grande Branch (2019-2020; Voted president-elect in 2017). Maintain documentation and branch member information up to date with National ASM headquarters. Organize Annual Regional Conference.

Chair of College of Arts and Science Junior Faculty Committee (2017 – 2019)
Chosen by Dean of College of Arts and Science at NMSU to lead initiative to strengthen community among junior faculty. Organized multiple events to bring together junior faculty from different departments and promote open conversations with Dean's office.

Maximizing Access to Research Careers (MARC) program Advisory Council (2017 – 2019).
Involved in the successful submission of grant renewal (funded for 2018 - 2023).
Selected to become the director of the program in Fall 2020 (declined offer to move to UIUC). The goal of the NIH-funded MARC program is to increase the number of underrepresented students entering graduate programs.

Teaching

UIUC

- Microbial Physiology MCB 431 (Fall 2021, Fall 2022)
- Invited to teach for the Honors College. Declined until completion of tenure process

NMSU

- Biochemistry I BCHE 395 (Fall 2015 - 2017)
- Biochemistry II BCHE 396 (Spring 2016 - 2019)
- Graduate Level Biochemistry BCHE 542 (Fall 2016 - 2018)
- Molecular Biology Student Seminar Series (Spring 2019)
- Biochemistry Student Seminar Series (Spring 2018, Fall 2018)

Mentoring

UIUC Graduate Students

- Ezza Khan (2nd year Ph.D. candidate)
- Morgan Letzkus (2nd year Ph.D. candidate)
- Stephanie Puentes (3rd year Ph.D. candidate)

- Daniel Joo Lee (Masters student. Graduation date May 2023)
- Amanda Erlandson (defended Ph.D. thesis in December 2022)

UIUC Undergraduate Students

- Yahira Chavez (Jan. 2023 – present)
- JD Norcross (Jun. 2022 – present)
- Tammy Guo (Jun. 2022 – present)
- Katarina Vrtikapa (Aug. 2021 – present)

NMSU Mentees (in Mera lab for >1 year)

- Inoka Menikpurage (Postdoctoral Fellow)
- Ady Melendez (CONACYT Award Recipient)
- Rigel Liefeld (High School Student)
- Rawan Elaksher (NM-NASA and MARC Scholar; undergraduate student; Genetics Major)
- Andrew Parra (BRAiN Scholar; undergraduate student; Biochemistry Major)
- Jackelyn Galaviz (AMP Scholar; undergraduate student; Microbiology Major)
- Joe Babbins (undergraduate student; Chemical Engineering Major, Military veteran)
- David Hernandez (undergraduate student; Genetics Major)
- LaPorsha Campbell (MARC Scholar; undergraduate Student; Microbiology Major)
- Ericka Flores (MARC Scholar; undergraduate student; Chemical Engineering Major)
- Sierra Strebe (MARC Scholar; undergraduate student; Genetics Major)
- Addi Moya (HHMI Scholar; undergraduate student; Genetics Major)
- Daniela Barraza (MARC Scholar; undergraduate student; Biochemistry Major)
- Sergio Aguirre (undergraduate student; Biology Major)
- Chris Acosta (undergraduate student; Biochemistry Major)

NMSU Summer Research (BRIDGES) – Native American Students.

- Treg Kee (2019)
- Mariah Paul (2017)
- Robyn Silverfox (2017)

Selected Outreach Activities

Workshops for undergraduate students (Summer 2019).

Organized Mera Lab to conduct three-full day workshop with undergraduate students from around New Mexico. The goal was to increase scientific literacy by performing student-led science workshops to clarify common misconceptions about bacteria and antibiotic resistance to diverse groups of students.

GUIDE (Summer 2019).

Partnered with Dr. Eric Morgan (NMSU professor in cultural and environmental communication) and Vanessa Fisher (NMSU administrator, >7-year experience working with Native students) to establish the program, *GUIDE,* over the Spring semester of 2019. The goal is to recruit, retain, and graduate underrepresented students in science by providing a culture-centered program that engages and supports Native students who transfer to NMSU from community colleges. GUIDE partnered with the NIH-

funded BRIDGES program. Over the summer of 2019, we performed weekly conversations and workshops with nine Native students.

Fostering STEM in Las Cruces (2017 – 2018).

Co-director and co-founder of program in collaboration with State of New Mexico's Children, Youth, and Family Department (CYFD) Our objective was to generate interest in STEM fields through early intervention. We performed quarterly science-themed activities with approximately 50 foster children ages 5 - 12 in Las Cruces, NM. Every member of my lab was involved in the development and execution of the science-themed activities.

Science is Elementary (2011 - 2015).

Non-profit organization in CA. Led once a month hands-on science experiments in elementary school classrooms from low-income communities.

CURRICULUM VITAE
William W. Metcalf

Education

Ph.D. Microbiology, Purdue University (8/86-10/91)
B.S. Microbiology, University of Illinois (1/83-5/84)
B.S. Anthropology, University of Illinois (8/76-5/81)

Research Interests

Biosynthesis of natural product antibiotics
Metabolism of reduced phosphorus compounds in microorganisms
Genetics and metabolism of Archaea, especially methane-producing organisms

Academic and Research Appointments

- Professor, Department of Microbiology, University of Illinois, 8/06 -present
- Associate Professor, Department of Microbiology, University of Illinois, 8/03 -8/06
- Assistant Professor, Department of Microbiology, University of Illinois, 10/97-8/03
- Co-director, Microbial Diversity Course, Marine Biol. Laboratory, Woods Hole, MA, 2004-2008
- Co-Instructor; Adv. Bacterial Genetics Course, 2002, Cold Spring Harbor Laboratory, New York
- NRSA Postdoctoral Fellow: Sponsor, Dr. Ralph S. Wolfe, 10/94 - 10/97
- Postdoctoral Research Associate in the laboratory of Dr. Ralph S. Wolfe, 2/93 - 10/94
- Postdoctoral Research Associate in the laboratory of Dr. Barry L. Wanner, 10/91 - 2/93
- Graduate Research Assistant, Dept. of Biol. Sci., Purdue Univ., 8/87 - 8/90 and 8/91 - 1/92
- Graduate Instructor, Dept. of Biol. Sci., Purdue Univ., 8/86 - 8/87 and 8/90 - 6/91
- Research Associate, Southern Illinois University School of Medicine, 9/84 - 8/86

Awards, Fellowships and Other Activities

- Elected Fellow in the American Association for the Advancement of Science (AAAS), 2016
- G. William Arends Professor in Molecular and Cellular Biology, 2013-present
- Elected Fellow in the American Academy of Microbiology, 2010
- American Society for Microbiology, Division K Chair, 2005-2006
- Helen Corley Petit Scholar, University of Illinois, 2003-2004
- UIUC "List of Faculty Ranked as Excellent" in 2003, 2004, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016, 2018, 2020
- Searle Scholar, Chicago Community Trust, 1999 Recipient
- NRSA Postdoctoral Fellowship, 10/94 - 10/97
- Purdue University Summer David Ross Fellowship, 6/91-8/91
- Purdue University David Ross Fellowship, 8/88-8/90
- Outstanding Graduate Student Research Award, 1991, Dept. of Biol. Sci., Purdue Univ.
- Monsanto Fellowship, 8/87-8/88
- Phi Kappa Phi Honor Society

Current Funding

- *Discovery, biosynthesis and bioactivity of phosphonic acid natural products*; NIH, National Institute of General Medical Sciences. 4/1/2018 – 3/31/2023. Total Funding: $1,441,835 ($962,629 direct cost).

- *Energy conservation, electron transfer and enzymology during methane production by Methanosarcina species*; DOE, Energy Biosciences Program; 09/15/20 - 09/14/23. Total Funding: $725,000 ($496,309 direct cost).

Past Funding

- *Microbial metabolism of reduced phosphorus compounds.* Agency; NIH, National Institute of General Medical Sciences. 06/01/1999 - 05/31/2004. Total Funding: $1,029,150 ($640,248 direct cost).
- *Genetic analysis of methanogenesis by Methanosarcina species.* Agency; NSF, Microbial Genetics. 09/01/1999 - 08/31/2002. Total Funding: $300,000 ($191,052 direct cost).
- *Genetic analysis of methanogenesis by Methanosarcina species.* Searle Scholars Program. 07/01/1999 - 07/01/2002. Total Funding: $180,000 ($165,000 direct cost).
- *Genetic analysis of hydrogenotrophic methanogenesis by Methanosarcina species.* Agency; DOE, Energy Biosciences. 06/01/2002 - 05/31/2005. Total Funding: $345,000 ($232,694 direct cost).
- *Development of an economically viable nicotinamide cofactor regeneration system.* (Co-PI with Wilfred van der Donk and Huimin Zhao). Source; Biotechnology Research and Development Corporation. 05/01/2002 - 04/30/2005. Total Funding: $900,000 ($600,000 direct cost).
- *Collaborative research: A cold microbial observatory in an Alaskan boreal forest soil.* (Co-PI with J. Handelsam, R. Ruess and J. Banfield). 02/01/2002 - 01/31/2006. Funding to William Metcalf: $55,166 ($38, 579 direct cost).
- *Genetic analysis of methylotrophic methanogenesis by Methanosarcina species.* Agency; NSF, Microbial Genetics. 09/01/2002 - 09/01/2005. Total Funding: $360,000 ($242,497 direct cost).
- *Microbial metabolism of reduced phosphorus compounds.* Agency; NIH, National Institute of General Medical Sciences. 06/01/2004-05/31/2005. Total Funding: $66,079 ($43,189 direct cost).
- *Microbial metabolism of reduced phosphorus compounds.* Agency; NIH, National Institute of General Medical Sciences. 12/10/2004 – 11/30/2008. Total Funding: $1,030,582 ($700,000 direct cost).
- *Genetic analysis of hydrogenotrophic methanogenesis by Methanosarcina species*; DOE, Energy Biosciences Program; 06/01/05 - 05/31/08. Total Funding: $390,000 ($267,975 direct cost).
- *Genetic analysis of methylotrophic methanogenesis by Methanosarcina species.* Agency; NSF, Microbial Genetics. 09/01/2005 – 08/31/2008. $450,000 ($311,549 direct cost).
- *Discovery of new bioactive phosphonates from natural and synthetic sources.* University of Illinois Critical Research Initiatives Program (Co-PI with Wilfred van der Donk). 07/01/06-6/31/09. Total Funding (direct cost) $200,000.
- *Program Project: Discovery, Design and Development of Phosphonic Acid Antibiotics*; NIH, National Institute of General Medical Sciences. 4/1/2007 – 3/31/2012. Total Funding: $7,298,786 ($5,009,791 direct cost). PI: W. Metcalf; Sub-Project Directors: W. Metcalf, W.A. van der Donk, H. Zhao, N. Kelleher, S. Nair and J. Handelsman.
- *Genetic analysis of hydrogenotrophic methanogenesis by Methanosarcina species*; DOE, Energy Biosciences Program; 06/01/08 - 05/31/11. Total Funding: $543,253 ($377,955 direct cost).
- *Genetic analysis of methylotrophic methanogenesis by Methanosarcina species.* Agency; NSF, Microbial Genetics. 09/01/2008 – 08/31/2009. $160,000 ($112,772 direct cost).

- *ARRA Administrative Supplement for Program Project: Discovery, Design and Development of Phosphonic Acid Antibiotics*; NIH, National Institute of General Medical Sciences. 9/30/09-8/31/11. Total Funding: $476,276 ($308,793 direct cost). PI: W. Metcalf; Sub-Project
- *Metabolic engineering of methanogenic Archaea*; Energy Biosciences Institute; 04/01/2010 - 12/31/12; Total Funding: $465,870 ($323,611 direct cost); Co-PI with Nathan Price.
- *Methanogenic archaea and the global carbon cycle: a systems biology approach to the study of Methanosarcina species*; DOE GTL Program; 06/15/2010 - 06/14/14; Total Funding: $2,300,641 ($1,516,522 direct cost); Co-PI with Rachel Whitaker, Nathan Price and Ping Ma.
- *Genetic analysis of methylotrophic methanogenesis by Methanosarcina species.* Agency; NSF, Microbial Genetics. 09/01/2010 – 08/31/2014. $697,263 ($477,011 direct cost).
- *Metabolic engineering of methanogenic Archaea*; Energy Biosciences Institute; 01/01/2013 - 5/31/15; Total Funding: $400,000 ($263,802 direct cost); Co-PI with Nathan Price.
- *Energy conservation during methanogenesis in Methanosarcina species*; DOE, Energy Biosciences Program; 06/01/11 - 05/31/15. Total Funding: $555,000 ($365,659 direct cost).
- *Program Project: Discovery, Design and Development of Phosphonic Acid Antibiotics*; NIH, National Institute of General Medical Sciences. 4/1/2012 – 3/31/2018. Total Funding: $7,956,458 ($5,236,498 direct cost). PI: W. Metcalf; Sub-Project Directors: W. Metcalf, W.A. van der Donk, H. Zhao and S. Nair.
- *Energy conservation during methanogenesis in Methanosarcina species*; DOE, Energy Biosciences Program; 07/01/15 - 03/31/18. Total Funding: $350,000 ($234,964 direct cost).
- *Development of genetic systems for human-associated methanogens;* NIH; 1/15/16 – 12/31/18; Total funding: $418,024 ($275,000 direct cost).
- *Energy conservation, electron transfer and enzymology during methane production by Methanosarcina species*; DOE, Energy Biosciences Program; 03/15/18 - 09/14/20. Total Funding: $650,000 ($445,520 direct cost).
- *Predictive Guidelines for Penetrance and Discovery of Broad-Spectrum Antibiotics;* NIH, National Institute of Allergy and Infection. 02/06/2018 – 01/31/2023. Total Funding: $1,638,456 ($1,109,280 direct cost). PI: Paul Hergenrother; Co-PIs: W. Metcalf, C. White, E. Tajkhorshid and G. Lau and T. Fan. Total Funding for Metcalf Sub-project: $395,224 ($280,250 direct cost).

Publications

1. Metcalf, W.W., P.M. Steed and B.L. Wanner. 1990. Identification of phosphate starvation inducible genes in *Escherichia coli* K-12 by DNA sequencing of *psi::lacZ* (*Mu d*1) transcriptional fusions. J. Bacteriol. **172:**3191-3200. PMID: 2160940.
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Scale Discovery of Phosphonic Acid Natural Products by Genome Mining of 10,000 Actinomycetes. Proc. Natl. Acad. Sci. USA **112:**12175-80. PMID: 26324907, PMC4593130
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110. Metcalf, W.W. 2016. Classic Spotlight: What's on (in) your plate today? J. Bact. **198:** 2897. PMID: 27736749, PMC5055592
111. McClure R.A., A.W. Goering, K-.S.Ju, J.A Baccile, F.C. Schroeder, W.W. Metcalf, R.J.Thomson and N.L. Kelleher. 2016. Elucidating the rimosamide-detoxin natural product families and their biosynthesis using metabolite/gene cluster correlations. ACS Chem. Biol. **11:**3452-3460. PMID: 27809474, PMC5295535
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113. Metcalf, W.W. 2016. Classic Spotlight: Metabolic flux-which way to go? J. Bact. **198:**3248-3249. PMID: 27864374, PMC5116926
114. Labeda, D.P., C.A. Dunlap, X. Rong, Y. Huang, J.R. Doroghazi, K-.S. Ju and W.W. Metcalf. 2017. Phylogenetic relationships in the family Streptomycetaceae using multi-locus sequence analysis. Antonie Van Leeuwenhoek. **110:**563-583. PMID: 28039547,
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137. Vasan, A.K., N. Haloi, R. J. Ulrich, M. E. Metcalf, P. C. Wen, W. W. Metcalf, P. J. Hergenrother, D. Shukla, and E. Tajkhorshid. 2022. Role of internal loop dynamics in antibiotic permeability of outer membrane porins. Proc. Natl. Acad. Sci. **119:**e2117009119. PMID: 35193963, PMC8872756.
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139. Parkinson, E.I., A.A. Alwali and W.W. Metcalf. 2022. An unusual oxidative rearrangement catalyzed by a divergent member of the 2-oxoglutarate-dependent dioxygenase superfamily

during biosynthesis of dehydrofosmidomycin. Angew. Chem. Int. Ed. **61:**e202206173 PMID: 35588368, PMC9296572.

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141. Thomsen, J., K. Weidenbach, W.W. Metcalf and R.A. Schmitz. 2022. Genetic methods and construction of chromosomal mutations in methanogenic Archaea. Methods Mol. Biol. **2522:**105-117. PMID: 361257451.
142. Zhao M, Shin GY, Stice S, Bown L, Coutinho TA, Metcalf W, Gitaitis R, Kvitko BH, Dutta B. 2022. A novel biosynthetic gene cluster across the *Pantoea* species complex is important for pathogenicity in onion. Mol Plant Microbe Interact. **36:**176-188. PMID: 36534063.
143. Bown, L. Hirota, R., Goettge, M.N., Cui, J. Krist, D.T. Zhu, L., Giurgiu, C., van der Donk, W.A., Ju, K-.S. and W.W. Metcalf. 2023. A novel pathway for biosynthesis of the herbicidal phosphonate natural product phosphonothrixin is widespread in actinobacteria. J. Bacteriol. *In press.*
144. Blin, K., Shaw, S., Augustijn, H.E., Reitz, Z.L., Biermann, F., Alanjary, M., Fetter, A., Terlouw, Metcalf, W.W., B., Helfrich, E.J.N., van Wezel, G.P., Medema, M.H. and T. Weber. 2023. antiSMASH 7.0: new and improved predictions for detection, regulation, chemical structures, and visualisation. Nuc Acids Res. *In press*.

Patents

1. Wanner, B.L., W.W. Metcalf and K-.S. Lee. 1995. Method for enhanced production and recovery of phosphate starvation inducible gene products. United States Patent **5,413,920.**
2. Zhao, H., W.W. Metcalf, W.A. van der Donk, T. Johannes and Ryan Woodyer. 2005. Phosphite dehydrogenase mutants for nicotinamide cofactor regeneration. United States Patent **7,402,419**.
3. Metcalf, W.W., W.A. van der Donk, J.K. Zhang, B.T. Circello, S.A. Borisova. 2013. Compositions and Methods for the synthesis of APPA-containing peptides. United States Patent **8,372,601**
4. Metcalf, William W.W., Ju, K.-S., Gao, J., Doroghazi, J.R., van der Donk; W.A. 2018. Phosphonic acid compounds and screening method. United States Patent **9,993,490**

Invited Presentations

- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, 1999.
- ASM Conference on Microbial Biodiversity, 1999, Chicago, IL.
- Invited Lecturer, Microbial Diversity Course, 1999, Marine Biol. Laboratory, Woods Hole MA.
- Purdue University, Biochemistry and Molecular Biology Program, Fall 1999 Seminar Series.
- Ohio State University, Department of Microbiology, Spring 2000 Seminar Series
- Invited Lecturer, Adv. Bacterial Genetics Course, 2000, Cold Spring Harbor Laboratory, New York
- Southern Illinois University, Department of Microbiology, Fall 2000 Seminar Series
- Whitehead Institute/MIT Center for Genomic Research, Fall 2000
- American Academy of Microbiology, Colloquium on Geobiology
- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, 2001.
- Utah State University, Department of Chemistry and Biochemistry, Fall 2001 Seminar Series
- John Ingraham Lecturer, West Coast Bacterial Physiologists Meeting, Asilomar, CA
- Invited Lecturer, Microbial Diversity Course, 2002, Marine Biol. Laboratory, Woods Hole MA.
- Gordon Conference; Molecular Basis of Microbial One-Carbon Metabolism, 2002.

- University of Nebraska, Microbiology Seminar Program, Fall 2002
- University of Wisconsin; Department of Bacteriology; December, 2002
- Harvard University Medical School, Dept. of Microbiology and Molecular Genetics, April, 2003
- Convener, Speaker; American Society for Microbiology, Annual Meeting; May, 2003
- University of Washington; Department of Microbiology; May, 2003
- Invited Lecturer, Adv. Bacterial Genetics Course, 2003, Cold Spring Harbor Laboratory, New York
- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, August, 2003.
- American Academy of Microbiology Colloquium: *"Microbiology in the 21st Century: Where are we and where are we going?"*, Charleston, SC, September, 2003
- Convener, Speaker; Division K symposium: "Recent advances in Archaeal Biology", American Society for Microbiology, Annual Meeting; June, 2005
- Convener, Speaker; Colloquium: "Putting microbes to work". American Society for Microbiology, Annual Meeting; June, 2005
- University of Georgia, Department of Microbiology, Fall 2005
- California Technical University, Department of Environmental Engineering, Spring 2006
- University of California-Davis, Department of Microbiology, Spring 2006
- University of Texas at Austin, Institute for Cellular and Molecular Biology, Fall 2006
- Southern Illinois University, Department of Microbiology, Spring 2007
- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, August, 2007.
- Keynote lecture, DFG Archaea Program Annual Meeting, Schmitten, Germany, October, 2007.
- University of British Columbia, Biochemistry Program, Spring 2008
- Convener, Speaker; Division K symposium: "Mining Microbial Genomes for Natural Product Discovery". American Society for Microbiology, Annual Meeting; June, 2008
- University of Copenhagen, DK, Dept. of Biology Biocenter Seminar series, September, 2008
- Montana State University, Thermal Biology Institute, December, 2008
- University of Chicago, Dept. of Microbiology, February, 2009
- Keynote lecture, 2009 Fellows Symposium, Institute for Genomic Biology, University of Illinois
- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, August, 2009.
- University of Maryland, Center for Advanced Research in Biotechnology, December, 2009
- Keynote Address, Perlman Symposium on Antibiotic Discovery and Development, University of Wisconsin-Madison, April, 2010
- Convener, Speaker; Colloquium: "Weird Microbes and Novel Physiologies". American Society for Microbiology, Annual Meeting; May, 2010
- Gordon Conference; Molecular Basis of Microbial One-Carbon Metabolism, 2010.
- Agriculture Research Service, Invited Seminar Series, Peoria, IL, December, 2010.
- University of California-Davis, Student-sponsored Seminar, Department of Microbiology, January, 2011
- American Academy of Microbiology Colloquium: *"*Advanced Microbiology Summer Courses*"*, San Francisco, CA, Januaray, 2011
- Division K Lecture, American Society for Microbiology, Annual Meeting; May, 2011
- University of Washington, Department of Microbiology, June 2011
- Invited Speaker, "Next generation antibiotics: where will they come from, who will develop them?" Society for Industrial Microbiology, July, 2011.

- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, August, 2011.
- The Ohio State University, Department of Microbiology, March, 2012
- Gordon Conference; Molecular Basis of Microbial One-Carbon Metabolism, Invited Speaker, August, 2012.
- Purdue University, Department of Biochemistry, April, 2013.
- Gordon Conference; Archaea: Ecology, metabolism and molecular biology, July, 2013.
- Miami University, Department of Microbiology, Spring 2014
- Invited Lecturer, Microbial Diversity Course, 2014, Marine Biol. Laboratory, Woods Hole MA.
- Indiana University, Biochemistry Program, October, 2014
- Invited Lecturer, Microbial Diversity Course, 2015, Marine Biol. Laboratory, Woods Hole MA.
- Convener & Speaker, SIMB annual meeting, August, 2015
- Invited Lecturer, Microbial Diversity Course, 2016, Marine Biol. Laboratory, Woods Hole MA.
- Keynote Speaker, Purdue University, Dept. of Biochemistry Annual Retreat
- Invited Speaker, Synthetic Biology of Natural Products, 2017, Cancun, Mexico
- Invited Speaker, 115th International Titisee Conference, 2017; Evolutionary mitochondrial biology: molecular, biochemical, and metabolic diversity
- Invited Lecturer, Microbial Diversity Course, 2017, Marine Biol. Laboratory, Woods Hole MA.
- Seminar Speaker, University of Chicago, December, 2017.
- Invited Speaker, Gordon Conference; Marine Natural Products, March, 2018.
- Invited Speaker, Natural Product Discovery and Development in the Genomic Era, Society for Industrial Microbiology and Biotechnology, January, 2018
- Invited Lecturer, Microbial Diversity Course, 2018, Marine Biol. Laboratory, Woods Hole MA.
- Invited Speaker, ASM Microbe, 2019, Session: Impacting the planet one carbon at a time: fundamentals of microbial methane metabolism.
- Invited Lecturer, Microbial Diversity Course, 2019, Marine Biol. Laboratory, Woods Hole MA.
- Seminar Speaker, University of Chicago, December, 2017.
- Seminar Speaker, University of Chicago, December, 2017.
- UCSB Department of Chemistry and Biochemistry Colloquium, February, 2022
- University of Minnesota, Plant and Microbial Biology Spring 2022 Colloquium Series, March 2022.

Service to Scientific Community

- Journal of Bacteriology (Editor), 2011-2021
- American Academy of Microbiology, Committee on Elections, 2014-2018
- Archives of Microbiology (Editor)
- Journal Review : Archaea (Editorial Board), PNAS (ad hoc Editor), Nature, Science, Genetics, Molecular Microbiology, Anaerobe, FEMS Microbial Ecology, Nature Genetics, Journal of Molecular Evolution , Journal of the American Chemical Society, Applied and Environmental Microbiology (Editorial Board, resigned 2011), Nature Chemical Biology
- Grant Review: NSF Metabolic Biochemistry, NSF LExEn, 2000 Panel, NSF Microbial Observatories, 2002 Panel, DOE Energy Biosciences, NSF Microbial Biology, 2003 Panel, NSF Microbial Genetics, NIGMS various ad hoc panels, NSF Microbial Biology, 2006 Panel, DOE Bioenergy Site Visit Panel, 2009, DOE BES Grant Review Panel, 2010, DOE KBase, Special review Panel, 2015, DOE KBase, Special review Panel, 2017, DOE Joint Genomes Insitute, Special Review Panel, 2017, NIH SBCB Panel 2020

On Campus Service

- MCB Promotions and Tenure Committee, Chair, 2022-present
- Department of Microbiology, Microbiology Search Committee, 2019
- Department of Microbiology, Microbiology Curriculum Committee, 2019-present
- Institute for Genomic Biology, Executive Committee, 2004-present
- Institute for Genomic Biology, MMG Theme Leader, 2004-present
- MCB Strategic Advisory Committee, 2018-2021
- Office of Technology Management Advisory Committee, 2017-2020
- Chemical Biology Interface Training Grant, Co-director, 2005-2021
- Plant Biology Search Committee, 2015
- LAS Nominations Committee, 2014-2018
- Microbiology Faculty Search Committee, 2013
- MCB Faculty Search Committee, 2012
- Search Committee for Director of the Institute for Genomic Biology, 2011
- School of Molecular and Cellular Biology, Executive Committee, 2008-2010
- Department of Microbiology, Bioinformatics Search Committee, 2005
- Department of Microbiology, Microbial Ecology Search Committee, 2005
- Caver Metabolomics Center, Advisory Committee, 2004-2010
- Department of Microbiology, Microbial Ecology Search Committee, 2004
- School of Molecular and Cellular Biology, Promotions and Tenure Committee, 2003-2008
- Department of Microbiology, Graduate Recruiting Committee, 2002-2007
- School of Molecular and Cellular Biology, Graduate Recruiting Committee, 2002-2007
- Department of Microbiology, Graduate Studies Committee, 2002-2007
- Microbiology Seminar Chairman, 1998-2003
- Microbiology Undergraduate Research committee, 1999-2003
- Microbiology Faculty Search Committee, 1999
- Cell and Molecular Biology Training Grant, Executive Committee, 1999-2005
- Faculty Advisor to CMB Training Grant Seminar Committee, 1999-2005
- MCB Seminar Committee, 1998-2003
- Civil Engineering/Animal Science Search Committee, 1999
- Organizing Committee for the Frontiers in Environmental Microbiology Lecture Series 1998/1999
- Annual Faculty Retreat on Active Learning, 1999
- Annual Faculty Retreat on Active Learning, 2001

Courses Taught

- Microbiology 309: The biochemical basis of microbial diversity.
- Microbiology 412: Topics in microbiology, Biology of Archaea.
- Microbiology 485: Microbiology Seminar
- MBC 424: Microbial Biochemistry
  - Achieved “List of Faculty Ranked as Excellent” for MCB424 (formerly Micro309) in 2003, 2004, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2014, 2016, 2018, 2021, 2022.
- MCB534: Advanced Microbial Metabolism

- Achieved "List of Faculty Ranked as Excellent" for MCB534 (formerly Micro309) in 2016.
- MCB 300: Microbiology
  - Achieved "List of Faculty Ranked as Excellent" for MCB300 (formerly Micro309) in 2012, 2014.

Graduate Students Supervised		**Current position**
Matthew A. Pritchett	Ph.D., 2003	Faculty, Tenn-Martin
Andrea K. White	Ph.D., 2003	Faculty, Cal State-Chico
Kechao Yang	Ph.D. 2004	General Electric, Shanghai, China
Adam Guss	Ph.D. 2006	Group leader, Oak Ridge National Laboratory
Marlene Wilson	Ph.D. 2006	Research Scientist, NIH, Bethesda, MD
Joshua Blodgett	Ph.D. 2007	Faculty, Washington University, St. Louis
Paula V. Welander	Ph.D. 2007	Faculty, Stanford
Arpita Bose	Ph.D. 2008	Faculty, Washington University, St. Louis
Rina Opulencia	Ph.D. 2009	Faculty at University of the Philippines Los Baños
Gargi Kulkarni	Ph.D. 2010	Senior Scientist, California Institute of Technology
Ben Circello	Ph.D. 2010	Proctor & Gamble, Cincinnati, OH
Xiaomin Yu	Ph.D. 2014	Faculty, Fujian Agriculture and Forestry University
Madeline López	Ph.D. 2017	post-doctoral, Boston University
"Andrew" He Fu	Ph.D. 2017	post-doctoral, University of Georgia
Thom Mand	Ph.D. 2018	post-doctoral at Oak Ridge National Labs
Michelle Goettge	Ph.D. 2018	currently at Manus Biotech, Boston MA
Kristen Farley	Ph.D. 2020	post-doctoral, University of Illinois
Alex Polidore	Ph.D. 2023	post-doctoral, University of Illinois
Roy Rodriguez Carrero	current	
Angelica Casserio	current	

Masters Degree Students		
Amaya Garcia	M.S. 2001	Faculty, Rocky Mountain College
Craig H. Kuettner	M.S. 2002	Pharmacia, Inc.
Lisa Mueller	M.S. 2003	
Donna Kridelbaugh	M.S. 2006	Staff Scientist, Oak Ridge National Laboratory
Rimpa Ghosh	M.S. 2012	Senior Research Executive, Hindustan Unilever Ltd
Joel Cioni	M.S. 2012	
Nannan Jiang	M.S. 2012	Staff Scientist, Oak Ridge National Laboratory
Tahere Mokhtari	M.S. 2019	

Undergraduate research projects

Sylvia Chow
Hammad Khan
Carl Radosevich
Shannon Neuhaus
Jon McDaniel
Haroon Osami
Joleen Su

Nurul Zulkepli
Miral Patel
Amla Sampat
Neda Bahrani
John Fudala
Emily Metzger
Caleb Shearrow
Steven Li
Robert Haines
Konstantin Tchalukov
Nicholas Shay
Sara Zhukovsky
Natalia Ciszek
Ramon Macias

Post-Doctoral

Paulo Boccazzi	Pharyx, Inc., Boston, MA
Rachel Larsen	Faculty, University of Southern Maine
Micheal Rother	Faculty, Technische Universität Dresden
Andrew Eliot	Dupont, Inc., Wilmington, DE
Benjamin Griffin	Synthetic Genomics, San Diego, CA
Mi Wang	Nanjing HTZ Biopharmaceutical Public Platform Co. Ltd
Nicole Buan	Faculty, University of Nebraska
Svetlana Borisova	Amyris, Inc., San Francisco, CA
Annette Erb	Roche, Zurich
Kou-San Ju	Faculty, Ohio State University
Sarath Janga	Faculty, Indiana Purdue University Medical School, Indianapolis
James Doroghazi	Bayer Crop Sciences, Research Triangle Park, North Carolina
James Henriksen	AgBiome Inc.
Bradley Evans	Danforth Plant Sciences Center
Nicolai Müller	Research Scientist, University of Konstanz, Germany
Jeremy Ellermeier	Faculty, S.E. Missouri St.
Petra Kohler	on parental leave
Dipti Nayak	Faculty, University of Canilfornia-Berkeley
Elizabeth Parkinson	Faculty, Purdue University
Manuel Ortega	currently a post-doc at MIT
Matthew Jennings	Faculty, Centenary College of Louisiana
Xiangyang Lui	Research Scientist at PPD Laboratories Bioanalytical Lab
Matteo Cossu	currently at working in family business in Italy
Luke Bown	currently at BiomEdit, Indianapolis, IN

October 11, 2023

CURRICULUM VITAE

Name: Gary Jay Olsen

Current Positions: Department of Microbiology,
Carl R. Woese Institute for Genomic Biology, and
Center for Biophysics and Quantitative Biology

Department of Microbiology
University of Illinois
B103 Chemical & Life Sciences Laboratory
601 South Goodwin Avenue
Urbana, IL 61801
USA

Education and Training

Institution and Location	Degree	Years	Field of Study
University of California, Los Angeles, CA	B.S.	1971–75	Physics
University of California, Los Angeles, CA	M.S.	1975–76	Physics
University of Colorado Health Sciences Center, Denver, CO	Ph.D.	1976–83	Biophysics
National Jewish Hospital and Research Center, Denver, CO	postdoctoral	1983–84	Molecular Biology
Department of Biology, Indiana University, Bloomington, IN	postdoctoral	1984–85	Molecular Biology

Research and Professional Positions

Sep. 1971 – June 1976: Undergraduate and graduate student in Physics, University of California at Los Angeles

Apr. 1972 – Dec. 1983: Consultant to T. R. Whitney Corporation and Pacific Infrared Systems Co., both in Reseda, CA

Sep. 1976 – Aug. 1983: Graduate student in Biophysics, University of Colorado Health Sciences Center. Research done with Dr. Mitchell L. Sogin, National Jewish Hospital and Research Center, Denver, CO

Sep. 1983 – June 1984: Research Associate with Dr. Norman R. Pace, Department of Molecular and Cellular Biology, National Jewish Hospital and Research Center, Denver, CO

July 1984 – June 1985: Research Associate with Dr. Norman R. Pace, Department of Biology, Indiana University, Bloomington, IN

July 1985 – June 1988: Assistant Scientist, Department of Biology, Indiana University, Bloomington, IN

Oct. 1985 – June 1988: Fellow of the Institute for Molecular and Cellular Biology, Indiana University, Bloomington, IN

July 1988 – Aug. 1994: Assistant Professor of Microbiology, University of Illinois, Urbana, IL

Aug. 1988 – Aug. 1989: Adjunct Assistant Professor of Supercomputer Applications, University of Illinois, Urbana, IL

Aug. 1989 – Aug. 1990: Assistant Professor, Beckman Institute for Advanced Science and Technology, University of Illinois, Urbana, IL

Aug. 1991 – 1993: Faculty of Genetics Program, University of Illinois, Urbana, IL

1992 – 1998: GenBank Taxonomy Workgroup

Aug. 1992 – 2012: Faculty of Cell and Molecular Biology Training Grant, University of Illinois, Urbana, IL

Aug. 1994 – Aug. 2001: Associate Professor of Microbiology, University of Illinois, Urbana, IL

1994 – 1996: Advisory Board of National Biological Computing Resource, San Diego Supercomputing Center, La Jolla, CA

Sep. 1998 – June 2002: Member of the National Research Council Space Studies Board

Apr. 2001 – present: Member of the Center for Biophysics and Quantitative Biology (formerly Center for Biophysics and Computational Biology), University of Illinois, Urbana, IL

Aug. 2001 – present: Professor of Microbiology, University of Illinois, Urbana, IL

Feb. 2002 – June 2004: "Oklahoma Biomedical Research Infrastructure Network" External Advisory Committee member.

Feb. 2004 – present: Adjunct Professor, Institute for Genomic Biology, University of Illinois, Urbana, IL

July 2004 – 2020: "Oklahoma IDeA Network of Biomedical Research Excellence" External Advisory Committee member.

Oct. 2010 – 2011: NSF "National Ethics Center" Steering Committee member.

2011 – 2015: "National Center for Professional and Research Ethics" Steering Committee member.

2011 – present: Affiliate, Illinois Informatics Institute, University of Illinois, Urbana, IL.

2013 – present: Member Institute for Universal Biology — a NASA Astrobiology Institute, University of Illinois, Urbana, IL.

Honors

Oct. 1989: National Science Foundation, "Presidential Young Investigator Award."

Mar. 1992: Nominated for National Science Foundation "Forefronts of Supercomputing 1992 Award."

Jan. 2001: Fellow of American Academy of Microbiology

May 2003: United States Federation of Culture Collections / J. Roger Porter Award, American Society for Microbiology

Selected Activities

Participant in National Science Foundation (NSF) sponsored workshop "Cell and Molecular Biology in the Ocean Sciences," Savannah, GA, Feb. 20–22, 1987.

Instructor in Gray Freshwater Institute course "Microbial Population Analysis Using 16S Ribosomal RNA," MN, 1987.

Participant in NSF "Panel and Workshop on Genomic Databases," Washington, DC, June 6–7, 1988.

Instructor in Woods Hole Marine Biology Laboratory (MBL) "Molecular Evolution Workshop," Woods Hole, MA, for 12 years (1988–1999).

Presenter and participant in Department of Energy (DOE) sponsored "Workshop on Advanced Computer Technologies and Biological Sequencing," Argonne National Laboratory, IL, Nov. 3–5, 1988.

Participant in National Library of Medicine (NLM) and NSF sponsored "*E. coli* Database Workshop," Washington, DC, Mar. 7–8, 1989.

Participant in NLM and NSF sponsored "*E. coli* Database Workshop II," Chicago, IL, June 28–29, 1989.

Participant in NSF sponsored "Workshop on Scientific Databases," University of Virginia, Charlottesville, VA, Mar. 12–13, 1990.

Instructor in NATO Advanced Study Institute "Molecular Techniques in Taxonomy," University of East Anglia, Norwich, UK, July 9–20, 1990.

Instructor in Centers for Disease Control (CDC) "Generation and Analysis of Sequence Data Course," Atlanta, GA, June 8–19, 1992.

Instructor in NSF-DOE sponsored "Institute in Computational Biology," Argonne National Laboratory, Argonne, IL, Dec. 7–11, 1992.

Instructor in "Computational Biology on the CM-5" Workshop, National Center for Supercomputer Applications, Urbana, IL, June 6–8, 1993.

Presenter and session chair at DOE Workshop on "Small Genomes: New Initiatives in Mapping and Sequencing." Center for Advanced Research in Biotechnology, Rockville, MD, July 7–9, 1993.

Instructor in Fundação Tropical de Pesquisas e Technologia "André Tosello" & International Centre for Genetic Engineering and Biotechnology workshop "Bioinformatics: Databases and Computer Networks in Biology," Campinas, São Paulo, Brazil, May 30–June 3, 1994.

Participant in United Nations Environment Programme, Global Biodiversity Assessment (GBA) Writing Workshop, International Union of Biological Sciences, Paris, France, July 11–15, 1994.

Participant in National Center for Biotechnology Information (NCBI) "GenBank Taxonomy Workshop," Bethesda, MD, Apr. 19–21, 1995.

Instructor in Woods Hole MBL "Microbial Diversity Course," Woods Hole, MA, 1995–1996.

Participant in Workshop on Integrated Microbial Databases, Center for Microbial Ecology, Michigan State University, East Lansing, MI, Aug. 11–12, 1995.

Participant in Department of Energy Microbial Genome Investigators Meeting, The Institute for Genomic Research, Gaithersburg, MD, Sep. 25, 1995.

Participant and presenter in American Academy of Microbiology Colloquium "The Microbial World: Foundation of the Biosphere," Palm Coast, FL, Jan. 19–21, 1996.

Participant and session discussion leader in "Green Plant Phylogeny Research Coordination Group—Data Analysis Workshop," Baton Rouge, LA, Feb. 14–16, 1996.

Organizing Committee for The Beckman Institute Symposium: "Bioinformatics, structure and function," Urbana, IL, May 29–June 1, 1997.

Instructor in Centro Argentino-Brasileño de Biotecnologia sponsored workshop "Molecular phylogeny. The reconstruction of the evolutionary history of organisms based on molecular

data," CIBYF, Department of Microbiology, School of Agricultural Sciences, National University of Buenos Aires, Argentina, Sep. 29–Oct. 10, 1997.

Created and taught CDC course "Phylogenetic Analysis," Atlanta, GA, June 15–19, 1998.

Participant in American Association for the Advancement of Science review of the NSF EPSCoR (Experimental Program to Stimulate Competitive Research) Alaska Genomics Project, Mar. 15–17, 2000.

Participant in National Science Foundation Workshop on Microbial Genomics, Johnson Center, Woods Hole, MA, Aug. 10–11, 2000.

Participant in American Academy of Microbiology Colloquium "Microbial Ecology and Genomics: A crossroads of opportunity," Singer Island, FL, Feb. 23–25, 2001.

Created and taught CDC course "Phylogenetic Analysis," Atlanta, GA, Sep. 24–28, 2001.

Participant in National Science Foundation Evolutionary Synthesis Center Workshop, Belmont Conference Center, Elkridge, MD, Jan. 31–Feb. 3, 2002.

Instructor in "Geobiology: An Intensive Training Course in a Rapidly Evolving Field". Offered by the USC Wrigley Institute and sponsored by the Agouron Institute. USC Wrigley Marine Science Center, Catalina Island, CA, July 6–Aug. 16, 2002.

Instructor in "Advances in Genome Technology and Bioinformatics." MBL, Woods Hole, MA, for 4 years (2002–2005).

Presented half-day "Workshop on Phylogenetic Analysis." Department of Microbiology, Institute of Plant Biology, Botanical Garden, University of Zürich, Zürich, Switzerland, Mar. 5, 2003.

American Society for Microbiology 2004 General Meeting Colloquium Planning Committee, Denver, CO, Apr. 11, 2003.

Instructor in ASM Workshop "Concepts for Establishing and Operating a Microbial Culture Collection", New Orleans, LA, May 22–23, 2004.

Participant in University of Colorado DUSEL Workshop (part of National Science Foundation Deep Underground Science and Engineering Laboratory Program Planning and Technical Requirements Solicitation 1), University of Colorado, Boulder, CO, Jan. 4–7, 2005.

Ad hoc member of National Research Council Space Studies Board Committee on the Origin and Evolution of Life, University of Colorado, Boulder, CO, Oct. 3–5, 2005.

Participant in American Association for the Advancement of Science review of the Arkansas INBRE (IDeA Network of Biomedical Research Excellence) Program in Bioinformatics, Jan. 22–24, 2006.

Participant in Department of Energy Workshop "Project to Sequence Bergey's," University of Georgia, Athens, GA, Mar. 8–9, 2007.

Participant in Department of Energy "GTL Systems Biology Knowledgebase Workshop," Bethesda, MD, May 28–30, 2008.

Participant in American Academy of Microbiology Colloquium "Large-Scale Sequencing," Washington, DC, Sep. 19–21, 2008.

Participant in NIH NIGMS "Conference on Dynamics of Host-Associated Microbial Communities," National Institutes of Health, Bethesda, MD, Nov. 13–14, 2008.

Session co-organizer and participant in Department of Energy "International Workshop on Opportunities in Computational Biology at Extreme Scale," Chicago, IL, Aug. 17–19, 2009.

Organizing committee of Argonne National Laboratory Institute of Computing in Science (ICiS), "Genomics Driven Modeling of Microbes and Communities", Park City, Utah, July 23–30, 2011.

Participant in NSF sponsored "Data Curation for Geobiology Workshop", Gardner, MT, Apr. 15–16, 2013.

Session co-organizer and co-chair at NASA "AbSciCon2017", Mesa, AZ, Apr. 23–28, 2017.

Publications

1. Sogin, M. L., and Olsen, G. J. 1980. Identification and mapping of a 60 bp *Eco*RI fragment in the *Dictyostelium discoideum* ribosomal DNA. *Gene* **8**: 231–238. (PMID: 6244213)
2. Olsen, G. J., and Sogin, M. L. 1982. Nucleotide sequence of *Dictyostelium discoideum* 5.8S ribosomal ribonucleic acid: Evolutionary and secondary structural implications. *Biochemistry* **21**: 2335–2343. (PMID: 7093192)
3. Walker, T. A., Johnson, K. D., Olsen, G. J., Peters, M. A., and Pace, N. R. 1982. Enzymatic and chemical structure mapping of mouse 28S ribosomal ribonucleic acid contacts in 5.8S ribosomal ribonucleic acid. *Biochemistry* **21**: 2320–2329. (PMID: 7093191)
4. McCarroll, R., Olsen, G. J., Stahl, Y. D., Woese, C. R., and Sogin, M. L. 1983. Nucleotide sequence of the *Dictyostelium discoideum* small-subunit ribosomal ribonucleic acid inferred from the gene sequence: Evolutionary implications. *Biochemistry* **22**: 5858–5868.
5. Olsen, G. J., McCarroll, R., and Sogin, M. L. 1983. Secondary structure of the *Dictyostelium discoideum* small subunit ribosomal RNA. *Nucleic Acids Res.* **11**: 8037–8049. (PMID: 6359065; PMCID: PMC326558)
6. Olsen, G. J. 1983. *Comparative Analysis of Nucleotide Sequence Data.* Ph.D. Dissertation, University of Colorado, Health Science Center, Denver, CO.
7. Stahl, D. A., Lane, D. J., Olsen, G. J., and Pace, N. R. 1984. Analysis of hydrothermal vent-associated symbionts by ribosomal RNA sequences. *Science* **224**: 409–411. (PMID: 17741220)
8. Seilhamer, J. J., Olsen, G. J., and Cummings, D. J. 1984. *Paramecium* mitochondrial genes: I. Small subunit rRNA gene sequence and microevolution. *J. Biol. Chem.* **259**: 5167–5172. (PMID: 6371000)
9. Pace, N. R., Stahl, D. A., Lane, D. J., and Olsen, G. J. 1985. Analyzing natural microbial populations by rRNA sequences. *ASM News* **51**: 4–12.
10. Rogers, M. J., Simmons, J., Walker, R. T., Weisburg, W. G., Woese, C. R., Tanner, R. S., Robinson, I. M., Stahl, D. A., Olsen, G., Leach, R. H., and Maniloff, J. 1985. Construction of the mycoplasma evolutionary tree from 5S rRNA sequence data. *Proc. Natl. Acad. Sci. USA* **82**: 1160–1164. (PMID: 2579388; PMCID: PMC397214)
11. Yang, D., Oyaizu, Y., Oyaizu, H., Olsen, G. J., and Woese, C. R. 1985. Mitochondrial origins. *Proc. Natl. Acad. Sci. USA* **82**: 4443–4447. (PMID: 3892535; PMCID: PMC391117)
12. Stahl, D. A., Lane, D. J., Olsen, G. J., and Pace, N. R. 1985. Characterization of a Yellowstone hot spring microbial community by 5S ribosomal RNA sequences. *Appl. Environ. Microbiol.* **49**: 1379–1384. (PMID: 2409920; PMCID: PMC241732)
13. Lane, D. J., Stahl, D. A., Olsen, G. J., Heller, D. J., and Pace, N. R. 1985. A phylogenetic analysis of the genera *Thiobacillus* and *Thiomicrospira* by 5S ribosomal RNA sequences. *J. Bacteriol.* **163**: 75–81. (PMID: 3924899; PMCID: PMC219082)

14. Elwood, H. J., Olsen, G. J., and Sogin, M. L. 1985. The small-subunit ribosomal RNA gene sequences from the hypotrichous ciliates *Oxytricha nova* and *Stylonychia pustulata*. *Mol. Biol. Evol.* **2**: 399–410. (PMID: 3939705)

15. Lane, D. J., Pace, B., Olsen, G. J., Stahl, D. A., Sogin, M. L., and Pace, N. R. 1985. Rapid determination of 16S ribosomal RNA sequences for phylogenetic analyses. *Proc. Natl. Acad. Sci. USA* **82**: 6955–6959. (PMID: 2413450; PMCID: PMC391288)

16. Olsen, G. J., Pace, N. R., Nuell, M., Kaine, B. P., Gupta, R., and Woese, C. R. 1985. Sequence of the 16S rRNA gene from the thermoacidophilic archaebacterium *Sulfolobus solfataricus* and its evolutionary implications. *J. Mol. Evol.* **22**: 301–307. (PMID: 3936935)

17. Lane, D. J., Stahl, D. A., Olsen, G. J., and Pace, N. R. 1985. Analysis of hydrothermal vent-associated symbionts by ribosomal RNA sequences. In Jones, M. L. (ed.), *The Hydrothermal Vents of the East Pacific Rise: An Overview/ Bulletin of the Biological Society of Washington, No. 6*, INFAX, Vienna, VA, pp. 389–400.

18. Woese, C. R., and Olsen, G. J. 1986. Archaebacterial phylogeny: Perspectives on the urkingdoms. *Syst. Appl. Microbiol.* **7**: 161–177. (PMID: 11542063) Reprinted in Kandler, O., and Zillig, W. (eds.), *Archaebacteria '85: Proceedings of the EMBO Workshop on Molecular Genetics of Archaebacteria and the International Workshop of Biology and Biochemistry of Archaebacteria, Munich, June 1985*, Gustov Fisher Verlag, Stuttgart/New York, pp. 161–177.

19. Pace, N. R., Olsen, G. J., and Woese, C. R. 1986. Ribosomal RNA phylogeny and the primary lines of evolutionary descent. *Cell* **45**: 325–326. (PMID: 3084106)

20. Pace, N. R., Stahl, D. A., Lane, D. J., and Olsen, G. J. 1986. The analysis of natural microbial populations by ribosomal RNA sequences. *Adv. Microbial Ecol.* **9**: 1–55.

21. Reich, C., Gardiner, K. J., Olsen, G. J., Pace, B., Marsh, T. L., and Pace, N. R. 1986. The RNA component of the *Bacillus subtilis* RNase P: Sequence, activity, and partial secondary structure. *J. Biol. Chem.* **261**: 7888–7893. (PMID: 2423526)

22. Olsen, G. J., Lane, D. J., Giovannoni, S. J., Pace, N. R., and Stahl, D. A. 1986. Microbial ecology and evolution: A ribosomal RNA approach. *Annu. Rev. Microbiol.* **40**: 337–365. (PMID: 2430518)

23. Woese, C. R., Pace, N. R., and Olsen, G. J. 1986. Are arguments against archaebacteria valid? *Nature (London)* **320**: 401–402. [Scientific Correspondence]

24. Raff, R. A., Anstrom, J. A., Chin, J. E., Field, K. G., Ghiselin, M. T., Lane, D. J., Olsen, G. J., Pace, N. R., Parks, A. L., and Raff, E. C. 1987. Molecular and developmental correlates of macroevolution. In Raff, R. A., and Raff, E. C. (eds.), *Development as an Evolutionary Process*, A. R. Liss, New York, pp. 109–138.

25. Stahl, D. A., Lane, D. J., Olsen, G. J., Heller, D. J., Schmidt, T. M., and Pace, N. R. 1987. A phylogenetic analysis of certain sulfur-oxidizing and related morphologically conspicuous bacteria by 5S ribosomal RNA sequences. *Internat. J. Syst. Bacteriol.* **37**: 116–122.

26. Romaniuk, P. J., Zoltowska, B., Trust, T. J., Lane, D. J., Olsen, G. J., Pace, N. R., and Stahl, D. A. 1987. *Campylobacter pylori*, the spiral bacterium associated with human gastritis, is not a true *Campylobacter* sp. *J. Bacteriol.* **169**: 2137–2141. (PMID: 3571163; PMCID: PMC212113)

27. Olsen, G. J. 1987. The earliest phylogenetic branchings: Comparing rRNA-based evolutionary trees inferred with various techniques. *Cold Spring Harbor Symp. Quant. Biol.* **52**: 825–837. (PMID: 3454291)

28. Pace, N. R., Reich, C., James, B. D., Olsen, G. J., Pace, B., and Waugh, D. S. 1987. Structure and catalytic function in ribonuclease P. *Cold Spring Harbor Symp. Quant. Biol.* **52**: 239–248. (PMID: 2456878)

29. Pace, N. R., James, B. D., Reich, C., Waugh, D. S., Olsen, G. J., and Marsh, T. L. 1987. *Bacillus subtilis* RNase P. In Inouye, M., and Dudock, B. S. (eds.), *Molecular Biology of RNA: New perspectives*, Academic Press, Orlando, pp. 17–36.

30. Reich, C., Olsen, G. J., Pace, B., and Pace, N. R. 1988. Role of the protein moiety of ribonuclease P, a ribonucleoprotein enzyme. *Science* **239**: 178–181. (PMID: 3122322)

31. James, B. D., Olsen, G. J., Liu, J., and Pace, N. R. 1988. The secondary structure of ribonuclease P RNA, the catalytic element of a ribonucleoprotein enzyme. *Cell* **52**: 19–26. (PMID: 2449969)

32. Giovannoni, S. J., DeLong, E. F., Olsen, G. J., and Pace, N. R. 1988. Phylogenetic group-specific oligodeoxynucleotide probes for identification of single microbial cells. *J. Bacteriol.* **170**: 720–726. (PMID: 2448289; PMCID: PMC210714)

33. Field, K. G., Olsen, G. J., Lane, D. J., Giovannoni, S. J., Ghiselin, M. T., Raff, E. C., Pace, N. R., and Raff, R. A. 1988. Molecular phylogeny of the animal kingdom. *Science* **239**: 748–753. (PMID: 3277277)

34. Raff, R. A., Field, K. G., Ghiselin, M. T., Lane, D. J., Olsen, G. J., Parks, A. L., Parr, B. A., Pace, N. R., and Raff, E. C. 1988. Molecular analysis of distant phylogenetic relationships in echinoderms. In Paul, C. R. C., and Smith, A. B. (eds.), *Echinoderm Phylogeny and Evolutionary Biology*, Oxford University, Oxford, pp. 29–41.

35. Pace, N. R., Lane, D. J., Olsen, G. J., and Stahl, D. A. 1988. Phylogenetic analysis of organisms and populations using ribosomal RNA sequences. In *Proceedings of the Fourth International Symposium on Microbial Ecology, Ljubljana, Yugoslavia, Aug. 24–29, 1986*.

36. Distel, D. L., Lane, D. J., Olsen, G. J., Giovannoni, S. J., Pace, B., Pace, N. R., Stahl, D. A., and Felbeck, H. 1988. Sulfur-oxidizing bacterial endosymbionts: Analysis of phylogeny and specificity by 16S rRNA sequences. *J. Bacteriol.* **170**: 2506–2510. (PMID: 3286609; PMCID: PMC211163)

37. Karl, D. M., Taylor, G. T., Novitsky, J. A., Jannasch, H. W., Wirsen, C. O., Pace, N. R., Lane, D. J., Olsen, G. J., and Giovannoni, S. J. 1988. A microbiological study of Guaymas Basin high temperature hydrothermal vents. *Deep Sea Res.* **35**: 777–791.

38. Olsen, G. J. 1988. Phylogenetic analysis using ribosomal RNA. *Methods Enzymol.* **164**: 793–812. (PMID: 3241556)

39. Lane, D. J., Field, K. G., Olsen, G. J., and Pace, N. R. 1988. Reverse transcriptase sequencing of rRNA for phylogenetic analysis. *Methods Enzymol.* **167**: 138–144. (PMID: 2467178)

40. Giovannoni, S. J., Turner, S., Olsen, G. J., Lane, D. J., and Pace, N. R. 1988. Evolutionary relationships among cyanobacteria and green chloroplasts. *J. Bacteriol.* **170**: 3584–3592. (PMID: 3136142; PMCID: PMC211332)

41. Turner, S., DeLong, E. F., Giovannoni, S. J., Olsen, G. J., and Pace, N. R. 1989. Phylogenetic analysis of microorganisms and natural populations using rRNA sequences. In Cohen, Y., and Rosenberg, E. (eds.), *Microbial Mats: Physiological Ecology of Benthic Microbial Communities*, American Society Microbiology, Washington, DC, pp. 390–401.

42. Olsen, G. J., and Woese, C. R. 1989. A brief note concerning archaebacterial phylogeny. *Can. J. Microbiol.* **35**: 119–123. (PMID: 2497936)

43. Pace, N. R., Smith, D. K., Olsen, G. J., and James, B. D. 1989. Phylogenetic comparative analysis and the secondary structure of ribonuclease P RNA — a review. *Gene* **82**: 65–75. (PMID: 2479592)

44. Field, K. G., Olsen, G. J., Giovannoni, S. J., Raff, E. C., Pace, N. R., and Raff, R. A. 1989. Phylogeny and molecular data. *Science* **243**: 550–551. (PMID: 17799191) [Letter to the editor]

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148. Phillips, A. P. R., Olsen, G. J., and Whitaker, R. J. 2023. Genome dynamics and variable transposition in divergent populations of conspecific hyperthermophilic Archaea. Manuscript in preparation.

Invited Talks at Meetings

1. Olsen, G. J. 1986. Phylogenetic inference in spite of lineage-to-lineage and site-to-site variations in mutation acceptance rate. *Macromolecules, Genes and Computers International Symposium and Workshop*, Waterville Valley, NH, Aug. 10–17, 1986.
2. Olsen, G. J. 1987. The earliest phylogenetic branchings: Comparing rRNA-based evolutionary trees inferred with various techniques. *Cold Spring Harbor Symposium on Quantitative Biology*, Cold Spring Harbor, NY, May 27–June 3, 1987.
3. Olsen, G. J. 1987. Prokaryotic Phylogeny. *Gordon Research Conference on Origin of Life*, Salve Regina College, Newport, RI, Aug. 17–21, 1987.
4. Olsen, G. J. 1988. The phylogenetic perspective provided by rRNAs. *The Molecular Biology of Archaebacteria*, Lester B. Pearson College of the Pacific, Victoria, BC, Canada, July 31–Aug. 5, 1988.
5. Olsen, G. J. 1988. Is there positive support for conflicting relationships between the urkingdoms? *Canadian Institute for Advanced Research Genome Evolution Meeting*, Ste-Marguerite Station, QC, Canada, Oct. 13–16, 1988.
6. Olsen, G. J. 1988. The CPGA project: Collection and analysis of the sequences. *The Interface between Computational Science and Nucleic Acid Sequencing*. The Santa Fe Institute, Los

Alamos Center for Human Genome Studies, and the National Center for Supercomputer Applications, Santa Fe, NM, Dec. 12–16, 1988.

7. Olsen, G. J. 1989. The current status of archaebacterial phylogeny. *Gordon Research Conference on Applied and Environmental Microbiology*, Colby-Sawyer College, New London, NH, Aug. 23–28, 1989.
8. Olsen, G. J. 1990. The molecular fossil record of early phylogenetic events. *Evolution of Genetic and Developmental Systems. Indiana Molecular Biology Symposium V*, Bloomington, IN, Oct. 28–31, 1990.
9. Olsen, G. J. 1991. Prokaryotes: Evolution of organisms and revolution of perspectives. Plenary talk at *Scientific Meeting X, Italian Society of General Microbiology and Microbial Biotechnology*, Palazzo dei Papi, Viterbo, Italy, Oct. 9–12, 1991.
10. Olsen, G. J., Woese, C. R., Matsuda, H., Hagstrom, R., and Overbeek, R. 1992. Inference of phylogenetic trees using maximum likelihood. *The First Delta Applications Workshop. Concurrent Supercomputing Consortium*, Pasadena, CA, Feb. 11–12, 1992.
11. Olsen, G. J. 1992. Molecular phylogeny: Tracing the origins of organisms and their genes. *First International* E. coli *Genome Meeting*, Madison, WI, Sep. 10–14, 1992.
12. Olsen, G. J. 1992. Molecular phylogeny: Tracing the origins of organisms and their genes. *Mathematics and Molecular Biology III: Computational Approaches to Nucleic Acid Structure and Function*, Santa Fe, NM, Nov. 7–11, 1992.
13. Olsen, G. J. 1993. From sequences to relationships: Inferring molecular phylogenies. *American Society for Microbiology 93rd General Meeting*, Atlanta, GA, May 16–20, 1993.
14. Olsen, G. J., Overbeek, R., and Pracht, S. C. 1993. All Sequences Are Not Created Equal: Characterizing and coping with differences in the tempo and mode of sequence change. *Models in Phylogeny Reconstruction: An International Symposium*, The Natural History Museum, London, England, Aug. 2–4, 1993.
15. Olsen, G. J. 1993. Comparative analysis of RNA structure. *Macromolecules, Genes and Computers International Symposium and Workshop: Chapter III*, Waterville Valley, NH, Aug. 17–22, 1993.
16. Olsen, G. J. 1994. Relationships from molecules: How and why. Semi-plenary lecture at *18th Annual Meeting of the Gesellschaft für Klassifikation*, Oldenburg, Germany, Mar. 8–11, 1994.
17. Olsen, G. J. 1994. Archaea and Bacteria: Their history and its implications. *Genome Sequencing and Analysis Conference VI*, Hilton Head, SC, Sep. 17–21, 1994.
18. Olsen, G. J. 1995. Maximum likelihood approaches to sequence-based phylogenetic analysis: Some histories would make the present much less improbable than others. *DIMACS Workshop on Phylogeny Reconstruction*, Princeton University, Princeton, NJ, Feb. 6–8, 1995.
19. Olsen, G. J. 1995. The histories of organisms and their genes. *American Society for Microbiology 95th General Meeting*, Washington, DC, May 21–25, 1995.
20. Olsen, G. J., and Grimes, D. J. 1995. The microbial genome initiative: Developing genomic information for the pursuit of energy, environmental, and industrial goals. *International Symposium on the Exploration of Microbial Diversity*, Goslar, Germany, June 12–15, 1995.
21. Olsen, G. J. 1995. The rates of sequence change: All sites are not created equal. *Annual Meeting of the Canadian Institute for Advanced Research Program in Evolutionary Biology*, Val Morin, Quebec, Canada, Aug. 23–26, 1995.

22. Olsen, G. J. 1995. Genes and genomes: Products of history. *EMBO Workshop on the Molecular Evolution of Archaeal, Bacterial and Organelle Genomes*, Aronsborg, Bålsta, Sweden, Oct. 6–9, 1995.
23. Olsen, G. J. 1996. Ancient diversification of polymerase proteins. *Gordon Research Conference on Origin of Life*, Ventura, CA, Jan. 7–12, 1996.
24. Olsen, G. J. 1996. We do what we can: Influence of computational resources on phylogenetic inference. *Mardi Gras Symposium in Systematics and Evolutionary Biology*, Louisiana State University, Baton Rouge, LA, Feb. 17, 1996.
25. Olsen, G. J. 1996. Molecular phylogenies and the diversity of life. *American Society for Microbiology 96th General Meeting*, New Orleans, LA, May 19–23, 1996.
26. Olsen, G. J. 1996. Interpreting genomes and their genes. *First International Congress on Extremophiles*, Estoril, Portugal, June 2–6, 1996.
27. Olsen, G. J. 1996. Having all of the pieces: What can we make of a genome? *Gordon Research Conference on Nucleic Acids*, New Hampton School, New Hampton, NH, June 9–14, 1996.
28. Olsen, G. J. 1996. Interpreting the genome of *Methanococcus jannaschii*. *Gordon Research Conference on Archaea: Ecology, metabolism and molecular biology*, Plymouth State College, Plymouth, NH, July 14–19, 1996.
29. Olsen, G. J. 1996. Confronting genomes: What can we learn from complete sequences. *Thermophiles '96: Biology, Ecology and Biotechnology of Thermophilic Microorganisms*, Athens, GA, Sep. 4–9, 1996.
30. Olsen, G. J., and Woese, C. R. 1996. Insights into the nature of the universal ancestor. *Thermophiles '96: Thermophiles, the key to molecular evolution and the origin of life*, Athens, GA, Sep. 10–12, 1996.
31. Olsen, G. J. 1996. Gene histories: Interpreting the trees. *35th Hanford Life Sciences Symposium: Microbial Genome Research and its Applications*, Richland, WA, Oct. 21–24, 1996.
32. Olsen, G. J. 1997. *Methanococcus jannaschii*. *American Society for Microbiology 97th General Meeting*, Miami Beach, FL, May 4–8, 1997.
33. Olsen, G. J. 1997. Microbial evolution: A genomic perspective. *American Society for Microbiology 97th General Meeting*, Miami Beach, FL, May 4–8, 1997.
34. Olsen, G. J. 1997. Pursuing the histories of genes. *American Society for Microbiology 97th General Meeting, Miami Beach*, FL, May 4–8, 1997.
35. Olsen, G. J. 1997. Genes, proteins and functions as products of history. *The Beckman Institute Symposium: Bioinformatics, structure and function*, Urbana, IL, May 29–June 1, 1997.
36. Olsen, G. J. 1997. Tracing the histories of genes in prokaryotes. *Gordon Research Conference on Microbial Population Biology*, Plymouth State College, Plymouth, NH, July 27–Aug. 1, 1997.
37. Olsen, G. J. 1997. Archaeal genomes: Histories of life and its genes. *Evolution: A molecular point of view*, Marine Biology Laboratory, Woods Hole, MA, Oct. 24–26, 1997.
38. Olsen, G. J., Pracht, S., and Overbeek, R. 1998. Site-specific rates of nucleotide change: Their justification and use. *5th Annual HIV Dynamics and Evolution Conference*, Santa Fe, NM, Apr. 18–20, 1998.

39. Olsen, G. J. 1998. Archaea: RNAs and more. *American Society for Microbiology 98th General Meeting*, Atlanta, GA, May 17–21, 1998.
40. Olsen, G. J. 1998. Genes can have a phylogeny, but what about organisms? *American Society for Microbiology 98th General Meeting*, Atlanta, GA, May 17–21, 1998.
41. Olsen, G. J. 1998. Archaeal genomes. *Life: From origins to global persistence*. Durham, NH, June 7–10, 1998.
42. Olsen, G. J., Haney, P. J., Badger, J. H., Buldak, G. L. and Woese, C. R. 1998. Temperature, evolution and the history of life: Extracting information from genomes. *Thermophiles 98',* Brest, France, Sep. 6–11, 1998.
43. Olsen, G. J. 1998. Genomes: The recorded histories of genes and organisms. *Alan Wilson Mini-Symposium*, University of California, Berkeley, Oct. 10, 1998.
44. Olsen, G. J. 1998. Reconstruction of metabolic pathways of Bacteria and Archaea. Plenary talk at *Symposium on Bioinformatics*, Viiki Biocenter, Helsinki, Finland, Oct. 23–25, 1998.
45. Olsen, G. J. 1999. Euryarchaeal genomics. *Archaea: bridging the gap between Bacteria and Eukarya*, Keystone Symposia, Taos, NM, Jan. 9–14, 1999.
46. Olsen, G. J. 1999. Temperature and the evolution of archaeal genomes. *Gordon Research Conference on Origin of Life*, Ventura, CA, Feb. 21–26, 1999.
47. Olsen, G. J. 1999. A genome's eye view of evolution. *Mining the Bacterial Genome*, Istituto Pasteur Fondazione Cenci Bolognetti, Consiglio Nazionale delle Riceche, Rome, Italy, Apr. 16–17, 1999.
48. Olsen, G. J. 1999. Roundtable "Microbial Genome Sequencing: Current status and future needs." *American Society for Microbiology 99th General Meeting*, Chicago, IL, May 30–June 3, 1999.
49. Olsen, G. J. 2000. The reports on the death of the tree of life are greatly exaggerated. *American Society for Microbiology 100th General Meeting*, Los Angeles, CA, May 21–25, 2000.
50. Olsen, G. J. 2000. Genes in genomes: From stable relationships to ephemeral flings. *Society for Molecular Biology and Evolution*, Yale University, New Haven, CT, June 17–20, 2000.
51. Olsen, G. J. 2000. The tree of Life. *California Academy of Sciences Fellows' Science Day*, California Academy of Sciences, San Francisco, CA, Oct. 14, 2000.
52. Olsen, G. J. 2001. Microbes from extreme environments and their genomes. *Microbe Interactions with Their Environments: Genome Perspectives*. Keystone Symposia, Taos, NM, Mar. 6–11, 2001.
53. Olsen, G. J. 2001. The persistence of an essence: Archaea as defined by their genomes. *Gordon Research Conference on Archaea: Ecology, Metabolism and Molecular Biology*, Proctor Academy, Andover, NH, Aug. 5–10, 2001.
54. Olsen, G. J. 2001. You gain some, you lose some: The comings and goings of genes, and the history of life. Keynote Lecture, *American Society for Rickettsiology / Bartonella Joint Conference*, Big Sky, MT, Aug. 17–22, 2001.
55. Olsen, G. J. 2001. Microbial Genomics. *USDA Comparative Insect Genomics Workshop*, Arlington, VA, Oct. 28–30, 2001.

56. Olsen, G. J. 2001. Environments and Genomes: The mix and match of genes in adaptation and innovation. *Geological Society of America Annual Meeting, A Geo-Odyssey*, Boston, MA, Nov. 5– 8, 2001.
57. Olsen, G. J. 2002. Temperature and evolution of archaeal genomes. *Gordon Research Conference on Molecular Evolution*, Sheraton Harbortown, Ventura, CA, Jan. 13–18, 2002.
58. Olsen, G. J. 2002. Historical Records in Genes and Genomes: Insights from faded, shredded documents. *A Discussion by Experimentalists of the Origin of Life, 10th Annual Suddath Symposium*, Georgia Technical University, Atlanta, GA, Apr. 19–20, 2002.
59. Olsen, G. J. 2002. Evolutionary Rhythm and Beat: Lessons from comparative genomics. *American Society for Microbiology 102nd General Meeting*, Salt Lake City, UT, May 19–23, 2002.
60. Olsen, G. J. 2002. You Gain Some, You Lose Some: The comings and goings of genes and the history of life. *American Society for Microbiology 102nd General Meeting*, Salt Lake City, UT, May 19–23, 2002.
61. Olsen, G. J. 2002. Prokaryotic Genome Evolution: Continuity in the presence of flux. *Molecular Evolution: Evolution, Genomics, Bioinformatics*. International Society of Molecular Evolution and Society for Molecular Biology and Evolution, Sorrento, Italy, June 13–16, 2002.
62. Olsen, G. J. 2002. Historical records in genes and genomes: Insights from faded shredded documents. *Extremophiles 2002: The 4th International Congress.* Complesso Universitario Monte Sant'Angelo of the University "Federico II" of Naples, Naples, Italy, Sep. 22–26, 2002.
63. Olsen, G. J. 2002. Genomic perspectives on horizontal gene transfer and the tree of life. *21st Molecular, Cellular and Developmental Biology Graduate Student Symposium, "Genomics and Beyond: DNA Tells All?"* University of Colorado, Boulder, CO, Nov. 8–9, 2002.
64. Olsen, G. J. 2003. Evolution of cells, with a special look at parasites and pathogens. *Joint Annual Meeting 2003 Swiss Society for Microbiology Swiss Society for Infectious Diseases Swiss Society of Tropical Medicine and Parasitology*. Basel, Switzerland, Mar. 6–7, 2003.
65. Olsen, G. J. 2003. The limits of molecular phylogeny. *American Society for Microbiology 103rd General Meeting*. Washington DC, May 18–22, 2003.
66. Olsen, G. J. 2003. Ribosomal RNA, gene transfer and the meaning of a tree of life. *American Society for Microbiology 103rd General Meeting*. Washington DC, May 18–22, 2003.
67. Olsen, G. J. 2003. A tree in the jungle of gene histories: or, don't trip on the vines. Gordon Research Conference on The Origins of Life. Bates College, Lewiston, ME, July 13–18, 2003.
68. Olsen, G. J. 2003. Horizontal gene transfer and the triumph of Darwin. *2003 Crafoord Days Symposium*. Lund, Sweden, Sep. 22, 2003.
69. Olsen, G. J. 2003. Horizontal gene transfer and the triumph of Darwin. *2003 Crafoord Days Symposium*. Stockholm, Sweden, Sep. 23, 2003.
70. Olsen, G. J. 2003. Horizontal gene transfer and the global gene pool. *European Conference on Prokaryotic Genomes*. Göttingen, Germany, Oct. 5–8, 2003.
71. Olsen, G. J. 2004. Comparative analysis of protein thermal adaptation. *American Chemical Society Annual Meeting*. Anaheim, CA, Mar. 28–31, 2004.
72. Olsen, G. J. 2004. Comparative genomics. *EMBO Conference on Molecular Microbiology: Exploring Prokaryotic Diversity.* EMBL, Heidelberg, Germany, Apr. 22–26, 2004.

73. Olsen, G. J. 2004. Sharing genes and sharing environments: Two versions of cooperation. *Okazaki Biology Conference 2: Terra Microbiology*. Mielpearl, Ise-Shima, Japan, Sep. 26–30, 2004.
74. Olsen, G. J. 2004. Genomic biology as a pathway to the future of sustainable technologies. *Industrial Applications of Renewable Resources*. American Oil Chemists' Society, Chicago, IL, Oct. 12–14, 2004.
75. Olsen, G. J. 2005. Thermal adaptation in Archaea: Life at many temperatures. *Archaea in the Environment*. University of Southern California Wrigley Institute for Environmental Studies. USC Wrigley Marine Science Center, Catalina Island, CA, June 25, 2005.
76. Olsen, G. J. 2006. Prokaryotic Taxonomy: In search of a natural system, or does one even exist? *International Symposium: The Microbe's Contribution to Biology*. Institut d'Estudis Catalans, Barcelona, Spain, Apr. 17–28, 2006.
77. Olsen, G. J. 2006. Horizontal gene transfer: When is a network still a tree? *6th "Understanding Complex Systems" Symposium: Molecular origin of life and dynamics of information, energy and water flows on evolving networks*. University of Illinois, Urbana, IL, May 15–18, 2006.
78. Olsen, G. J. 2007. Horizontal gene transfer and its impact on a tree of life. *Annual Meeting of the Illinois Association of Community College Biologists*, Allerton Park, Monticello, IL, Oct. 6–7, 2007.
79. Olsen, G. J. 2007. Horizontal gene transfer: An evolving portrait. *Pace Symposium*, University of Colorado, Boulder, CO, Oct. 26–27, 2007.
80. Olsen, G. J. 2008. The SEED, the NMPDR and protein ontologies. *2nd Annual Meeting of the Protein Ontology Consortium*, Protein Identification Resource, George Washington University, Georgetown, DC, Nov. 18–20, 2008.
81. Olsen, G. J. 2009. Transcription in Archaea: Getting started. *Archaea and the Universal Tree of Life*, Les Treilles, Provence, France, May 11–16, 2009.
82. Olsen, G. J. 2009. State of the tree. *American Society for Microbiology 109th General Meeting*, Philadelphia, PA, May 17–21, 2009.
83. Olsen, G. J. 2009. Horizontal gene transfer: A view based on codon usage. *Gordon Research Conference on Archaea: Ecology, Metabolism and Molecular Biology*, Waterville Valley, NH, July 17–21, 2009.
84. Olsen, G. J. 2014. IN SILICO: Reconciling computer conjectures with facts. *BISMiS-2014: Defining Microbial Diversity in the Genomic Era*, Edinburgh, Scotland, Apr. 7–10, 2014.
85. Olsen, G. J. 2015. The alien-looking codon usage of recently acquired genes is not alien, it is another native codon usage. *Norm-posium*, Colorado School of Mines, Golden, CO, June 4–5, 2015.
86. Olsen, G. J. 2015. The alien-looking codon usages of recently acquired genes is not alien. *Looking in the Right Direction: Carl Woese and the New Biology*, Carl R. Woese Institute for Genomic Biology, University of Illinois, Urbana, IL, Sept. 19–20, 2015.
87. Olsen, G. J. 2017. What is simple life, and how did we get from there to here? AbSciCon2017, Mesa, AZ, Apr. 23–28, 2017.
88. Olsen, G. J. 2022. Exigency Genes: They might save you in a crisis, but they might kill you. *Mini Symposium on Remembering Abigail Salyers*. Marine Biology Laboratory, Woods Hole, MA, Oct. 28–29, 2022.

Seminars and Other Workshop Sessions

1. "Trials and tribulations of molecular phylogenies." NASA Ames Research Center, Moffett Field, CA, Feb. 24, 1986.
2. "Comparative Analysis of Sequence Data." Department of Biology, Indiana University, Bloomington, IN, Feb. 17, 1987.
3. "The primary kingdoms of life: The phylogeny of 16S rRNA." Montana State University, Bozeman, MT, Mar. 2, 1987.
4. "The ribosomal RNAs of microbial populations." Department of Botany and Microbiology, Oklahoma State University, Stillwater, OK, Mar. 16, 1987.
5. "Natural microbial populations and their ribosomal RNAs." EPSCoR Cell and Molecular Biology Workshop, University of Wyoming, Laramie, WY, Apr. 23, 1987.
6. "Tales told by sequences: Inferring molecular structure and evolution." Department of Microbiology, University of Illinois, Urbana, IL, Apr. 12, 1988.
7. "Inferring evolution from ribosomal RNAs: Phylogeny of the Metazoa." Florida State University, Tallahassee, FL, Apr. 21, 1988.
8. "A molecular history of life: Well I'll be an archae's uncle." Department of Medical Chemistry and Department of Human Genetics, University of Utah, Salt Lake City, UT, Apr. 12, 1991.
9. "Inferring relationships from molecules: Methods without madness." Department of Medical Chemistry and Department of Human Genetics, University of Utah, Salt Lake City, UT, Apr. 12, 1991.
10. "A molecular history of life: Well I'll be an archae's uncle." Department of Ecology and Evolutionary Biology Thursday Evening Evolution Group, University of California, Irvine, CA, Oct. 31, 1991.
11. "Problems in computational biology." Workshop on Application of Logic Programming in Genetic Sequence Analysis, 1991 International Logic Programming Symposium, San Diego, CA, Oct. 28–Nov. 1, 1991.
12. "What we've learned from molecular evolution: Well I'll be an archae's uncle." Department of Microbiology, University of Georgia, Athens, GA, Nov. 14, 1991.
13. "Advances in methods and perspectives in phylogenetics." Department of Microbiology, Southern Illinois University, Carbondale, IL, Apr. 10, 1992.
14. "From sequences to relationships: Inferring and using molecular phylogenies." Systematics and Evolutionary Biology Group, Louisiana State University, Baton Rouge, LA, Nov. 12, 1993.
15. "From sequences to relationships: Inference and use of molecular phylogenies." Lehrstuhl für Mikrobiologie, Universität Regensburg, Regensburg, Germany, Mar. 4, 1994.
16. "From sequences to relationships: Inference and use of molecular phylogenies." Max-Planck-Institut für Biochimie, Martinsried (bei München), Germany, Mar. 8, 1994.
17. "From sequences to relationships: Inference and use of molecular phylogenies." Lehrstuhl für Mikrobiologie, Technische Universität München, München, Germany, Mar. 14, 1994.
18. "Inferring relationships from molecules: How and why." Departamento de Microbiología, Universidad Nacional de Rosario, Rosario, Argentina, June 8, 1994.

19. "From sequences to relationships: Inference and use of molecular phylogenies." Department of Microbiology, University of São Paulo, São Paulo, Brazil, June 13, 1994.
20. "From sequences to relationships: Inference and use of molecular phylogenies." Abbott Laboratories, Abbott Park, IL, Nov. 28, 1994.
21. "Transcription and transcription factors in the archaes." Département de biochimie, Université de Montréal, Montréal, Quebec, Canada, Dec. 6, 1994.
22. "Inference and implications of molecular phylogenies: Well I'll be an archae's uncle." Department of Biology, University of Ottawa, Ottawa, Canada, Dec. 8, 1994.
23. "Transcription and transcription factors in the archaes." Département de biochimie, Université Laval, Quebec, Quebec, Canada, Dec. 9, 1994.
24. "The histories of microorganisms and their genes." Computational Genomics Group, Washington University, St. Louis, MO, Dec. 12, 1995.
25. "The histories of genes." Recombinant BioCatalysis, Inc., La Jolla, CA, Aug. 20, 1996.
26. "The archaean genome." Colorado State University, Fort Collins, CO, Dec. 2, 1996.
27. "Archaea and the history of life: What are we learning from genomes." Department of Biochemistry, University of Illinois, Urbana, IL, Mar. 7, 1997.
28. "Genomes and the histories of genes." New England BioLabs, Beverly, MA, Aug. 12, 1997.
29. "Archaeal Genomes." Department of Microbiology, University of Michigan, Ann Arbor, MI, Sep. 12, 1997.
30. "Microbial diversity: The scale of the known and the unknown." Annual Graduate Student and Postdoctoral Retreat of the Center for Microbial Ecology, Michigan State University, Kellogg Biological Station, MI, Sep. 13, 1997.
31. "Archaeal genomes: Windows into the histories of life and genes." Facultad de Química, Universidad de la República, Montevideo, Uruguay, Sep. 23, 1997.
32. "Archaeal genomes: Windows into the histories of life and genes." Department of Molecular and Cell Biology, University of California, Berkeley, CA, Oct. 16, 1997.
33. "Archaeal genomes: Windows into the histories of life and genes." Department of Biochemistry, University of Missouri, Columbia, MO, Dec. 1, 1997.
34. "Archaeal genomes: The roles of gene inheritance and gene transfer." Université Paris-Sud, Orsay, France, Sep. 4. 1998.
35. "Dynamic genomes: Genes move, but is it chaos?" Max-Planck-Institute for Terrestrial Microbiology, Marburg, Germany, Sep. 15, 1998.
36. "Archaeal genomes: Invention versus acquisition." Uppsala University, Uppsala, Sweden, Oct. 28, 1998.
37. "Archaea and the histories of their genes: Why so many conflicting hypotheses?" Distinguished Speakers in Biochemistry and Molecular Biology, University of Wisconsin, Milwaukee, WI, Mar. 26, 1999.
38. "The human genome project: One among thousands." IEEE Central Illinois Section Meeting, Urbana, IL, Sep. 8, 1999.
39. "Dynamic Genomes: Genes move, but is it chaos?" Department of Biological Sciences, Northern Illinois University, DeKalb, IL, Sep. 23, 1999.

40. "Lateral gene transfer: What we are learning from genome sequencing." Department of Biology, American University, Washington, DC, Mar. 3, 2000.
41. "Is evolution science?" Department of Philosophy, American University, Washington, DC, Mar. 3, 2000.
42. "Making sense of genomes: Comparative analysis and not getting snowed by the exceptions." Computational Biology Student-Invited Seminar, Genetics Department, Washington University, St. Louis, MO, Mar. 23, 2000.
43. "A Tree of Life: Where is it from and how is it used?" 2000 NCAUR Lecture Series Speaker, National Center for Agricultural Utilization Research, US Department of Agriculture, Peoria, IL, May 4, 2000.
44. "Molecular Phylogeny: Many methods and much madness." 2000 NCAUR Lecture Series Speaker, National Center for Agricultural Utilization Research, US Department of Agriculture, Peoria, IL, May 4, 2000.
45. "Gene Transfer: Yes, it is common, but all is not chaos." 2000 NCAUR Lecture Series Speaker, National Center for Agricultural Utilization Research, US Department of Agriculture, Peoria, IL, May 5, 2000.
46. "Genes in genomes: From stable relationships to ephemeral flings." Institute of Molecular Biology & Biotechnology, Foundation for Research & Technology-Hellas, Crete, Greece, July 19, 2000.
47. "Genes in genomes: From stable relationships to ephemeral flings." Integrated Genomics, Inc., Chicago, IL, Nov. 6, 2000.
48. "It's not quite chaos, but ...: Nature's piecemeal approach to genomes." Department of Microbiology, University of Washington, Feb. 20, 2001.
49. "Microbial genomes: The complex history of simple organisms." Miller Distinguished Lecture, Department of Microbiology, Iowa State University, Ames, IA, Apr. 19, 2001.
50. "It's not quite chaos, but ...: Nature's piecemeal approach to genomes." Institute of Cellular and Molecular Biology, University of Texas, Austin, TX, Sep. 6, 2001.
51. "It's not quite chaos, but ...: Nature's piecemeal approach to genomes." NEC Research Institute, Princeton, NJ, Oct. 5, 2001.
52. "The histories of genes: Issues that limit our understanding of the tree of life." Applied Mathematics, University of Illinois, Urbana, IL, Oct. 8, 2001.
53. "Protein sequence analysis." University of Illinois Biotechnology Center Bioinformatics Conference/Workshop, Urbana, IL, May 3, 2002.
54. "The tree still stands: The comings and goings of genes in the history of life." Department of Microbiology and Immunology, Oklahoma University Health Sciences Center, Sep. 6, 2002.
55. "Prokaryotic Genome Evolution: Continuity in the presence of flux." Philips Distinguished Visitor Lecture, Department of Biology, Haverford College, Haverford, PA, Dec. 9, 2002.
56. "Horizontal gene transfer and the triumph of Darwin." Institute of Molecular Biology, University of Copenhagen, Copenhagen, Denmark, Sep. 30, 2003.
57. "Archaeal promoters: An experimental search and comparative analysis." Laboratory of Microbiology, Wageningen University, Wageningen, The Netherlands, Oct. 2, 2003.
58. "Horizontal Gene Transfer and the Triumph of Darwin." San Diego State University, San Diego, CA, Dec. 4, 2003.

59. "Horizontal Gene Transfer and the Triumph of Darwin." Bioengineering, University of Illinois, Urbana, IL, Dec. 11, 2003.
60. "A Tree in the Jungle of Gene Histories: Or, don't trip on the vines." Biology, University of New Mexico, Albuquerque, NM, Jan. 13, 2004.
61. "Variation Within Microbial 'Species': So many different genes, so few (observed) effects." Biosciences Division, Los Alamos National Laboratory, Los Alamos, NM, Jan. 14, 2004.
62. "A Tree in the Jungle of Gene Histories: Or, don't trip on the vines." Physics/Theoretical Colloquia, Los Alamos National Laboratory, Los Alamos, NM, Jan. 15, 2004.
63. "Horizontal gene transfer and the triumph of Darwin." Department of Energy Joint Genome Institute, Walnut Creek, CA, Dec. 14, 2005.
64. "Horizontal gene transfer and the triumph of Darwin." Bioinformatics Summit, Department of Computer Science, University of Illinois, Urbana, IL, Mar. 8, 2006.
65. "Horizontal gene transfer: What remains of the tree of life?" Department of Biology, University of Massachusetts, Amherst, MA, Mar. 10, 2006.
66. "Horizontal gene transfer: When is a network still a tree?" Department of Microbiology, University of Idaho, Moscow, ID, Oct. 27, 2006.
67. "Codon usage analysis as a window on genomes: Automating the analyses." Institute Pasteur, Paris, France, Nov. 28, 2007.
68. "What are the reservoirs of alien genes?" Bay Paul Center, Marine Biology Laboratory, Woods Hole, MA, Sept. 24, 2010.
69. "Lateral Gene Transfer in Prokaryotes Bacteria and Archaea: What are the reservoirs of alien genes?" San Diego State University, San Diego, CA, Oct. 8, 2010.
70. "Rampant Interspecies Gene Transfer: Codon usage evidence for a shared *Escherichia coli* / *Salmonella enterica* pangenome?" Department of Biology, Indiana University, Bloomington, IN, Sep. 4, 2012.
71. "Curiouser and curiouser: Genomes, pangenomes and supraspecies pangenomes." Department of Microbiology, University of Georgia, Athens, GA, Aug. 29, 2013.

Poster Presentations

1. Olsen, G. J. 1981. Comparative analysis of nucleotide sequence data and ribosomal RNAs of *Dictyostelium discoideum*. Evolution of the Eukaryotic Genome and its Components. Dalhousie University, NS, Canada, July 12–15, 1981.
2. Olsen, G. J., Lane, D. J., Pace, B., Stahl, D. A., and Pace, N. R. 1985. Using the small subunit ribosomal RNAs to study phylogeny and microbial ecology. International Conference on Structure, Function, and Genetics of Ribosomes. Port Aransas, TX, Apr. 14–18, 1985.
3. Olsen, G. J. 1989. Rates of nucleotide change in 16S ribosomal RNA. Macromolecules, Genes and Computers: Chapter two. Molecular Biology Computing Research Resource, Dana-Farber Cancer Research Institute and the National Library of Medicine. Waterville Valley, NH, Aug. 13–18, 1989.

Selected Other Abstracts

1. Lane, D. J., Pace, B., Olsen, G. J., Stahl, D. A., Sogin, M. L., and Pace, N. R. 1985. Rapid determination of 16S ribosomal RNA sequences for phylogenetic analyses. Abstracts, 85th Annual Meeting of the American Society for Microbiology, Las Vegas, Mar. 3–7, 1985.
2. Lane, D. J., Olsen, G. J., Giovannoni, S. J., and Pace, N. R. 1986. A new device for studying bacterial growth in submarine hydrothermal vent flows *in situ*. Abstracts, 86th Annual Meeting of the American Society for Microbiology, Washington, DC, Mar. 23–28, 1986.
3. Giovannoni, S. J., Turner, S., Olsen, G. J., Lane, D. J., Pace, N. R., and Waterbury, J. B. 1986. Phylogenetic analysis of cyanobacteria using 16S rRNA sequences. Abstracts, 86th Annual Meeting of the American Society for Microbiology, Washington, DC, Mar. 23–28, 1986.
4. Pace, N. R., Reich, C., Olsen, G. J., Waugh, D. S., James, B. D., Liu, J., Pace, B., Gardiner, K. J., and Marsh, T. L. 1986. The *Bacillus subtilis* RNase P. Cold Spring Harbor Laboratory Meeting on RNA Processing, Cold Spring Harbor, NY.
5. Pace, N. R., Lane, D. J., Olsen, G. J., and Stahl, D. A. 1986. Analysis of natural microbial populations by ribosomal RNA sequences. Abstracts, Fourth International Symposium on Microbial Ecology, Ljubljana, Yugoslavia, Aug. 24–29, 1986.
6. Pace, N. R., Lane, D. J., Pace, B., Olsen, G. J., and Stahl, D. A., and Sogin, M. L. 1986. Rapid determination of 16S ribosomal RNA sequences for phylogenetic analysis. Abstracts, Fourth International Symposium on Microbial Ecology, Ljubljana, Yugoslavia, Aug. 24–29, 1986.
7. Field, K. G., Ghiselin, M. T., Lane, D. J., Olsen, G. J., Pace, N. R., Raff, E. C., and Raff, R. A. 1986. Phylogeny of the Metazoa based on 18S ribosomal RNA sequences. Abstracts, American Society of Zoologists Annual Meeting, Nashville, TN, Dec. 27–30, 1986.
8. Ghiselin, M. T., Field, K. G., Olsen, G. J., Lane, D. J., Raff, R. A., Raff, E. C., and Pace, N. R. 1986. A phylogenetic tree of the Chordate subphyla based on 18S ribosomal RNA sequences. Abstracts, American Society of Zoologists Annual Meeting, Nashville, TN, Dec. 27–30, 1986.
9. Reich, C., Olsen, G. J., Pace, B., and Pace, N. R. 1987. The *Bacillus subtilis* RNase P: Kinetic analysis of the RNA alone and holoenzyme reactions. Cold Spring Harbor Laboratory Meeting on RNA Processing, Cold Spring Harbor, NY, May 13–17, 1987.
10. Pace, N. R., James, B. D., Waugh, D. S., Olsen, G. J., Reich, C., Liu, J., Pace, B., Aprison, E. 1987. Structure and catalytic function in *Bacillus subtilis* RNase P RNA. Cold Spring Harbor Laboratory Meeting on RNA Processing, Cold Spring Harbor, NY, May 13–17, 1987.
11. Pace, N. R., Reich, C., James, B. D., Waugh, D. S., Olsen, G. J., Pace, B., Liu, J., and Aprison, E. Z. 1987. Structure and catalytic function in *Bacillus subtilis* RNase P RNA. Cold Spring Harbor Symposium on Quantitative Biology, Cold Spring Harbor, NY, May 27–June 3, 1987.
12. Field, K. G., Turner, S., Giovannoni, S. J., Lane, D. J., Olsen, G. J., and Pace, N. R. 1987. Rapid sequencing of 16S ribosomal RNA for phylogenetic analysis. Abstracts, XIV International Botanical Congress, Berlin, Germany, July 24–Aug. 1, 1987.
13. Pace, N. R., Giovannoni, S. J., Turner, S., Olsen, G. J., Lane, D. J., Barns, S., and DeLong, E. F. 1987. Phylogenetic characterization of organisms and populations using ribosomal RNA sequences. Abstracts, Microbial Mats: Ecological Physiology of Benthic Microbial Communities, Bat-Sheva de Rothschild International Seminar, Eilat, Israel, Sep. 13–20, 1987.

14. Lane, D., Harrison, A. P., Jr., Stahl, D., Pace, B., Giovannoni, S., Olsen, G. J., and Pace, N. R. 1988. 16S ribosomal RNA phylogeny of iron and sulfur oxidizing bacteria. Abstracts, American Society of Microbiology Annual Meeting, Miami Beach, FL, May 8–13, 1988.
15. Waugh, D. S., Green, C. J., James, B. D., Olsen, G. J., Vold, B. S., and Pace, N. R. 1988. The design and catalytic properties of an abbreviated ribonuclease P RNA. Cold Spring Harbor Laboratory Meeting on RNA Processing, May 11–15, 1988.
16. Duncan, A. J., Carman, R. J., Olsen, G. J., and Wilson, K. H. 1993. The agent of Tyzzer's disease is a *Clostridium* sp. *Clin. Infect. Diseases* **16** (suppl. 4): S422–S422.
17. Bult, C. J., Adams, M., Fleischmann, B., Gocayne, J., Sutton, G., Zhou, L., White, O., FitzGerald, L., Blake, J., Clayton, R., Kirkness, E., Geoghagen, N., Weidman, J., Fuhrmann, J., Dougherty, B., Tomb, H., Reich, C., Fraser, C., Olsen, G., Smith, H., Woese, C., and Venter, J. C. 1996. Complete genome sequencing and characterization of the thermophilic methanogen, *Methanococcus jannaschii*. Department of Energy Human Genome Program Contractor-Grantee Workshop V, Santa Fe, NM, Jan. 28–Feb. 1, 1996.
18. Colón, G. M., Reich, C., and Olsen, G. J. 1996. Analysis of presumptive TFIIB and TBP homologs from Archaea. First International Congress on Extremophiles, Estoril, Portugal, June 2–6, 1996.
19. Badger, J., Overbeek, R., and Olsen, G. J. 1996. Analyzing the *Methanococcus jannaschii* genome. Thermophiles '96: Biology, Ecology and Biotechnology of Thermophilic Microorganisms, Athens, GA, Sep. 4–9, 1996.
20. Colón, G. M., McNeil, L. K., Reich, C. I., and Olsen, G. J. 1997. Phylogeny and biochemical characterization of archaeal transcription factors. Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Francisco, CA, Aug. 24–29, 1997.
21. Haney, P. J., Badger, J. H., Buldak, G. L., Woese, C. R., and Olsen, G. J. 1998. Large scale statistical analyses identify amino acid replacements repeatedly utilized in the adaptations between closely related mesophilic and thermophilic proteins. Thermophiles 98', Brest, France, Sep. 6–11, 1998.
22. Colón, G. M., and Olsen, G. J. 1999. Evolutionary history and biochemical characterization of archaeal transcription factors. Archaea: bridging the gap between Bacteria and Eukarya, Taos, NM, Jan. 9–14, 1999.
23. McNeil, L. K., Olsen, G. J., Woese, C. and Lewin, H. 1999. Phylogenetic analysis of proteasome alpha genes detected in the Crenarchaea and lower Eukarya using degenerate PCR. Archaea: bridging the gap between Bacteria and Eukarya, Taos, NM, Jan. 9–14, 1999.
24. Giometti, C. S., Tollaksen, S. L., Liang, X., Adams, M. W. W., Holden, J. F., Menon, A., Schut, G., Reich, C. I., Olsen, G. J., and Yates, J., III. 1999. Archaeal proteomics. DOE Human Genome Program Contractor-Grantee Workshop VII, Oakland, CA, Jan. 12–16, 1999.
25. Olsen, G. J., Reich, C. I., Kyrpides, N. C., Badger, J. H., Graham, D. E., Haney, P. J., McNeil, L. K., Colón González, G. M., Best, A. A., Kaine, B. P., and Woese, C. R. 1999. Genome sequencing and analysis. DOE Human Genome Program Contractor-Grantee Workshop VII, Oakland, CA, Jan. 12–16, 1999.
26. Graham, D. E., and Olsen, G. J. 1999. Identification and characterization of archaeal tRNA methyltransferases. American Society for Microbiology 99th General Meeting, Chicago, IL, May 30–June 3, 1999.

27. Giometti, C. S., Tollaksen, S. L., Olsen, G. J., Reich, C. I., Adams, M. W. W., Holden, J. F., Hays, L. G., and Yates, J. R. 1999. Archaeal proteomics. American Society for Microbiology 99th General Meeting, Chicago, IL, May 30–June 3, 1999.
28. Best, A. A., Reich, C. I., and Olsen, G. J. 1999. Subunit interactions of an archaeal RNA polymerase and relationships to eukaryotes. American Society for Microbiology 99th General Meeting, Chicago, IL, May 30–June 3, 1999.
29. Giometti, C. S., Tollaksen, S. L., Lim, H., Yates, J., Holden, J., Lal Menon, A., Schut, G., Adams, M. W. W., Reich, C., and Olsen, G. 2000. Protein expression in *Methanococcus jannaschii* and *Pyrococcus furiosus*. DOE Human Genome Program Contractor-Grantee Workshop VIII, Santa Fe, NM, Feb. 27–Mar. 2, 2000.
30. Hendrickson, E. L., Olson, M., Olsen, G., and Leigh, J. A. 2002. Genome sequence of *Methanococcus maripaludis*, a genetically tractable methanogen. DOE Genome Contractor-Grantee Workshop IX, Oakland, CA, Jan. 27–31, 2002.
31. Li, E., Best, A. A., Colón, G. M., Reich, C. I., and Olsen, G. J. 2002. A genome-wide search for archaeal promoter elements. DOE Genome Contractor-Grantee Workshop IX, Oakland, CA, Jan. 27–31, 2002.
32. Reich, C. I., Woese, C. R. and Olsen, G. J. 2002. Gene Transfer: Past and Present. DOE Genome Contractor-Grantee Workshop IX, Oakland, CA, Jan. 27–31, 2002.
33. Best, A. A., Morrison, H. G., McArthur, A. G., Sogin, M. L., and Olsen, G. J. 2002. Evolution of transcription: Insights from the genome of *Giardia lamblia*. American Society for Microbiology 102nd General Meeting, Salt Lake City, UT, May 19–23, 2002.
34. Li, E., Reich, C., and Olsen, G. 2002. Whole genome approach to identify promoter sequences in *Methanococcus jannaschii*. American Society for Microbiology 102nd General Meeting, Salt Lake City, UT, May 19–23, 2002.
35. Best, A., Olsen, G. Overbeek, R. and Woese, C. 2004. Defining microbial relationships with complete genomes: The euryarchaeal crown. American Society for Microbiology 104th General Meeting, New Orleans, LA, May 24–27, 2004.
36. Karberg, K., Maloy, S., and Olsen, G. 2004. Evolutionary genomics of *Salmonella enterica* serovars. American Society for Microbiology 104th General Meeting, New Orleans, LA, May 24–27, 2004.
37. Zhang, J., Reich, C., and Olsen, G. 2004. Identification and characterization of promoters for protein-coding genes in the genome of *Methanococcus jannaschii*. American Society for Microbiology 104th General Meeting, New Orleans, LA, May 24–27, 2004.
38. Brueckner, E., Lee, J., Farrand, S. K., Olsen, G. J., and the K84/S4 Genome Sequencing Consortium. 2004. The chimeric nature of the opine catabolic plasmid pAtK84b of *Agrobacterium radiobacter* K84 suggests a complex evolutionary history. Crown Gall Meeting, Urbana, IL, Aug. 13–17, 2004.
39. Ho, B. T., Leigh, J. A., Feldman, R. A., Bench, S. R., and Olsen, G. J. 2004. Thermal adaptation of proteins in the Methanococcales. Extremophiles 2004, Cambridge, MD, Sep. 19–23, 2004.

Editorial Positions

Environmental Microbiology, Editorial Board Member (2000–2011)

Journal of Bacteriology, Editorial Board Member (1992–97)

Molecular Biology and Evolution, Associate Editor (1995–96)

Ad Hoc Manuscript Reviews

Applied and Environmental Microbiology
Archaea
Archives of Microbiology
Australian Journal of Marine and Freshwater Research
Bioinformatics
BioSystems
Canadian Journal of Microbiology
Computer
Current Biology
Developmental Biology
Environmental Microbiology
Evolution
Gene
Genome
Genomics
Genome Biology
Genome Research
IBM Systems Journal
International Journal of Systematic Bacteriology
Journal of Bacteriology
Journal of Biochemical and Biophysical Methods
Journal of Computational Biology
Journal of Crustacean Biology
Journal of Functional Programming
Journal of Molecular Evolution
Journal of Theoretical Biology
Microbiological Reviews
Molecular Biology and Evolution
Molecular Microbiology
Molecular Phylogenetics and Evolution
Nature
Nature Genetics
Nucleic Acids Research
Phycologia
PLoS ONE
Proceedings of the National Academy of Sciences, U. S. A.
Quarterly Review of Biology
Science
Systematic and Applied Microbiology

Systematic Biology
Systematic Zoology
Trends in Biotechnology
Trends in Microbiology

Study Sections and Site Visit Committees

Canadian Institute for Advanced Research: Review of Program in Molecular Evolution, 1996
Canadian Institutes of Health Research: Genomics Grant Committee, 2000–2006
Canadian Institutes of Health Research: Meetings, Planning and Dissemination Grants Program, 2009
Canadian Institutes of Health Research: Site Visit Committee, Aug. 2001
Genome Canada: Round I Projects, Interim Review, June 2003
Genome Canada: Round II Projects, Interim Review, May–June 2004
Genome Canada: Round III Projects, Review Panel, June 2005
Medical Research Council of Canada: Genomics Committee, 1999
Medical Research Council of Canada: Site visit committee of Organellar Genome Megasequencing Project, 1997
NASA Exobiology Review Panel, Dec. 2003
National Institutes of Health special grant review panel, July 1994
National Institutes of Health: Genome Study Section, Feb. 2000
National Institutes of Health: Genome Study Section, Oct. 2001
National Science Foundation: Assembling the Tree of Life Panel, May 2008–2009
National Science Foundation: Panel and Workshop on Genomic Databases, June 1988
National Science Foundation: Scientific Databases Panel, Apr. 1993
National Science Foundation: Systematics Panel, Oct. 1994
National Science Foundation and National Institutes of Health: Big Data Panel, Oct. 2012
National Science Foundation Preproposal Panel, May 2015
Ontario Research Fund, Research Excellence Program Review Panel, Nov. 2014

Ad Hoc Grant Proposal Reviews

Australian Research Council
Department of Energy
Forskningsstyrelsen (The Danish Research Agency)
Genome Canada
Medical Research Council of Canada, Canadian Genome Analysis and Technology Program
National Aeronautics and Space Administration (through American Institute of Biological Sciences)
National Oceanic and Atmospheric Administration, Office of Oceanic Research Programs, National Sea Grant College Program
National Science Foundation (6 different programs)
Natural Environment Research Council, United Kingdom
National Science and Engineering Council of Canada

Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung; Fonds national suisse de la recherche scientifique (Swiss National Science Foundation)

Sigma Xi

The Wellcome Trust

Other Review Roles

External Referee in search for Senior Lecturer/Associate Professor in Molecular Evolution, Uppsala University, Sweden

External Reviewer of University of California at Irvine Institute for Genomics and Bioinformatics (for the University) (2005 and 2010)

External Reviewer of Microbiology Program, Oregon State University, Corvallis OR (2015)

Other University of Illinois Campus-Associated Talks

1. "Comparative Sequence Analysis." Department of Microbiology Allerton Conference. Allerton, IL, Nov. 19, 1988.
2. "Computing in Biology: Opportunities and challenges." Department of Computer Science, University of Illinois, Urbana, IL, Mar. 10, 1989.
3. "Sequence analysis," ACM-SIGBIO, Sep. 11, 1989.
4. "Sequence analysis programs and sequence databases," Beckman Institute, Sep. 14, 1989.
5. "Gene duplications and the rooting of the universal tree of life," Molecular Evolution Journal Club, Apr. 10, 1990.
6. "The rooting of the universal tree of life," Department of Microbiology Allerton Conference. Allerton, IL, Oct. 27, 1990.
7. "The history of life as reflected in present-day genes and organisms." Presentation at Department of Microbiology Allerton Conference. Allerton, IL, Oct. 26–27, 1991.
8. "Genes, trees, and making intractable analyses a reality." Fifth Annual Cell & Molecular Biology/Molecular Biophysics Training Grant Research Symposium. The Beckman Institute for Advanced Science and Engineering, Urbana, IL, Sep. 19, 1992.
9. "Genes, trees, and making intractable analyses a reality." Department of Microbiology Allerton Conference. Allerton, IL, Nov. 7–8, 1992.
10. "Maximum likelihood and sequence-based phylogenies." Presented at meeting of University of Illinois systematics interest group. Natural History Survey, Urbana, IL, Nov. 24, 1992.
11. "Transcription in the Archaea: Prokaryotes that think they are eukaryotes." Presented at meeting of University of Illinois RNA Supergroup. Roger Adams Laboratory, Urbana, IL, May 12, 1993.
12. "Archaeal Proteomics." Department of Microbiology Allerton Conference. Allerton, IL, Sep. 23–24, 2000.
13. "Horizontal Gene Transfer." Bioinformatics Symposium. Urbana, IL, Mar. 8, 2005.
14. "Rampant Interspecies Gene Transfer: Codon usage evidence for a shared *Escherichia coli* / *Salmonella enterica* pangenome." Department of Microbiology, Urbana, IL, Mar. 15, 2012.

Campus-Associated Poster Presentations

1. Whitelock, R. B., and Olsen, G. J. 1992. Finding interesting genes in *Thermococcus celer*. Fifth Annual Cell & Molecular Biology/Molecular Biophysics Training Grant Research Symposium. The Beckman Institute for Advanced Science and Engineering, Urbana, IL, Sep. 19, 1992.
2. Whitelock, R. B., and Olsen, G. J. 1992. Finding interesting genes in *Thermococcus celer*. Department of Microbiology Allerton Conference. Allerton, IL, Nov. 7–8, 1992.
3. Badger, J. H., and Olsen, G. J. 1993. A Comparative Approach for Identifying Protein Coding Regions in DNA Sequences. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 11, 1993.
4. Pracht, S. C., Olsen, G. J., Overbeek, R. 1993. Phylogenetic Tree Generation Applying Rates of Nucleotide Change. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 11, 1993.
5. Badger, J. H., and Olsen, G. J. 1993. A Comparative Approach for Identifying Protein Coding Regions in DNA Sequences. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1993.
6. Pracht, S. C., Olsen, G. J., and Overbeek, R. 1993. Phylogenetic Tree Generation Applying Rates of Nucleotide Change. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1993.
7. Marsh, J., Marsh, T. L., and Olsen, G. J. 1993. Interesting Genes of *Thermococcus celer*: The search continues. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1993.
8. Reich, C., Marsh, T. L., Whitelock, R. B., and Olsen, G. J. 1993. Transcription Initiation in the Archaea: The TATA-binding Protein of *Thermococcus celer*. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1993.
9. Badger, J. H., and Olsen, G. J. 1994. A comparative approach for identifying protein coding regions in DNA sequences. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 24, 1994.
10. Colón, G. M., Reich, C. I., and Olsen, G. J. 1994. A view into the genomes of *Thermococcus celer* and *T. litoralis*, two thermophilic members of the Archaea. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 24, 1994.
11. Reich, C, Colón, G., Marsh, T., and Olsen, G. 1994. A window into the evolution of the transcription apparatus: Transcription factors in the Archaea. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 24, 1994.
12. Strader, B. R., Reich, C. I., and Olsen, G. J. 1994. A foray into the Archaea: Sequencing of the *Methanococcus jannaschii* genome. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 24, 1994.

13. Badger, J. H., and Olsen, G. J. 1994. A comparative approach for identifying protein coding regions in DNA sequences. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1994.
14. Buldak, G. L., Reich, C., and Olsen, G. J. 1994. Random clone analysis of the *Methanococcus jannaschii* genome. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1994.
15. Colón, G., Reich, C. I., and Olsen, G. J. 1994. A view into the genomes of *Thermococcus celer* and *T. litoralis*, two thermophilic members of the Archaea. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1994.
16. Badger, J. H., and Olsen, G. J. 1995. CRITICA: A comparative approach for identifying protein coding regions in DNA sequences. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 30, 1995.
17. Buldak, G. L., Reich, C. I., and Olsen, G. J. 1995. A glimpse at DNA repair in the Archaea: When is a *recA*-like gene really RAD (51)? Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 30, 1995.
18. Colón, G., Reich, C. I., and Olsen, G. J. 1995. The TATA-binding protein and transcription factor IIB from mesophilic and thermophilic Archaea. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 30, 1995.
19. De Wispeleare, D., Reich, C., and Olsen, G. 1995. An exploration of gene expression and thermostability via the archaeal proteins TATA-binding protein (TBP) and transcription factor IIB (TFIIB). Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 30, 1995.
20. Reich, C. I., Hong, K. S., Bult, C., Venter, J. C., Woese, C. R., and Olsen, G. J. 1995. *Methanococcus jannaschii*: the genome. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 30, 1995.
21. Badger, J. H., and Olsen, G. J. 1995. CRITICA: A comparative approach for identifying protein coding regions in DNA sequences. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 21–22, 1995.
22. Buldak, G. L., Reich, C. I., and Olsen, G. J. 1995. A glimpse at DNA repair in the Archaea: When is a *recA*-like gene really RAD (51)? Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 21–22, 1995.
23. Colón, G., Reich, C. I., and Olsen, G. J. 1995. The TATA-binding protein and transcription factor IIB from mesophilic and thermophilic Archaea. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 21–22, 1995.
24. De Wispeleare, D., Reich, C., and Olsen, G. 1995. An exploration of gene expression and thermostability via the archaeal proteins TATA-binding protein (TBP) and transcription factor IIB (TFIIB). Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 21–22, 1995.
25. Reich, C. I., Hong, K. S., Bult, C., Venter, J. C., Woese, C. R., and Olsen, G. J. 1995. *Methanococcus jannaschii*: the genome. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 21–22, 1995.

26. Badger, J., Overbeek, R., and Olsen, G. J. 1996. Analyzing the *Methanococcus jannaschii* genome. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 28, 1996.
27. Buldak, G. L., Reich, C. I, and Olsen, G. J. 1996. Recombinatory DNA repair in the Archaea: Just how *RAD* is it? Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 28, 1996.
28. Bult, C., White, O., Olsen, G. J., Reich, C., Kaine, B., Smith, H., Woese, C., Venter, J. C. 1996. Complete genome sequence of the archaeon *Methanococcus jannaschii.* Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 28, 1996.
29. Colón, G. M., Reich, C. I., Hong, K. S., Arntzen, Y. K., Yang, E., and Olsen, G. J. 1996. Analysis of transcription factor IIB and TATA-binding protein homologs from Archaea. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 28, 1996.
30. Kyrpides, N., Olsen, G. J., and Woese, C. R. 1996. New protein functions in the archaeon *Methanococcus jannaschii*. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 28, 1996.
31. Arntzen, Y., Hong, K., Yang, E., and Olsen, G. J. 1996. Transcription factor IIB homologs in mesophilic members of the Archaea. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1996.
32. Badger, J., Overbeek, R., and Olsen, G. J. 1996. Analyzing the *Methanococcus jannaschii* genome. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1996.
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34. Bult, C., White, O., Olsen, G. J., Reich, C., Kaine, B., Smith, H., Woese, C., Venter, J. C. 1996. Complete genome sequence of the archaeon *Methanococcus jannaschii.* Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1996.
35. Colón, G. M., Reich, C. I., Hong, K., and Olsen, G. J. 1996. Phylogenetic analysis of TFIIB and TBP homologs from Archaea. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1996.
36. Colón, G. M., McNeil, L. K., Reich, C. I., and Olsen, G. J. 1996. Biochemical characterization of archaeal transcription factors. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1996.
37. Kyrpides, N., Olsen, G. J., and Woese, C. R. 1996. New protein functions in the archaeon *Methanococcus jannaschii*. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 8–9, 1996.
38. Wronski, J., Reich, C. I. and Olsen, G. J. 1997. Hughes Undergraduate Research Fellows Poster Session, University of Illinois, Levis Faculty Center, Urbana, IL, Aug. 2, 1997.
39. Aslam, M. K., Hardwidge, P. R., Reich, C. I., and Olsen, G. J. 1997. Thermal stability of archaeal transfer RNAs is provided by posttranslational modifications. Cell and Molecular

Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 27, 1997.

40. Badger, J. H., Haney, P. J., and Olsen, G. J. 1997. Characterization of amino acid replacement patterns between closely related thermophilic and mesophilic archaeal species. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 27, 1997.
41. Best, A. A., Reich, C. I., and Olsen, G. J. 1997. RNA polymerase subunit interactions in the archaeon *Methanococcus jannaschii*. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 27, 1997.
42. Colón González, G. M., McNeil, L. K., Reich, C. I., and Olsen, G. J. 1997. Phylogeny and biochemical characterization of archaeal transcription factors. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 27, 1997.
43. Graham, D. E., and Olsen, G. J. 1997. Proposed enzymology of the citramalate pathway for 2-oxobutyrate synthesis in two methanogenic Archaea. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 27, 1997.
44. Wronski, J., Reich, C., and Olsen, G. 1997. A comparison of the DNA repair proteins RadA and RadP in mesophilic and thermophilic Archaea. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Sep. 27, 1997.
45. Aslam, M. K., Hardwidge, P. R., Reich, C. I., and Olsen, G. J. 1997. Thermal stability of archaeal transfer RNAs is provided by posttranslational modifications. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 25–26, 1997.
46. Badger, J. H., Haney, P. J., and Olsen, G. J. 1997. Characterization of amino acid replacement patterns between closely related thermophilic and mesophilic archaeal species. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 25–26, 1997.
47. Best, A. A., Reich, C. I., and Olsen, G. J. 1997. RNA polymerase subunit interactions in the archaeon *Methanococcus jannaschii*. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 25–26, 1997.
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50. Wronski, J., Reich, C., and Olsen, G. 1997. A comparison of the DNA repair proteins RadA and RadP in mesophilic and thermophilic Archaea. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 25–26, 1997.
51. Best, A. A., Reich, C. I., and Olsen, G. J. 1998. RNA polymerase subunit interactions in the archaeon *Methanococcus jannaschii*. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 19–20, 1998.

52. Colón-González, G. M., Reich, C. I., and Olsen, G. J. 1998. Evolutionary history and biochemical characterization of archaeal transcription factor. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 19–20, 1998.
53. McNeil, L., Buldak, G., Olsen, G., and Reich, C. 1998. The *Methanococcus voltae* RadA protein: A functional homolog of eukaryotic RAD51. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 19–20, 1998.
54. Wronski, J., Brucker, J., Olsen, G., and Reich, C. 1998. The archaeal DNA repair proteins RadA and RadP. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 19–20, 1998.
55. Graham, D. E., and Olsen, G. J. 1998. Identification and characterization of archaeal tRNA methyltransferases. Cell and Molecular Biology & Molecular Biophysics Research Symposium, Beckman Institute for Advanced Science and Technology, Urbana, IL, Oct. 31, 1998.
56. Best, A. A., Reich, C. I., and Olsen, G. J. 1999. RNA polymerase subunit interactions in the archaeon *Methanococcus jannaschii*. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1999.
57. Colón-González, G. M., Reich, C. I., and Olsen, G. J. 1999. Evolutionary history and biochemical characterization of archaeal transcription factor. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1999.
58. Oger, P., Reich, C., Olsen, G. J. and Farrand, S. K. 1999. Complete nucleotide sequence and analysis of pTiBo542, the supervir Ti plasmid from *Agrobacterium tumefaciens* Bo542. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1999.
59. Reich, C., Tollaksen, S., Yates, J., Olsen, G., and Reich, C. 1999. Archaeal proteomics. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1999.
60. Wronski, J., Brucker, J., McNeil, L., Reich, C., and Olsen, G. 1999. A comparison of DNA repair proteins, RadA and RadB, in thermophilic and mesophilic Archaea. Department of Microbiology Allerton Research Conference, Allerton, IL, Oct. 9–10, 1999.
61. Best, A. A., and Olsen, G. J. 2000. Similar subunit architecture of archaeal and eukaryal RNA polymerases. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 23–24, 2000.
62. Colón-González, G. M., Reich, C., and Olsen, G. J. 2000. Archaeal TFB interactions. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 23–24, 2000.
63. Li, E., and Olsen, G. 2000. Whole genome approach to identify promoter sequences in *Methanococcus jannaschii*. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 23–24, 2000.
64. McNeil, L. K, and Olsen, G. J. 2000. Phylogenomic analysis of the proteasome family of Archaea and Eukarya. Department of Microbiology Allerton Research Conference, Allerton, IL, Sep. 23–24, 2000.

April 28, 2023

CURRICULUM VITAE
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Date of Birth: January 16, 1963, West Grove, Pennsylvania

Education and Academic Positions:

B.S., 1984, Biochemistry, The Pennsylvania State University, University Park, PA 16802

Ph.D., 1990, Molecular Biology, Princeton University, Princeton, NJ 08544

Postdoctoral Fellow, Department of Microbiology and Molecular Genetics
Harvard Medical School, Boston, MA 02115
June, 1990 - December, 1993

Assistant Professor, Department of Microbiology and UI College of Medicine
University of Illinois, Urbana, IL 61801
January, 1994 – August, 2000

Instructor, Advanced Bacterial Genetics Course
Cold Spring Harbor Laboratory, Cold Spring Harbor, NY 11724
June, 1997 – June, 2000

Associate Professor, Department of Microbiology and UI College of Medicine
University of Illinois, Urbana, IL 61801
September, 2000 – August 2008

Director, Medical Scholars Program
UI College of Medicine, University of Illinois, Urbana, IL 61801
August, 2002 – August 2022

Carle Illinois College of Medicine, University of Illinois, Urbana, IL 61801
May 2019 – Present

Faculty Member, Institute for Genomic Biology
University of Illinois, Urbana, IL 61801
June, 2004 – Present

Professor, Department of Microbiology
University of Illinois, Urbana, IL 61801
September, 2008 – Present

Professor, Carle Illinois College of Medicine
University of Illinois, Urbana, IL 61801
November, 2016 - Present

Interim Associate Dean for Academic Affairs
Carle Illinois College of Medicine, University of Illinois, Urbana, IL 61801
November, 2016 – October, 2017

Interim Director of Biomedical and Translational Sciences
Carle Illinois College of Medicine
University of Illinois, Urbana, IL 61801
November, 2017 – May 2018

Head of the Department of Microbiology
University of Illinois, Urbana, IL 61801
May 2018 – Present

Other Experience:

Organizer, Microbial Pathogenesis and Host Response Meeting,
Cold Spring Harbor Laboratory
2002 – 2007

Editor, EcoSal, the Web-based version of "*Escherichia coli* and *Salmonella*: Cellular and Molecular Biology" ASM Press.
2007-2023

Editorial Advisory Board, Molecular Microbiology, Blackwell Publishing
2008-2009
2012-Present

Editorial Board, Journal of Bacteriology, ASM Press
2004-2021

Editorial Board, Infection and Immunity, ASM Press
2016-2024

College of CSR Reviewers, National Institutes of Health
2010-Present

Director, Infection Biology Training Program
University of Illinois, Urbana, IL 61801
May 2010 – August 2015

Society and Honor Society Memberships:

American Society for Microbiology
American Association for the Advancement of Science
Phi Lambda Upsilon, National Honorary Chemical Society

Honors and Awards:

Baxter Travenol Fellowship, Princeton University
September, 1984 - August, 1985

Predoctoral Fellow, NIH Genetics Training Grant
July, 1986 - June, 1989

Postdoctoral Fellow, The Cancer Research Fund of the
Damon Runyon - Walter Winchell Foundation

April, 1990 - March, 1993

AAAS-Newcomb Cleveland Prize, 1992-1993. For publication of the outstanding paper in the journal, *Science*.

Harvard Health Letter, Top ten medical advances of 1993.

American Cancer Society Junior Faculty Research Award, 1996.

A. Paul Naney Research Award, 1996-1997, American Heart Association Illinois Affiliate. For the highest merit score on a grant application

Selected as one of the 50 outstanding Fellows in the 50 years of the Damon Runyon – Walter Winchell Foundation. 1996 Annual Report.

Arnold O. Beckman Research Award, 2002, 2003, and 2018. For Research Board Projects of Special Distinction

List of Teachers Ranked Excellent by their Students, University of Illinois. **Thirty six** awards, Fall 1996 - present.

Elected as a Fellow, American Academy of Microbiology, 2011

University Scholar, University of Illinois, 2011

School of Molecular and Cellular Biology Faculty Excellence Award, 2013

Medical Scholars Program Advisor of the Year Award, 2015

School of Molecular and Cellular Biology Excellence in Service Award, 2017

Patents:

In vivo selection of microbial virulence genes. Michael J. Mahan, John J. Mekalanos, and James M. Slauch. US Patent Number 5,434,065. July 18, 1995.

Journal Publications: (H-Index: 51 according to Google Scholar)

1. Martin, J.D., D.M. King, J.M. Slauch, and R.J. Frisque. 1985. Differences in regulatory sequences of naturally occurring JC virus variants. J. Virology 53:306-311. PMCID: PMC255040

2. Slauch, J.M., S. Garrett, D.E. Jackson, and T.J. Silhavy. 1988. EnvZ functions through OmpR to control porin gene expression in *Escherichia coli* K-12. J. Bacteriol. 170:439-441. PMCID: PMC210662

3. Slauch, J.M. and T.J. Silhavy. 1989. Genetic analysis of the switch that controls porin gene expression in *Escherichia coli* K-12. J. Mol. Biol. 210:281-292. (Erratum, 212:429, 1990) PMID: 2557454

4. Slauch, J.M. and T.J. Silhavy. 1991. *cis*-acting *ompF* mutations that result in OmpR-dependent constitutive expression. J. Bacteriol. 173:4039-4048. PMCID: PMC208052

5. Slauch, J.M., F.D. Russo, and T.J. Silhavy. 1991. Suppressor mutations in *rpoA* suggest that OmpR controls transcription by direct interaction with the alpha subunit of RNA polymerase. J. Bacteriol. 173:7501-7510. PMCID: PMC212516

6. Michetti, P., M.J. Mahan, J.M. Slauch, J.J. Mekalanos, and M.R. Neutra. 1992. Monoclonal secretory immunoglobulin A protects mice against oral challenge with the invasive pathogen *Salmonella typhimurium*. Infect. Immun. 60:1786-1792. PMCID: PMC257074

7. Mahan, M.J., J.M. Slauch, and J.J. Mekalanos. 1993. Identification of bacterial virulence genes based on selection of genes that are specifically induced in host tissues. Science 259:686-688. PMID: 8430319

8. Russo, F.D., J.M. Slauch, and T.J. Silhavy. 1993. Mutations that affect separate functions of OmpR, the phosphorylated regulator of porin transcription in *Escherichia coli*. J. Mol. Biol. 231:261-273.

9. Mahan, M.J., J.M. Slauch, and J.J. Mekalanos. 1993. Bacteriophage P22 transduction of integrated plasmids: single-step cloning of *Salmonella typhimurium* gene fusions. J. Bacteriol. 175:7086-7091. PMCID: PMC206837

10. Slauch, J.M., M.J. Mahan, and J.J. Mekalanos. 1994. Measurement of transcriptional activity in pathogenic bacteria recovered directly from infected host tissue. Biotechniques 16:641-644. PMID:8024783

11. Michetti, P., N. Porta, M.J. Mahan, J.M. Slauch, J.J. Mekalanos, A.L. Blum, J.P. Kraehenbuhl, and M.R. Neutra. 1994 Monoclonal immunoglobulin A prevents adherence and invasion of polarized epithelial cell monolayers by *Salmonella typhimurium*. Gastroenterology 107:915-923.

12. Slauch, J.M., M.J. Mahan, P. Michetti, M.R. Neutra, and J.J. Mekalanos. 1995. Acetylation (O-factor 5) affects the structural and immunological properties of *Salmonella typhimurium* lipopolysaccharide O-antigen. Infect. Immun. 63:437-441. PMCID: PMC173014

13. Mahan, M.J., J.W. Tobias, J.M. Slauch, P.C. Hanna, R.J. Collier, and J.J. Mekalanos. 1995 Antibiotic-based selection for bacterial genes that are specifically induced during infection of a host. Proc. Natl. Acad. Sci. USA. 92:669-673. PMCID: PMC42681

14. Slauch, J.M., A.A. Lee, M.J. Mahan, and J.J. Mekalanos. 1996. Molecular characterization of the *oafA* locus responsible for acetylation of *Salmonella typhimurium* O-antigen: OafA is a member of a family of integral membrane trans-acylases. J. Bacteriol. 178:5904-5909. PMCID: PMC178445

15. Mann, B.A. and J.M. Slauch. 1997. Transduction of low-copy number plasmids by bacteriophage P22. Genetics 146:447-456. PMCID: PMC1207987

16. Kim, M.L. and J.M. Slauch. 1999. Effect of acetylation (O-antigen 5) on the polyclonal antibody response to *Salmonella typhimurium* O-antigen. FEMS Immunol.Med.Microbiol. 26:83-92.

17. Janakiraman, A., and J.M. Slauch. 2000. The putative iron transport system SitABCD encoded on SPI1 is required for full virulence of *Salmonella typhimurium*. Mol.Microbiol. 35:1146-1155. PMID:10712695

18. Stanley, T.L., C.D. Ellermeier, and J.M. Slauch. 2000. Tissue specific gene expression identifies a gene in the lysogenic phage Gifsy-1 that affects *Salmonella enterica* serovar Typhimurium survival in Peyer's patches. J.Bacteriol. 182:4406-4413. PMCID: PMC94610

19. Ho, T.D., and J.M. Slauch. 2001. Characterization of *grvA*, an anti-virulence gene on the Gifsy-2 phage in *Salmonella enterica* serovar Typhimurium. J.Bacteriol. 183:611-620. PMCID: PMC94917

20. Ho, T.D., and J.M. Slauch. 2001. OmpC is the receptor for the Gifsy-1 and Gifsy-2 bacteriophages of *Salmonella*. J.Bacteriol. 183: 1495-1498. PMCID: PMC95030

21. Ellermeier, C.D., A. Janakiraman, and J.M. Slauch. 2002. Construction of targeted single copy *lac* fusions using λ Red and FLP-mediated site-specific recombination in bacteria. Gene 290: 153-161. PMID:12062810

22. Kehres, D.G., A. Janakiraman, J.M. Slauch and M.E. Maguire. 2002. Regulation of *Salmonella enterica* serovar Typhimurium *mntH* transcription by H2O2, Fe2+, and Mn2+. J. Bacteriol. 184: 3151-3158. PMCID: PMC135095

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Publications in preparation

Review Articles, Book Chapters, and Symposium Volumes:

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Funding:

Current Grants

National Institute of Allergy and Infectious Diseases, R21 AI163687. June 2021 – May 2023. $275,000 Total direct costs. The role of TamAB in *Salmonella* pathogenesis. (PI: J. Slauch)

National Institute of Allergy and Infectious Diseases, R21 AI166495. June 2022 – May 2024. Received an impact score of 11. $275,000 Total direct costs. Regulation of the *Salmonella* pathogenicity island 1 type III secretion system via the *hilD* 3' untranslated region. (PI: J. Slauch)

Pending Grants

National Institute of Allergy and Infectious Diseases, R01 AI175271. Nov 2023 – Oct 2028. $1,986,810 Total direct costs. Cation homeostasis: the role of polyamines in *Salmonella* physiology. (PI: J. Slauch)

Previous Funded Grants

NASA SBIR, 80NSSC20C0564. Aug 31, 2020-March 1, 2021. $33,966 subcontract. Plasma-Based Techniques for Spacecraft Contamination Control. (Slauch is subcontractor for CU Aerospace)

University of Illinois Campus Research Board. RB19075. December 2018-June 2020 $15,003 Total costs. An in vitro device to deliver high concentrations of superoxide. (PI: J. Slauch)

National Institute of General Medical Sciences, R01 GM120182. Aug 2016 – July 2020. (on no-cost extension 2021) $840,000 Total direct costs. Integration of Small RNAs in Control of *Salmonella* Pathogenicity Island 1. (PIs: J. Slauch, C. Vanderpool)

National Institute of Allergy and Infectious Diseases, R01 AI123381. April 2016 – March 2020 (on no-cost extension 2021). $1,000,000 Total direct costs. Characterizing the targets of phagocytic superoxide in *Salmonella*. (PI: J. Slauch)

University of Illinois Campus Research Board. RB15007. Oct 2014-Oct 2017 $16,500 Total direct costs. Knocking out every non-essential gene in *Salmonella* – creation of an ordered insertion mutant library. (PI: J. Slauch)

National Institute of Allergy and Infectious Diseases, R13 AI126805. July 2016 – June 2017. $8000 Total costs. The 23rd Annual Midwest Microbial Pathogenesis Conference. (PI: J. Slauch, T. Kehl-Fie)

National Institute of Allergy and Infectious Diseases, R21 AI111455. Feb 2014 – Jan 2016. $247,500 Total direct costs. The targets of phagocytic superoxide in *Salmonella* (PI: J. Slauch)

National Institute of Allergy and Infectious Diseases, T32 AI078876. July 2010 – June 2015. $267,984 Annual direct costs. The Infection Biology Training Program (PI: J. Slauch)

Dept of Energy. SBIR 212763. July 2014- March 2015. $25,000 Total direct and indirect cost of subcontract. Singlet-oxygen Plasma Afterglow Reaction Chamber for Disinfection and Sterilization (SPARC-DS). (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

National Institute of Allergy and Infectious Diseases, R01 AI080705. July 2010 – June 2014. $1,000,000 Total direct costs. Regulation of the *Salmonella* Pathogenicity Island Type III Secretion System (PI: J. Slauch)

University of Illinois Campus Research Board. December 2012. $15,000 Total direct costs. Identifying the Bacterial Targets of Phagocytic Superoxide.

University of Illinois Campus Research Board. May 2010. $13,500 Total direct costs. Regulation of the *Salmonella* Pathogenicity Island 1 Type III Secretion System.

National Institute of Allergy and Infectious Diseases, 5R01 AI063230-05. December 2004 – November 2010. $1,250,000 Total direct costs. Functional Analysis of Cu/Zn Superoxide Dismutase (PI: Slauch; Co PI: J. Imlay)

CRI-Carle Translational Research. September, 2006 – August 2007. $75,000 Total direct costs. Evolutionary Medicine and Women's Vaginal Health. (PI: B. Wilson; Co PI: Slauch et al.)

University of Illinois Campus Research Board. February 2003. $20,095 Total direct costs. Resistance to external superoxide in *Salmonella*.

R. J. Carver Charitable Trust, 03-128. November 2002 – November 2004. $282,000 Total direct costs. Microbial Transport Proteins as Targets for Specific Antimicrobial Drugs (Co-PIs: P. Best, R. Gennis, G. Olsen, E. Jakobsson)

University of Illinois Campus Research Board. February 2002. $23,000 Total direct costs. Identification of protein-protein interactions in the analysis of *Salmonella* pathogenesis. (Co-PI D. Kranz)

R. J. Carver Charitable Trust, 00-25. November 1999 – November 2002. $239,737 Total direct costs. "Characterization of *Salmonella typhimurium* genes required for growth in the small intestine."

National Institute of Allergy and Infectious Diseases, R01-AI37530-01A2. Sept. 1997 – May 2001. $398,743 Total direct costs. "Molecular pathogenesis of *Salmonella typhimurium*."

National Institute of Allergy and Infectious Diseases, R21-AI37530-01A1. Sept. 1996 – Aug. 1997. $81,040 Total direct costs. $49,396 Indirect costs. "Molecular pathogenesis of *Salmonella typhimurium*."

University of Illinois Campus Research Board. March, 1998. $5692 Total direct costs. For the purchase of a biosafety hood for the animal facility. (Co-PI; PI Stanley Maloy)

C-Far Strategic Research Initiatives Program, 99Si-050-4A. July 1998 – June, 2002. $205,500 Total direct costs. "Food Safety Outcome #1 – Monoclonal antibodies against *Salmonella typhimurium* O-antigen."

American Cancer Society Junior Faculty Research Award, JFRA-633. July 1996 – June 1999. $84,500 Total direct costs. $6000 Indirect costs. "Analysis of bacterial gene required for host-pathogen interactions."

American Heart Association – IL Affiliate, 96-GB-01. July, 1996 – June 1998. $50,000 Total direct costs. "Characterization of bacterial virulence genes that are specifically induced in host tissues." – Received the highest merit score.

College of Medicine Committee on Research, May, 1995. $5000 Total direct costs. "Immune response to *Salmonella typhimurium* O-antigen."

University of Illinois Campus Research Board. March, 1995. $6305 Total direct costs. For the purchase of a luminometer.

University of Illinois Campus Research Board. April, 1994. $14,316 Total direct costs. For the establishment of a tissue culture facility.

Unfunded Proposals

NASA SBIR S4.05-6431. July 2021 – June 2023. $81,759 Direct subcontract. Plasma-Based Techniques for Spacecraft Contamination Control. (PI: JW Zimmerman, , CU Aerospace; Slauch is subcontractor)

National Institute of General Medical Sciences, T32 GMxxxx. July 2020 – June 2025. $3,076,510 Total direct costs. The Microbial Systems Engineering Training Program (PIs: J.J.M. Irudayaraj and J. Slauch)

National Institute of Allergy and Infectious Diseases, R01 AI156265. Dec 2020 – Nov 2025. $1,000,000 Total direct costs. Signal Integration in Regulation of the *Salmonella* Pathogenicity Island 1 Type III Secretion System. (PI: J. Slauch)

Department of Defense SBIR. July 2020-June 2022. $141,177 subcontract. Singlet-Oxygen Plasma Afterglow Exposure System for Equipment Disinfection and Sterilization. (Slauch is subcontractor for CU Aerospace)

Department of Energy SBIR. July 2018-April 2019. $48,000 subcontract. Bacteria Inactivation by Exposure to Closed-cycle Oxygen Plasma Afterglow. (Slauch is subcontractor for CU Aerospace)

Department of Energy SBIR. June 2017-March 2018. $30,000 subcontract. Closed-cycle Oxygen Plasma Afterglow Techniques for Bacteria Inactivation. (Slauch is subcontractor for CU Aerospace)

National Institutes of Health. SBIR, July 2014- January 2015. $46,000 Total direct and indirect cost of subcontract. Atmospheric Microcavity Reactive-Oxygen Generators for Localized Plasma-based Disinfection and Decontamination. (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

Dept of Energy. SBIR 212763. July 2015- June 2017. $75.608 Total direct and indirect cost of subcontract. Singlet-oxygen Plasma Afterglow Reaction Chamber for Disinfection and Sterilization (SPARC-DS) – Phase II. (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

NASA. SBIR, July 2015- January 2016. $15,500 Total direct and indirect cost of subcontract. NASA S4.05 "Compact In-situ Plasma Sterilizers for Robotic Missions". (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

National Institutes of Health. SBIR, July 2014- January 2015. $46,000 Total direct and indirect cost of subcontract. Atmospheric Microcavity Reactive-Oxygen Generators for Localized Plasma-based Disinfection and Decontamination. (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

National Science Foundation. SBIR, July 2014- January 2015. $46,000 Total direct and indirect cost of subcontract. Reactive Oxygen Convection Chamber for Sterilization. (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

Dept of Defense. SBIR, July 2014- March 2015. $25,000 Total direct and indirect cost of subcontract. Singlet-oxygen Plasma Afterglow Reaction Chamber for Disinfection and Sterilization (SPARC-DS) – Phase II. (PI: CU Aerospace; Subcontractor/Consultant: J. Slauch)

National Institutes of Health, 1DP7-XXX. Sept 2013-Aug 2018. $1,227,611 Total direct costs. Connecting Illinois' BEST: Innovative Training for the Biomedical Workforce. (PI: Chancellor Wise, 1 of 10 Co-PIs: J. Slauch)

National Institute of Allergy and Infectious Diseases, 1U19 AI107790-01. July 2013-June 2018. $9,821,295 Total direct costs. Functional Annotation of Genes in NIH/NIAID Priority GI Pathogens. (Director and PI: B.A. Wilson, Co-Director and Co-PI, J. Slauch)

Invited Seminars and Oral Presentations at Meetings:

Midwest Prokaryotic Biology Meeting - University of Illinois. May 1994

Southern Illinois University. October 1994

CMB Training Grant Symposium -University of Illinois. September 1994

10th Anniversary Celebration of the Department of Molecular Biology at Princeton University. January 1995

Arizona State University. March 1995

Northwestern University School of Medicine. June 1995

Iowa State University. March 1996

Midwest Microbial Pathogenesis Conference. October 1996

Annual Meeting of the Society for Microbiology. May 1997

The Indiana Conference on Microbial Pathogenesis. May 1997

Microbial Pathogenesis and Host Defense. Cold Spring Harbor. September 1997

Northern Illinois University. February 1998

University of Illinois – Chicago. April 1998

Food Safety Initiative Technical Workshop: Relating Numbers of Foodborne Pathogens to Human Illness. Food and Drug Administration. August 1998

Molecular Genetics of Bacteria and Phages. Cold Spring Harbor. August 1998

2nd International Rushmore Conference on Mechanisms in the Pathogenesis of Enteric Diseases. Keynote Speaker. October 1998

University of Texas Health Science Center at San Antonio. January 1999

Case Western Reserve University. February 1999

Conference on Genetic Approaches to Understanding Complex Biological Problems. Harper's Ferry, WV. March 1999

Midwest Prokaryotic Biology Meeting - University of Illinois. April 1999

University of Cincinnati Medical School. May, 1999

Virulence Mechanisms of Bacterial Pathogens. Ames, Iowa. September 1999

University of Washington. May, 2000

2001 Illinois Food Safety Symposium. September 2001

Karolinska Institute. Stockholm, Sweden. November 2002

University of Idaho. February 2003

Tulane University School of Medicine. April 2003

Advanced Bacterial Genetics Course. Cold Spring Harbor. June 2003

Conference on Genetic Approaches to Understanding Complex Biological Problems. Baltimore, MD. March 2004

Medical College of Wisconsin, March 2004

Illinois State University, November 2004

University of Rochester, April 2005

Wadsworth Center, Albany, NY, April 2005

University of Texas at Austin, November 2005

University of North Dakota, Grand Forks, ND, April 2006

13th University of Alberta/University of Calgary Conference on Infectious Diseases, Banff Alberta, May 2006

Indiana University at Bloomington, November 2007

Dartmouth Medical School, Hanover, NH, February 2008

Conference on Genetic Approaches to Understanding Complex Biological Problems. Banff, Alberta, May 2008

Gordon Research Conference on Microbial Stress Responses, Mount Holyoke College, MA, July 2008

Midwest Microbial Pathogenesis Conference, Madison WI, September 2008

Cornell University, Ithaca, NY, April 2009

University of Maryland, College Park, MD, May 2009

Microbial Pathogenesis and Host Defense. Cold Spring Harbor. September 2009

Society for Risk Analysis (SRA), Annual Meeting. Baltimore MD. December 2009

Kansas State University, Manhattan, KS, January 2010

Southern Illinois University. February 2010

Wayne State University. February 2011. Invited by the graduate students.

University of Iowa, Iowa City, IA, November 2011

Arizona State University. January 2013

Conference on Genetic Approaches to Understanding Complex Biological Problems. Sedona, AZ. March 2013

University of Illinois at Chicago, April 2013

University of Chicago, May 2013

Indiana University School of Medicine, January 2014

University of Georgia, October 2014

Virginia Tech, April 2016. Invited by the undergraduate students in the ASM chapter.

Advanced Bacterial Genetics Course. Cold Spring Harbor. June 2016

Geisel School of Medicine, Dartmouth College, June 2017

Midwest Microbial Pathogenesis Conference, Notre Dame Univ, August 2017

University of Alberta, Edmonton, AB Canada, September 2017

Conference on Genetic Approaches to Understanding Complex Biological Problems. Princeton, NJ. May 2018

Toxins & Microbial Pathogenesis Gordon Research Conference, July 2018

Duke University, Invited by the graduate students, December 2018

University of Wisconsin, Madison, March 2019

Salmonella Gordon Research Conference, 2019

University of Toledo, May 2023

Salmonella Gordon Research Conference, 2023 (Session Chair)

Conference on Genetic Approaches to Understanding Complex Biological Problems. Boston, MA. June 2023

<u>Scheduled</u>

Meetings Planned

Eighth Annual Midwest Microbial Pathogenesis Meeting – University of Illinois. October 2001

Microbial Pathogenesis and Host Defense, Cold Spring Harbor Laboratory. September 2003-2007

Twenty Third Annual Midwest Microbial Pathogenesis Meeting – University of Illinois. September 2016

Poster Presentations:

My students and/or I have presented > 150 posters at the following regional and national meetings: Midwest Microbial Pathogenesis Meeting, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2006, 2008, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2021; General Meeting of the American Society for Microbiology, 1996, 1997, 1998, 1999, 2003, 2005, 2006, 2007, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017; Microbial Pathogenesis and Host Defense, Cold Spring Harbor Labs, 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2107, 2019, 2021 (virtual); ASM Conference on Salmonella, 2006, 2013, 2016; Gordon Conference on Microbial Toxins and Pathogenesis, 2006; Gordon Conference on Bacterial Cell Surfaces, 2016; Molecular Genetics of Bacteria and Phages, Madison, WI, 2012, 2014, 2017.

Summary of Current Research:

Salmonella cause over one million cases of gastroenteritis and enteric fever per year in the US and lead all other foodborne bacterial pathogens as a cause of death. The long-term objectives of our research are to understand the molecular mechanisms by which Salmonella circumvents the host immune system to cause disease. Salmonella typhimurium provides an ideal model system to study molecular pathogenesis. The genetics of this organism are well defined and allow the simple manipulation and characterization of mutations that affect virulence. In addition, there is an excellent animal model of infection to study the effects of bacterial mutations on pathogenesis.

Salmonella invades the intestinal epithelium and induces inflammatory diarrhea using the Type III Secretion System (T3SS) encoded on Salmonella Pathogenicity Island 1 (SPI1). This system is transcriptionally induced in response to a variety of environmental signals such that the machinery is produced at the appropriate time and place in the intestine of the host. By performing careful genetic analyses, we have modeled the complex circuitry responsible for integrating these various environmental signals. This model is a breakthrough in Salmonella pathogenesis, explaining a plethora of published data that was often confusing. We continue to refine this model and determine the molecular mechanisms by which various environmental parameters feed into the regulator circuit. Our current foci include the roles of sRNAs in the system, a collaboration with Cari Vanderpool, and the functional characterization of the long 3' untranslated region of the hilD mRNA. An NIH R01 on this project will end this year. An R21 focused on the hilD 3' UTR is being reviewed this summer.

The most serious Salmonella disease results from extraintestinal infection and bacteremia. The hallmark of these extraintestinal infections is the ability of Salmonella to survive in macrophages, which normally

kill bacteria by producing a variety of antimicrobials, including superoxide (O2-). Evidence that phagocyte-produced superoxide is important in Salmonella infection is clear, but the molecular mechanism by which external superoxide kills or inhibits Salmonella is not known. Our studies have led to a paradigm shift. Contrary to current dogma, the targets of the phagocytic oxidative burst are not the bacterial DNA or other cytoplasmic molecules. Rather, we provide evidence that phagocytic superoxide kills or inhibits Salmonella by damaging an extracytoplasmic target. Our long-term goal is to understand the physiological basis of sensitivity to phagocytic superoxide and the adaptations that allow key pathogens to survive.

In an attempt to identify targets of phagocytic superoxide, we used "differential TnSeq". We isolated large numbers of random transposon insertions in both wild type and sodC mutant backgrounds and passaged pools of these mutants through our mouse infection model. Comparing relative changes in transposon representation between wild type and sodC mutant pools recovered from the animals identifies genes that genetically interact with sodCI. We are following up on several genes identified in this screen. This includes paeA, which we believe encodes a polyamine transporter. We are studying the physiological relationship between Mg2+ and polyamines and how these factors allow adaptation to growth in the macrophage phagosome.

The tamAB locus encodes proteins that, by homology, seem to be involved in outer membrane assembly. Originally proposed as a system for assembly of a subset of beta-barrel proteins, the so-called autotransporter proteins, the actual function of TamAB is unknown. We have discovered that tamAB is a previously unrecognized member of the PhoPQ regulon and is induced when Salmonella is replicating in macrophages, suggesting that this system is important for virulence. Indeed, our preliminary data strongly support our primary hypothesis that TamAB is induced to assist Bam, the primary machine for assemble of outer membrane proteins, under the stressful conditions in the phagosome. Understanding the roles of TamAB will inform us about the conditions in the phagosome leading to outer membrane assembly stress and the mechanisms used by Salmonella to combat them. Identifying the specific proteins affected by loss of TamAB also identifies additional virulence factors critical for Salmonella pathogenesis. A new R21 on TamAB will be funded this summer.

Teaching:

Students receiving degrees and subsequent positions:

Theresa L. Stanley, Ph.D., October 1998; Professor of Biology, (Has served as Head), Gordon State College, Barnesville, GA

Brandon A. Mann, Ph.D., December 1998; Postdoctoral Fellow, Center for GI Biology and Disease, University of North Carolina School of Medicine, Chapel Hill, NC

Staff Scientist, Department of Microbiology and Immunology, Indiana University School of Medicine, Indianapolis, IN

Director of Scientific Communications, Koeus Solutions, Indianapolis, IN

Creative Services Writer, Eli Lilly, Indianapolis, IN

George A. Kopitas, M.S., January 1999; Vice President of Sales and Support, Mission Bio, San Francisco, CA

Theresa D. Ho, Ph.D., October 2000; Postdoctoral Fellow, Department of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA

Postdoctoral Fellow, Department of Molecular Biology and Microbiology, Tufts University School of Medicine, Boston, MA

Associate Research Scientist and Course Lecturer, Department of Microbiology, University of Iowa, Carver School of Medicine, Iowa City, IA

Anuradha Janakiraman, Ph.D., November 2001; Postdoctoral Fellow, Department of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA

Professor, Department of Biology, City College of New York, New York, NY

Myung L. Kim, Ph.D., April 2002; Founder and Chief Executive Officer, Kim Laboratories, Inc., Rantoul, IL

Senior Vice President, SK Telecom, Seoul, Korea

Chief Executive Officer, NanoEnTek, Korea

Chief Operating Officer & Chief Technology Officer, Eutilex, Co., LTD, Korea

Founder and Chief Executive Officer, Bilix, Co., LTD Oct 2018 – Present

Craig D. Ellermeier, Ph.D., April 2003; Postdoctoral Fellow, Department of Biology, Harvard University, Cambridge, MA

Professor, Department of Microbiology and Immunology, University of Iowa, Carver School of Medicine, Iowa City, IA

Radha Krishnakumar, Ph.D., July 2006; Postdoctoral Fellow, J. Craig Venter Institute, Rockville, MD

Staff Scientist, J. Craig Venter Institute, Rockville, MD

Senior Scientist, Intrexon Corporation, Germantown, MD

Scientific Business Analyst, Regeneron Pharmaceuticals, VA

Jeremy R Ellermeier, Ph.D., October 2008; Postdoctoral Fellow, Department of Microbiology and Immunology, University of Michigan Medical School, Ann Arbor, MI

Staff Scientist, ImmuVen, Inc., Champaign, IL

Postdoctoral Fellow, Department of Microbiology, University of Illinois, Urbana, IL

Assistant Professor, Southeast Missouri State University, Cape Girardeau MO

Assistant Professor, Department of Microbiology and Immunology, Midwestern University, Glendale AZ

Dongxia Lin, Ph.D., May 2009; Postdoctoral Fellow, Department of Microbiology and Immunology, Stanford School of Medicine, Stanford, CA

Staff Scientist, Fluidigm Corp., San Francisco, CA

Senior Director, Multiplex Imaging Technology, Immuno-Oncology Applications, Sirona Dx, Portland, OR

Jessica Cott Chubiz, M.S., May 2010; Research Associate, Institute for Technology Assessment, Massachusetts General Hospital, Boston, MA

Project Manager, Washington University School of Medicine, St Louis, MO

Grant Development Manager, Centene Corporation, St Louis, MO

Yekaterina A. Golubeva, Ph.D., November 2010; Postdoctoral Fellow, Department of Microbiology, University of Illinois, Urbana, IL

Research Scientist, Department of Microbiology, University of Illinois, Urbana, IL

Byoungkwan Kim, Ph.D., November 2010; Postdoctoral Fellow, Department of Pediatrics and Infectious Diseases, University of California-San Francisco, School of Medicine, San Francisco, CA

Postdoctoral Fellow, NICHD-NIH, Bethesda, MD

Team Lead – CMC QC, Celltrion, Incheon, Korea

Barbara Maureen Craig, Ph.D., April 2011

Kyungsub Kim, Ph.D., May 2019; Postdoctoral Fellow, Department of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA

Alexander Palmer, Ph.D., April 2020; Postdoctoral Fellow, Department of Molecular Biology & Microbiology, Tufts University School of Medicine

Luke Fenlon, MD/PhD, May 2020; Resident Physician, University of Utah Health, Salt Lake City, UT

Marinos Kalafatis, PhD, December 2021; PTD Module and Integration Yield Engineer, Intel Corporation, Eugene, OR.

Current Graduate Students

Rouhallah Ramezanifard
Matthew Georgiou
Brooke Burris

Undergraduates: A total of 57, including the following current students, have performed research in my lab. Seventeen previous students have attended graduate school at Univ of Illinois, Duke, Northwestern Med, Berkeley, Wisconsin, Georgia, UT MD Anderson Cancer Center, Michigan, Johns Hopkins/NIH, Harvard Medical School, Princeton, and Texas A&M. Most of the remaining students have entered medical school. Both Michaela Eickhoff and Pariyamon Thaprawat were ASM Fellowship Winners.

Current students:
Olivia Wynn
Ahmer Khan
Aidan Petersen
Nosheen Ahmed

Postdocs

Jack Ikeda ~2004-2005

Yumi Iwadate, Fall 2018 – Present

Fatih Cakar, Fall 2018-Present

Others:

Yekaterina A. Golubeva. Postdoc 2010-2017
Research Scientist 2017-Present

Avital Tidhar, Senior Scientist, Dept of Biochemistry and Molecular Genetics, Israel Institute for Biological Research, Ness-Ziona, Israel. On sabbatical Sept. 2012 – Aug 2014.

Fabrizio Bertelloni, DVM (208, Univ of Pisa), PhD candidate (Univ of Pisa)
Visited lab during summer 2013

Current teaching assignments

MCB250 - Molecular Genetics – Fall Term - 2002 (New course) – 2007
Spring Term – 2012, 2019, 2020, 2021, 2022, 2023
Fall Term – 2012 – 2016, 2018, 2019, 2021, 2022
21 Lecture hours
Team taught with Rachel Smith-Bolton (Fall) and Anna Sokac (Spring). This is the first core course for MCB majors. Lectures cover the fundamentals of DNA replication, transcription and translation. We routinely have >300 students in the fall and >200 students in the spring.

Covid: We converted the class to online for Fall 2020. I recorded and edited 44 15-25 min videos for the students to watch asynchronously. We held synchronous sessions during normal class hours where I covered the most difficult material, asked poll questions for active learning and to test knowledge, and answered questions. The mean for the class actually increased despite there being no significant change in the difficulty of homework, quizzes, or tests.

MCB 540 – Scientific Writing- Fall 2021, 2022, 2023
Team taught with Rachel Smith-Bolton. Others are contributing as graders, but Rachel and I deliver the lectures and lead the course.

Previous Teaching Duties

Microbiology 200 – Fall Term, 1996, 1997, 1998, 1999, 2000 and Spring Term 2001.
17 lecture hours
This course was primarily taught by Dr. Abigail Salyers (Fall) or Dr. Charles Pratt (Spring). My lecture subjects included Immunology and Bacterial Pathogenesis.

Included on the University "List of Teachers Ranked Excellent by their Students" for Spring 1998

Microbiology 412 – Spring Term 1998 Only
Literature based course for graduate students on "Fundamental Cellular Processes"

Included on the University "List of Teachers Ranked Excellent by their Students"

MCB297 – Honors Discussion for MCB250
Fall Term – 2003 – 2007
Spring Term – 2012
Fall Term – 2012 - 2016
7 Contact hours
The honors students meet once a week in a session run by my co-instructor and me. We discuss classic and modern molecular biology papers, concentrating on the logic and details of the experiments.

M1 Medical Microbiology, University of Illinois College of Medicine - Fall and Spring Terms – 1994-2017
11 Lecture hours
4 Clinical Conference hours
12 Team-based learning hours
Lecture subjects include Bacterial Growth and Metabolism, Bacterial Structure, Bacterial Genetics, DNA and Protein Synthesis, Bacterial Toxins, Gastrointestinal Tract Infections, and Urogenital Tract Infections including Sexually Transmitted Diseases.

Included on the University "List of Teachers Ranked Excellent by their Students" for Fall 1996, 1997, 1998, 1999, 2001, 2002, 2003, Spring 2005, Fall 2005, Spring 2007, Fall 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Spring 2015, and Spring 2017.

M2 Medical Microbiology, University of Illinois College of Medicine - Spring Term – 1996-2020; Course Coordinator, 2010-2017, 2019-20
4 lecture hours, but I attend all 12 hours.
My lecture topics include Molecular Techniques in Clinical Microbiology and Vaccines

Included on the University "List of Teachers Ranked Excellent by their Students" for Spring 1999, 2000, 2004, 2013, Fall 2013, Spring 2014, Fall 2015, Spring 2016, and Fall 2016.

Foundational Elements, Carle Illinois College of Medicine – recorded five lectures watched by first year medical students. Summer 2018.

Course Design and Preparation of Lab Manuals

MCB250 – Molecular Genetics, Fall 2002

MCB251 - Experimental Techniques in Molecular Biology, May 2002

MCB301 – Experimental Microbiology, June 2003

Service:

Department of Microbiology

Microbiology Undergraduate Research Committee. Fall 1995-2002. Oversaw "Mcbio 290, 292" research assignments and evaluate all undergraduate research theses.

Co-director of Graduate Studies and Admissions. Fall 1994-Spring 2002. Responsible for all aspects of the graduate program, including evaluating applications, arranging visits and interviews for potential candidates, planning the "Recruiting Weekend," submission of students for campus fellowships, and writing applications for various campus funds for recruiting and graduate program enhancement. I also established the departmental web site.

Andrei Kuzminov's Third Year Review, March 2003

Committee to review the service of John Cronan as Head of Microbiology, April 2003.

John Xu's Third Year Review, March 2005

Committee to review the service of John Cronan as Head of Microbiology, April 2015.

Currently serving on approximately 10 Prelim/Thesis Committees

School of MCB

MCPB Working Group for Reorganization of the School of Life Sciences. Jan.-Oct, 1996. Planned the organization and establishment of the School of Molecular and Cellular Biology.

Chair, MCB Graduate Recruiting Committee. Fall 2001-Spring 2002. Organized school wide recruiting.

Chair, Admission committee for the Molecular and Cell Biology Training Grant. Fall 2001-Spring 2002. Member, Fall 1996-Spring 2001.

Chair, Faculty Search Committee – Immunology/Host Defense, Spring 1999. Hired Brenda Wilson.

Faculty Search Committee – Immunology, Spring 2000. Hired Ziwei Huang and Andrei Kuzminov

Chair, Faculty Search Committee – Immunology/Virology, Spring 2001. Hired John Xu and Joanna Shisler (and Peter Jones in CSB).

Faculty Search Committee – Bacterial Physiology, Spring 2004.

Faculty Search Committee – Bacterial Physiology, Spring 2005. Hired Cari Vanderpool.

Committee to review the service of Charles Miller as Director of the SMCB, April 2005.

Search Committee for Director of the SMCB, Spring 2007. Hired Steve Sligar.

MCB Strategic Planning Committee. Fall 2001-2011; 2017-2018

Faculty Search Committee – Virology, Spring 2015. Hired Christopher Brooke.

MCB Promotion and Tenure Committee. Fall 2009 – May 2018; Chair 2014-May 2018

MCB Executive Committee, Elected Microbiology Representative, Fall 2016 – Fall 2018

Faculty Search Committee – Immunology, Spring 2018.

MCB Executive Committee, Fall 2018 –

University of Illinois College of Medicine

Chair, Student Progress and Promotions Committee. Fall 1998-Spring 2002. Member, Fall 1994-Fall 1998. Responsible for evaluating the progress and grades of all medical students and making recommendations for promotion and graduation to the Executive Committee. Considers all petitions by students regarding their academic programs and awards school honors.

Chair, Committee on Research. Fall 1998-Spring 2002. Allocates summer research fellowships to medical students.

Educational Policy Committee. Fall 1998-Present

Faculty Search Committee – Pharmacology, Spring 2007.

Search Committee – Associate Dean for Student Affairs and the Medical Scholars Program, Spring/Summer 2007

ICM Committee – Fall 2010 – 2019. Coordinates 2nd year medical curriculum.

Director, Medical Scholars Program, Aug 2002 – Present. One the largest and most diverse MD/PhD programs in the country.

Committee on Student Awards and Scholarships-UIC. Fall 2017-2022

Committee on Faculty Awards-UIC. Fall 2017 - 2022

Carle-Illinois College of Medicine

Appointments, Promotions & Tenure Committee. June 2019 – Present. Chair, 2023-24 AY

Student Progress and Promotions Committee, June 2019 – June 2022

Search Committee – Associate Dean of Research, Spring-Summer 2021

University

Faculty Search Committee – Department of Veterinary Pathobiology, Spring 1996. Hired Lois Hoyer

Institutional Animal Care and Use Committee – Fall 2000 to Fall 2006

Ad hoc reviewer, University Research Board

Search Committee – Director of Biotechnology Center, Spring 2002. Hired Jonathan Sweedler.

Search Committee – Institutional Veterinarian, Spring 2004. Hired Lyndon Goodly.

Provost's Campus-Wide Committee on Pathobiology, Spring 2004

Search Committee – Head of Veterinary Pathobiology, Fall 2004. Hired Dan Rock.

Chancellor's ad hoc Committee on Biology Education, Subcommittee Chair, Spring 2007

Graduate College Executive Committee, Fall 2007 - 2011

Implementation Committee for the "Division of Biomedical Sciences", Spring 2008

Compliance Advisory Committee, Fall 2009 – 2012

Inter-Disciplinary Health Vision Team; Illinois Interdisciplinary Health Sciences Initiative, Summer 2010 – 2012

Search Committee – Dept of Microbiology, Fall 2012.

Search Committee – Food Science and Human Nutrition, Spring 2013; Spring 2014.

Search Committee – Director of the Interdisciplinary Health Sciences Initiative, Spring 2014. Hired Neal Cohen

Two committees at the Provost level discussing structure and relationship to the College of Medicine, Summer and Fall 2013

President's Transition Task Force – March-May, 2015. In response to President Easter's proclamation of creation of the Carle-Illinois College of Medicine.

President's College of Medicine Transition Team – August 2015 – Fall 2019. Governance committee to oversee phasing out of the current Urbana regional site of the College of Medicine in preparation for the new Carle-Illinois College of Medicine.

University Scholars Selection Committee, Spring 2016 – Spring 2018

Health Sciences Strategic Plan Task Force, March 2017 – Dec 2018

Chair, Search Committee – Head of Pathobiology, College of Veterinary Medicine. Dec 2017-Summer 2018; Dec 2018-Spring 2019

Chancellor's Nalbandov Selection Committee, 2019-Present

LAS STAR Committee, Fall 2018 – Spring 2021

COVID-19 Research Oversight Committee, OVCR, Oct 2020 -Present

Carle Illinois Clinical & Translational Research Planning Committee, Fall 2021-Present

Provost's Program Review Council, Fall 2022 - Present

Off-Campus Activities

Instructor – Advanced Bacterial Genetics Course
Cold Spring Harbor Laboratories, 1997 – 2000

Executive Editor, EcoSal, a web based version of the classic ASM Press publication Escherichia coli and Salmonella: Cellular and Molecular Biology, now an ASM Journal. 2007-2023

Editorial Board, Journal of Bacteriology, ASM Press
2004-2021

Editorial Board, Infection and Immunity, ASM Press
2016-2024

Editorial Board, Frontiers in Cellular and Infection Microbiology
2023-Present

Ad hoc reviewer (3 grants)
National Science Foundation, 1998

Ad hoc member, American Cancer Society
Molecular and Cellular Biology of Cancer Study Section, Jan. 1999

Ad hoc member, National Institutes of Health
Bacteriology and Mycology Subcommittee 1 Study Section, Feb. 2001

Ad hoc reviewer (4 grants)
US Department of Agriculture Extramural Grants
Program in Sustaining Animal Health and Well-Being, June 2001

Ad hoc member, Canadian Foundation for Innovation
Study Section, Oct. 2001

Ad hoc member, National Institutes of Health
Bacterial BioDefense IDM-A Study Section, June 2004

Ad hoc member, National Institutes of Health
Bacterial BioDefense IDM-A Study Section, July 2005

Ad hoc member, National Institutes of Health

Bacterial BioDefense IDM-A Study Section, July 2006

Ad hoc member, National Institutes of Health
DBBD Minority and Disability Predoctoral Fellowship Review, ZRG1 IMM-L 29 L Study Section, February 2007

Ad hoc member, National Institutes of Health
Special Emphasis Study Section, March 2008

Ad hoc grant review, Wellcome Trust, Jan. 2009

Ad hoc grant review, NSF, Sept. 2009

Ad hoc reviewer, National Institutes of Health
Director's Opportunity 5 Themes- Infectious Diseases A, ZRG1 IDM-C (55) R, Mail reviews May 2010

Ad hoc member, National Institutes of Health
ZRG1 IDM-A 80S Study Section, March 2011

Ad hoc reviewer, Northwest Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research.
May 2011

Ad hoc member, National Institutes of Health
NIH/NIAID "Chemical Approaches to Target Validation for Drug Resistant Pathogens" initiative, November 2011

Ad hoc member, National Institutes of Health
ZRG1 IDM-A 80S Study Section, June 2012

Ad hoc reviewer (1 grant), The Helmholtz Association, Bonn, Germany
July 2012

Ad hoc reviewer (1 grant), NSERC, Canada
January 2013

Ad hoc member, National Institutes of Health
ZRG1 IDM-R (50), Dual purpose with dual benefit research in biomedicine and agriculture. March, 2013

Ad hoc member, National Institutes of Health
ZRG1 IDM-B (80) Study Section, July 2013

Ad hoc member, National Institutes of Health
ZRG1 IDM-T (02) Study Section, July 2014

Ad hoc member, National Institutes of Health
ZRG1 IDM-B (80) Study Section, July 2015

Ad hoc member, National Institutes of Health
ZRG1 IDM-B (80) Study Section, July 2016

Ad hoc member, National Institutes of Health
ZRG1 IDM-V (02) Study Section, December 2016

Ad hoc member, National Institutes of Health
ZRG1 CB-L (02) Study Section, March 2017

Ad hoc member, National Institutes of Health
BACP Study Section, June 2017

FDA Site Visit, Division of Bacterial, Parasitic, and Allergenic Products
October, 2017

Ad hoc reviewer (1 grant), The Swiss National Science Foundation, Switzerland
November, 2017

Ad hoc member, National Institutes of Health
ZRG1 IDM-B (80) Study Section, March 2018

Ad hoc member, National Institutes of Health
BACP Study Section, February 2019

Ad hoc reviewer (1 grant), The Austrian Science Fund (FWF), Vienna Austria
March 2019

Ad hoc reviewer (1 grant), Deutsche Forschungsgemeinschaft, Bonn, Germany
April 2019

Ad hoc reviewer (1 grant), Biotechnology and Biological Sciences Research Council, Wiltshire, UK
June 2019

Ad hoc reviewer (1 grant), The Austrian Science Fund (FWF), Vienna Austria
September 2019

Ad hoc member, National Institutes of Health
2020/01 ZRG1 IDM-T (02) M Study Section, December 2019

Ad hoc reviewer (1 grant), National Science Foundation, May 2020

Ad hoc member, National Institutes of Health
ZRG1 IDM-B (80) Study Section, June 2020

Ad hoc member, National Institutes of Health
ZRG1 F07A-B (20) L Fellowship Study Section, November 2022

Ad hoc reviewer (1 grant), German Center for Infection Research (DZIF), April 2023

Reviewed manuscripts (#) for the following journals:
Antimicrobial Agents and Chemotherapy (3)

Applied & Environmental Micro (25)
Archives of Microbiology (1)
ASM Spectrum (1)
Biotechniques (5)
BMC Genomics (1)
BMC Microbiology (1)
Cell Host and Microbe (3)
Cell Reports (1)
Cellular and Molecular Life Sci (1)
Cellular Microbiology (1)
Clinical Microbiology Reviews (1)
Critical Reviews in Microbiology (1)
EBio Medicine (1)
ELife (1)
Environmental Microbiology (2)
FASEB (1)
FEBS Letters (1)
FEMS Immunology and Med Micro (1)
FEMS Microbiology Letters (3)
FEMS Microbiology Reviews (1)
Frontiers in Microbiology (3)
Gene (2)
Genes and Development (3)
Genetics (1)
Gut Microbes (2)
Infection and Immunity (50)
iScience (1)
Journal of Applied Microbiology (1)
Journal of Bacteriology (141)
Journal of Biological Chemistry (4)
Journal of Clinical Microbiology (1)
Journal of Medical Microbiology (1)
Journal of Microbial Methods (1)
Journal of Molecular Biology (2)
Journal of Theoretical Microbiology (1)
Journal of Virology (2)
Journal of Visualized Experiments (1)
Langmuir (1)
mBio (16)
Microbes and Infection (2)
Microbial Pathogenesis (1)
Microbiology (12)
Microbiology and Molecular Biology Reviews (1)
Molecular Genetics and Genomics (2)
Molecular Microbiology (76)
Nature Reviews in Microbiology (2)
Nature Communications (2)
Nucleic Acids Research (1)
Pathogens and Disease (1)
PLOS Biology (2)
PLOS Genetics (6)
PLOS One (19)

PLOS Pathogens (17)
Guest editor – March 2017
Guest editor - Jan 2018
PNAS (26)
Progress in Biophysics and Molecular Biology (1)
Review Commons (1)
Science (2)
Scientific Reports (4)
Systems and Synthetic Biology (1)
Toxins (1)
Trends in Microbiology (1)
Trends in Pharmaceutical Sciences (1)

Other reviews:

Tenure Reviews
University of Texas, San Antonio, Sept. 2002
Tufts University, Nov. 2002
Katholieke Universiteit Leuven, Belgium, Dec. 2007
Cornell University, June 2008
The Hashemite University, Zarqa-Jordan, Oct. 2010
Arizona State University, August 2011
Southern Illinois University, September 2012
Wayne State University School of Medicine, September 2012
Notre Dame University, October, 2014
University of Albany, May 2016
Southern Illinois University, September 2017
University of Toledo, August 2019
Virginia Tech, September 2020
University of Toledo, August 2022

Promotion Reviews
Arizona State University, Tempe, August 2009
Dartmouth College, Hanover, NH, January 2012
University of Iowa College of Medicine, Iowa City, IA, October 2012
Cornell University, June 2013
Haverford College, Haverford, PA, February 2014
National University of Singapore, April 2015
Virginia Tech, August 2015
McMaster University, September 2015
Israel Institute for Biological Research, September 2017
University of Colorado, November 2017
Texas A&M, September 2019
University of Colorado, October 2019
Emory University, October 2021
Harvard Medical School, February 2022

Book Proposal, American Society for Microbiology
Book Chapter, Virtual Text, Cambridge MA
Book Chapters, Watson et al., Molecular Biology
Book Chapter, Garland Science

April 11, 2023

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Education

- Purdue University, B. S., Microbiology. (1998)
- University of Minnesota, Ph.D., Microbiology. (2003) *Dissertation title:* "The *Bordetella pertussis* Heme Iron Utilization System: Transport and Heme-Responsive Gene Regulation."

Academic Appointments

- Postdoctoral Fellow, National Cancer Institute, National Institutes of Health (2003-2006)
- Assistant Professor, Department of Microbiology, University of Illinois at Urbana-Champaign (2006-2013)
- Associate Professor, Department of Microbiology, University of Illinois at Urbana-Champaign (2013-2018)
- Associate Professor, Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign, Microbiome Metabolic Engineering Theme (2015-2018)
- Professor, Department of Microbiology, Carl R. Woese Institute for Genomic Biology, Microbiome Metabolic Engineering and Infection Genomics for One Health research themes, University of Illinois at Urbana-Champaign (2018-present)
- Director, Illinois Microbial Systems Initiative, University of Illinois at Urbana-Champaign (2018-present)
- Associate Head, Department of Microbiology, University of Illinois at Urbana-Champaign (2019-present)
- Affiliate, Personalized Nutrition Initiative, University of Illinois at Urbana-Champaign (2021-present)
- Interim Associate Dean for Research and Advanced Studies, College of Veterinary Medicine, University of Illinois at Urbana-Champaign (2021-present)
- Dean's Fellow for Diversity, Equity, and Inclusion, College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign (2023-present)

Honors

- American Cancer Society Postdoctoral Fellow (2003-2006)
- Fellows Award for Research Excellence, National Institutes of Health (2005)
- Helen Corley Petit Scholar, College of Liberal Arts and Sciences, University of Illinois (2013-2014)
- List of Teachers Ranked as Excellent by their students (2014-present)
- MCB Innovative Teaching and Learning Award recipient (2016)
- Charles G. Miller Professorial Scholar, College of Liberal Arts and Sciences, University of Illinois (2018-present)
- Leadership Initiative for Women Faculty University of Illinois at Urbana-Champaign (2019)
- NSF IAspire Leadership Academy Fellow (2020-2022)
- Elected Fellow American Academy of Microbiology (2021)
- Building Pathways for Emerging Leaders at Illinois Fellow (2021-2022)

Research Funding

Current Grant Support

- NSF Biology Integration Institute #2022049 (Vanderpool, co-I) September 2020-August 2025. "Genomics and Eco-Evolution of Multi-scale Symbioses."

- National Institutes of Health R35 GM139557. (Vanderpool, PI) January 2021-December 2025. "Small RNA Regulation in Bacteria."

Past Grant Support

- American Cancer Society Postdoctoral Fellowship GMC-106351. January 2004-April 2006. "Analysis of Stress-Induced Regulatory RNAs."

- American Cancer Society Research Scholar Grant ACS 2008-01868 (Vanderpool, PI) July 2008-June 2012. "Global Analysis of Regulation by a Novel Bifunctional Small RNA."

- American Heart Association Scientist Development Grant 0835355N. (Vanderpool, PI) July 2008-June 2012. "Sugar Accumulation and Metabolic Stress: Role of the Novel Transcription Factor SgrR."

- National Institutes of Health R01 GM112659. (Ha, Vanderpool, Luthey-Schulten, PIs.) January 2015-December 2019. "Quantitative Imaging and Modeling of Regulation by Bacterial Small RNA."

- National Institutes of Health R01 GM092830. (Vanderpool, PI) August 2010-July, 2021. "Molecular Determinants of Regulatory Hierarchy for Bacterial Small RNAs."

- National Institutes of Health R01 GM120182. (Vanderpool, Slauch, PIs.) August 2016-July 2021. "Integration of Small RNAs in Control of *Salmonella* Pathogenicity Island 1."

Teaching

Current Teaching Assignments

- Course Co-Director and Instructor, MCB 300, Microbiology, 3 credits

Previous Teaching Assignments

- Course Director and Instructor, MCB 150 Online, The Molecular and Cellular Basis of Life, 3 credits, Summer 2016
- Course Co-Instructor, MCB 585VM Viruses of Microbes, 1 credit
- Course Director and Instructor, MCB 431, Microbial Physiology, 3 credits
- Course Director and Instructor, MCB 532 Advanced Microbial Physiology, 1 credit

Lab Personnel

Current Ph.D. Students – Research Topic

- Gloria Hou – RNA-mediated regulation of *Salmonella* pathogenesis
- David Vereau Gorbitz – Genetic basis of symbiosis between *Rhizobium leguminosarum* and clover
- Anubhav Basu – Regulation of polysaccharide utilization in *Bacteroides*
- Hellan Lee – Function of novel RNA binding proteins in *Bacteroides*
- Wyatt Marciniak-Haynosch – Phage resistance mechanisms in *Escherichia coli*
- Hunter Cobbley – Phage resistance mechanisms in *Rhizobium leguminosarum*

Current Postdoctoral Researchers – Research Topic

- Kristen Farley, Ph.D. – Small RNA-mediated mechanisms of transcriptional control
- Joe Fernandez, Ph.D. – Transcription and genome structure in *Rhizobium leguminosarum*

Former Ph.D. Students – Thesis Title

- Jennifer Rice (2011) – Regulation of the Mannose PTS Operon by the Small RNA SgrS
- Yan Sun (2012) – Sweet Relief: Regulating the Response to Glucose-Phosphate Stress by SgrS
- Divya Balasubramanian (2015) – Mechanistic and Physiological Insights into Post-Transcriptional Regulation by Small RNAs SgrS and DicF
- Maksym Bobrovskyy (2017) – Target Regulation and Prioritization by the Small RNA SgrS in *Escherichia coli*
- Chelsea Lloyd (2018) – Molecular Analysis of Small RNA and Small Protein Regulation of Stress Responses in *Escherichia coli*
- M. Shafiul Azam (2019) – An *E. coli* Small RNA Inhibits Translation Initiation from a Distance
- Alisa King (2019) – A Combinatorial Approach for Improved Target Prediction, Validation and Characterization of Small RNAs in *Escherichia coli*
- Colleen Bianco (2019) – Understanding the Physiological Role of the Small RNA RydC
- Preethi Ragunathan (2020) – Molecular mechanisms of bacterial phage resistance

- Amanda Adams (2021) – The role of novel RNA chaperones in regulation of polysaccharide metabolism in *Bacteroides thetaiotaomicron*
- Sabrina Abdulla (2022) – Regulation of *Salmonella* Pathogenicity Island 1 Through the *hilD* mRNA 3' Untranslated Region

Former Postdoctoral Trainees – Research topic

Richard Horler, Ph.D. – Structure-function studies on transcription factors and small RNAs

*Gregory Richards, Ph.D. – Understanding the physiological basis of metabolic stress

*Received an NRSA fellowship to support postdoctoral work; is now a tenured Associate Professor at University of Wisconsin-Parkside

Former Undergraduate Researchers - 23 Former

Leadership and Service

National and International

- Council on Microbial Sciences, American Society for Microbiology (2017-2021)
- Editorial Advisory Board, *Molecular Microbiology* (2012-present)
- Editorial Board, *Journal of Bacteriology* (2010-present)
- Session Chair at Molecular Genetics of Bacteria and Phages Meeting. Madison, Wisconsin. (2009)
- Session Chair at 5th Congress of European Microbiologists. Leipzig, Germany. (2013)
- Conference Organizer, 4th International Conference on Regulating with RNA in Bacteria and Archaea. Cancún, Mexico. (2015)
- Conference Organizer, 5th International Conference on Regulating with RNA in Bacteria and Archaea. Sevilla, Spain. (2018)
- Reviewer for journals, *e.g., PNAS*, *Nucleic Acids Research*, *PLoS Genetics*, *Genes and Development*, *eLife*, *Nature Microbiology*, *Nature Communications, Molecular Cell*
- Reviewer for domestic and international funding agencies, *e.g.*,: NSF Gene Expression Panel; US-Israel Binational Science Foundation; L'agence Nationale de la Recherché (ANR, French National Research Agency); Fonds de recherché du Quebec (Research Foundation of Quebec); National Science Center, Poland; FCT – Portugal Foundation for Science and Technology.
- Study Section Member for: NSF CAREER Panel (2012); NIH Prokaryotic Cell and Molecular Biology (PCMB) Study Section (2013, 2014, 2017, 2018); NIH Infectious Diseases and Microbiology Fellowship Study Section (2018, 2020); Department of Energy Early Career Panel (2016); Deutsche Forschungsgemeinschaft (DFG, German Research Foundation, 2017); NIH/NIGMS R35/MIRA Study Section (2019); NIH GGG Special Emphasis panel (2021); NSF Molecular and Cellular Biosciences Review Panel (2022)
- Permanent member inaugural NIH MRAA study section. Term 2021-2025.

University

- 21st Century Scientists Panel on Intersectionality in Science (2017)
- College of Liberal Arts and Sciences Executive Committee (2018-2020)
- Director, Illinois Microbial Systems Initiative (2018-present)

- Graduate College Fellowship Board (2019-2022)
- Graduate College Executive Committee (2020-2022)
- College of Liberal Arts and Sciences Dean Search Committee (national search) (2020-2021)
- Campus Promotion and Tenure Committee (2021-2024)
- Chair, Director of Research Safety search (2022)
- Health Innovation Visioning Committee (2022-2023)
- Carle-Illinois Strategic Affiliation Research Committee (2022-present)
- Research Theme co-Leader, Microbiome Metabolic Engineering, Carl R. Woese Institute for Genomic Biology (2023-present)

School of Molecular and Cellular Biology (SMCB) and Department of Microbiology

- SMCB Graduate Admissions Committee (2007-2012)
- SMCB Faculty Search Committees (2008, 2011, 2012)
- SMCB Courses and Curriculum Committee (2011-2018)
- Department of Microbiology Research Fellowship Committee (2012-present)
- Chair, SMCB Faculty Search Committee (2015)
- Department of Microbiology Head 5-year Review Committee (2016)
- SMCB Director Search Committee (2017)
- Department of Biochemistry Rutter Endowed Chair Search Committee (2017)
- Co-Chair, SMCB Strategic Advisory Committee (2017-2019)
- Department of Microbiology Junior Faculty Mentoring Committee (2018-present)
- Chair, Department of Microbiology Curriculum Review Committee (2019)
- Department of Microbiology Graduate Advisor (2020-present)
- SMCB Committee on Diversity, Equity, and Inclusion (2020-present)
- SMCB Director 5-year Review Committee (2022)
- Diversity Advocate, Department of Microbiology Emerging Infectious Diseases Faculty Search Committee (2022-2023)
- Chair, Department of Microbiology Strategic Planning Committee (2022-present)

Invited Seminars

- Molecular Genetics of Bacteria and Phages. Cold Spring Harbor, New York. (2006)
- Second Annual ASM Conference on Integrating Metabolism and Genomics (IMAGE2). Montreal, Quebec, Canada. (2007)
- Department of Bacteriology, University of Wisconsin. Madison, Wisconsin. (2008)
- Molecular Genetics of Bacteria and Phages Meeting. Cold Spring Harbor Laboratory, Cold Spring Harbor, New York. (2008)
- Department of Biochemistry and Molecular Biology, Pennsylvania State University. University Park, Pennsylvania. (2008)

- Department of Microbiology, University of Iowa. Iowa City, Iowa. (2009)
- Regulatory RNAs in Prokaryotes Meeting. Berlin, Germany. (2009)
- Molecular Genetics of Bacteria and Phages Meeting. Madison, Wisconsin. (2009)
- Department of Biology, University of California at San Diego. San Diego, California. (2010)
- American Society for Microbiology 110th General Meeting. San Diego, California. (2010)
- Gordon Research Conference on Microbial Stress Response. Mount Holyoke, Massachusetts. (2010)
- Plenary Session, "Gene Discovery and Function: Beyond a DNA Sequence." 2011 American Society for Microbiology General Meeting. New Orleans, Louisiana. (2011)
- Federation of European Microbiologists (FEMS) 4th Congress of European Microbiologists. Geneva, Switzerland. (2011)
- Gordon Research Conference on Microbial Stress Response. Mount Holyoke, Massachusetts. (2012)
- 3rd International Conference on Regulating with RNA in Bacteria. Würzburg, Germany. (2013)
- FASEB Science Research Conference on Mechanism and Regulation of Prokaryotic Transcription. Saxton's River, Vermont. (2013)
- FEMS 2013, 5th Congress of European Microbiologists. Leipzig, Germany. (2013)
- Department of Biology. Washington University. St. Louis, Missouri. (2013)
- Biochemical Sciences Division, DuPont. Wilmington, Delaware. (2014)
- American Society for Microbiology, 114th General Meeting, Boston, Massachusetts. (2014)
- New Mexico Bioinformatics, Science and Technology Symposium, Santa Fe, New Mexico. (2015)
- Department of Microbiology and Molecular Genetics, Michigan State University. East Lansing, Michigan. (2015)
- Molecular Biology and Genetics of Bacteria and Phages, Madison, Wisconsin. (2015)
- Lambda Gala, National Cancer Institute, Frederick, Maryland. (2015)
- Department of Biology, University of Wisconsin-Parkside, Kenosha, Wisconsin. (2016)
- Cold Spring Harbor Laboratory Bacterial Genetics Course, Cold Spring Harbor, New York. (2016)
- Department of Microbiology, The Ohio State University, Columbus, Ohio. (2017)
- Department of Microbiology and Immunology, University of Minnesota Medical School, Minneapolis, Minnesota. (2017)
- FASEB Meeting on Mechanism and Regulation of Prokaryotic Transcription, Saxton's River, Vermont. (2017)
- Department of Biology, Indiana University, Bloomington, Indiana. (2017)
- Department of Cell Biology and Molecular Genetics, University of Maryland, College Park, Maryland. (2018)
- Department of Biology, Johns Hopkins University, Baltimore, Maryland. (2018)
- American Society for Microbiology, ASM Microbe 2018, Atlanta, Georgia. (2018)
- Department of Microbiology, University of Tennessee, Knoxville, Tennessee. (2018)
- Department of Biomedical Sciences and Pathobiology, Virginia Tech, Blacksburg, Virginia. (2019)
- American Society for Microbiology, ASM Microbe 2020, Chicago, Illinois* (2020, *Canceled due to COVID-19)
- Gordon Research Conference on Microbial Stress Response, Mt. Holyoke, Massachusetts* (2020, *Canceled due to COVID-19)

- Biochemical Genetics of Regulation by Proteolysis and Small RNAs, Bethesda, Maryland* (2020, *Postponed due to COVID-19)
- Regulating with RNA in Bacteria and Archaea, St. Petersburg, Florida* (2020, *Postponed due to COVID-19)
- Regulating with RNA in Bacteria Virtual Conference, Online (2020)
- Small Proteins, Big Questions Virtual Conference, Online* (2021, *Declined due to conflict)
- Gordon Research Conference on *Salmonella* Biology*, Smithfield, Rhode Island (2021, *Canceled due to COVID-19)
- Gordon Research Seminar on Mechanisms of Microbial Transcription*, Manchester, New Hampshire (2021, *Canceled due to COVID-19)
- Genetics Training Program – Student-invited speaker. University of Michigan, Ann Arbor, Michigan (virtual visit, 2021)
- Department of Medical Microbiology and Immunology, University of Wisconsin, Madison, Wisconsin (2021)
- Regulating with RNA in Bacteria and Archaea Online Conference (2022)
- Gordon Research Conference on Microbial Stress Response, Mt. Holyoke, Massachusetts (2022, declined due to other commitments)
- Biochemical Genetics of Regulation by Proteolysis and Small RNAs, Bethesda, Maryland (2022)
- Neidhardt-Freter Lectureship in Bacterial Physiology and Virulence, University of Michigan Medical School, Ann Arbor, Michigan (2022)
- Department of Medical Microbiology and Immunology, University of Toledo, Toledo, Ohio (2023, declined due to other commitments)
- Gordon Research Conference on *Salmonella* Biology and Pathogenesis, Lucca, Italy (2023, declined due to other commitments)
- 7th Conference on Regulating with RNA in Bacteria and Archaea, St. Petersburg, Florida (upcoming, 2023)
- Wadsworth Center, New York State Department of Health, Albany, New York (upcoming, 2024)

Publications (*Denotes Corresponding Author)

1. **Vanderpool, C. K.** and S. K. Armstrong. 2001. The *Bordetella bhu* locus is required for heme iron utilization. *J. Bacteriol.* 183:4278-4287.
2. **Vanderpool, C. K.** and S. K. Armstrong. 2003. Heme-responsive transcriptional activation of *Bordetella bhu* genes. *J. Bacteriol.* 185:909-917.
3. **Vanderpool, C. K.** and S. K. Armstrong. 2004. Integration of environmental signals controls expression of *Bordetella* heme utilization genes. *J. Bacteriol.* 186:938-948.
4. Brickman, T. B., **Vanderpool, C. K.** and S. K. Armstrong. 2004. Iron acquisition in *Bordetella pertussis*. *In* Crosa, J. H. and S. M. Payne (ed.), *Iron Transport in Bacteria: Molecular Genetics, Biochemistry, Microbial Pathogenesis and Ecology.* ASM Press, Washington, D.C.
5. **Vanderpool, C. K.** and S. Gottesman. 2004. Involvement of a novel transcriptional activator and small RNA in post-transcriptional regulation of the glucose phosphoenolpyruvate phosphotransferase system. *Mol. Microbiol.* 54:1076-1089.
6. Majdalani, M., **Vanderpool, C. K.,** and S. Gottesman. 2005. Bacterial Small RNA Regulators. *Crit. Rev. Biochem. Mol. Biol.* 40:93-113.

7. **Vanderpool, C. K.**, and S. Gottesman. 2005. Non-coding RNAs at the membrane. *Nat. Struct. Mol. Biol.* 12:285-286.

8. Massé, E., **Vanderpool, C. K.,** and S. Gottesman. 2005. The effect of RyhB non-coding RNA on global iron metabolism in *Escherichia coli*. *J. Bacteriol.* 187:6962-6971.

9. **Vanderpool, C. K.**, and S. Gottesman. 2005. An RNA regulator for avoiding sugar-phosphate stress. *CCR Frontiers in Science.*

10. Brickman, T. J., **Vanderpool, C. K.**, and S. K. Armstrong. 2006. Heme transport contributes to in vivo fitness of *Bordetella pertussis* during primary infection in mice. *Infec. Immun.* 74:1741-1744.

11. Gottesman, S., McCullen, C. A., Guillier, M, **Vanderpool, C. K.**, Majdalani, N., Benhammou, J., Thompson, K. M., Fitzgerald, P. C., Sowa, N. A. and D. J. Fitzgerald. 2006. Small RNA Regulators and the Bacterial Response to Stress. *Cold Spring Harb. Symp. Quant. Biol.* 71:1-11.

12. **Vanderpool, C.K.** and S. Gottesman. 2007. The novel transcription factor SgrR coordinates the response to glucose-phosphate stress. *J. Bacteriol.* 189:2238-2248.

13. **Vanderpool, C. K.*** 2007. Physiological consequences of small RNA-mediated regulation of glucose-phosphate stress. *Curr. Opin. Microbiol.* 10:146-151.

14. Wadler, C. S. and **C. K. Vanderpool***. 2007. A novel dual function for a bacterial small RNA: SgrS performs basepairing-dependent regulation and encodes a functional polypeptide. *Proc. Natl. Acad. Sci. U.S.A.* 104:20454-20459.

15. Horler, R. S. P. and **C. K. Vanderpool*.** 2009. Homologs of the small RNA SgrS are broadly distributed in enteric bacteria but have diverged in size and sequence. *Nucl. Acids Res.* 37:5465-5476.

16. Wadler, C. S. and **C. K. Vanderpool*.** 2009. Characterization of homologs of the small RNA SgrS reveals diversity in function. *Nucl. Acids Res.* 37:5477-5485.

17. Sun, Y. and **C. K. Vanderpool*.** 2010. The regulation and function of *Escherichia coli* Sugar Efflux Transporter A (SetA) during glucose-phosphate stress. *J. Bacteriol.* 193:143-153.

18. Rice, J. B. and **C. K. Vanderpool*.** 2011. The small RNA SgrS controls sugar-phosphate accumulation by regulating multiple PTS genes. *Nucl. Acids Res.* 39:3806-3819.

19. Richards, G. R. and **C. K. Vanderpool*.** 2011. Molecular call and response: the physiology of bacterial small RNAs. *Biochim. Biophys. Acta.* 1809:525-531.

20. **Vanderpool, C. K.*,** Balasubramanian, D. and C. R. Lloyd. 2011. Dual-function RNA regulators in bacteria. *Biochimie.* 93:1943-1949.

21. **Vanderpool, C. K.*** 2011. Combined experimental and computational strategies define an expansive regulon for GcvB small RNA. *Mol. Microbiol.* 81:1129-1132.

22. Richards, G. R. and **C. K. Vanderpool*.** 2012. Induction of the Pho regulon suppresses the growth defect of an *Escherichia coli sgrS* mutant, connecting phosphate metabolism to the glucose-phosphate stress response. *J. Bacteriol.* 194:2520-2530.

23. Rice, J. B., Balasubramanian, D. and **C. K. Vanderpool***. 2012. Small RNA binding site multiplicity involved in translational regulation of a polycistronic mRNA. *Proc. Nat. Acad. Sci. U.S.A.* 109:E2691-E2698.

24. Papenfort, K., Sun, Y., Miyakoshi, M., **Vanderpool, C. K.***, and J. Vogel*. 2013. Regulation of glucose homeostasis by small RNA mediated suboperonic mRNA stabilization. *Cell* 153:426-437.

25. McClure, R., Balasubramanian, D., Sun, Y., Bobrovskyy, M. Sumby, P., Genco, C., **Vanderpool, C. K.,** and B. Tjaden. 2013. Computational analysis of bacterial RNA-Seq data. *Nucl. Acids Res.* 41:e140.

26. Balasubramanian, D. and **C. K. Vanderpool*.** 2013. Deciphering the interplay between two independent functions of the small RNA regulator SgrS in *Salmonella*. *J. Bacteriol.* 195:4620-4630.

27. Sun, Y. and **C. K. Vanderpool***. Physiological consequences of multiple target regulation by the small RNA SgrS in *Escherichia coli*. *J. Bacteriol.* 195:4804-4815.

28. Richards, G. R., Patel, M. V., Lloyd, C. R. and **C. K. Vanderpool*.** 2013. Depletion of glycolytic intermediates plays a key role in glucose-phosphate stress in *Escherichia coli. J. Bacteriol.* 195:4816-4825.

29. Bobrovskyy, M. and **C. K. Vanderpool*.** 2013. Regulation of bacterial metabolism by small RNAs using diverse mechanisms. *Ann. Rev. Genetics* 47:209-232.

30. Bobrovskyy, M. and **C. K. Vanderpool*.** 2014. The small RNA SgrS: roles in metabolism and pathogenesis of enteric bacteria. *Front. Cell. Infect. Microbiol.* 4:61.

31. Fei, J., Singh, D., Zhang, Q., Park, S., Balasubramanian, D., Golding, I., **Vanderpool, C. K.*,** Ha, T*. 2015. Determination of in vivo target search kinetics of regulatory noncoding RNA. *Science.* 347:1371-1374.

32. Azam, M. S., and **C. K. Vanderpool***. 2015. Talk among yourselves: RNA sponges mediate crosstalk between functionally related messenger RNAs. *EMBO J.* 34:1436-1438.

33. Papenfort, K. and **C. K. Vanderpool**. 2015. Target activation by regulatory RNAs in bacteria. *FEMS Microbiol. Rev.* 39:362-378.

34. Bobrovskyy, M., **Vanderpool, C. K.** and G. R. Richards. 2015. Small RNAs regulate primary and secondary metabolism in Gram-negative bacteria. *Microbiol. Spectr.* 3: doi: 10.1128/microbiolspec.MBP-0009-2014.

35. Bobrovskyy, M. and **C. K. Vanderpool***. 2016. Diverse mechanisms of post-transcriptional repression by the small RNA regulator of glucose-phosphate stress. *Mol. Microbiol.* 99:254-273.

36. Whitaker, R. J., and **C. K. Vanderpool**. 2016. CRISPR-Cas Gatekeeper: Slow on the uptake but gets the job done. *Cell Host Microbe.* 19:135-137.

37. Balasubramanian, D., Ragunathan, P. T., Fei, J. and **C. K. Vanderpool***. 2016. A prophage-encoded small RNA controls metabolism and cell division in *Escherichia coli*. *mSystems*. 1:e00021-15.

38. Lloyd, C. R., Park, S., Fei, J. and **C. K. Vanderpool*#.** 2017. The small protein SgrT controls transport activity of the glucose-specific phosphotransferase system. *J. Bacteriol.* doi 10.1128/JB.00869-16. #This article was selected by the *Journal of Bacteriology* editors as a "Spotlight" article of special interest.

39. Azam, M. S., and **C. K. Vanderpool***. 2018. Translational regulation by bacterial small RNAs via an unusual Hfq-dependent mechanism. *Nucl. Acids Res*. 46:2585-2599.

40. **C. K. Vanderpool***. 2018. Susan Gottesman: An Exceptional Scientist and Mentor. Chapter doi: 10.1128/9781555819545.ch16. *In* Whitaker, R. J. (ed) and H. A. Barton. Women In Microbiology. American Society for Microbiology. Washington, D. C.

41. Raina, M., King, A., Bianco, C., and **C. K. Vanderpool***. 2018. Dual-Function RNAs. *Microbiol. Spectr.* 6(5). doi: 10.1128/microbiolspec.RWR-0032-2018

42. King, A. M., **Vanderpool, C. K.*** and P. H. Degnan*. 2019. SPOT: sRNA-target Prediction Organizing Tool. *mSphere*. 4: pii: e00561-18.

43. Kim, K., **Vanderpool, C. K.**, and J. M. Slauch. 2019. Oxygen-dependent regulation of SPI1 Type Three Secretion System by Small RNAs in *Salmonella enterica* serovar Typhimurium. *Mol. Micro*. 111:570-587.

44. Kim, K., Palmer, A.D., **Vanderpool, C.K.**, and J. M. Slauch. 2019. The sRNA PinT contributes to PhoP-mediated regulation of the SPI1 T3SS in *Salmonella enterica* serovar Typhimurium. *J. Bacteriol.* 201: pii: e00312-19.

45. Bianco, C.M., Fröhlich, K.S., and **C. K. Vanderpool*#**. 2019. Bacterial Cyclopropane Fatty Acid Synthase mRNA is targeted by activating and repressing small RNAs. *J. Bacteriol.* 201: pii: e00461-19. #This article was selected by the *Journal of Bacteriology* editors as a "Spotlight" article of special interest.

46. Bobrovskyy, M., Azam, M.S., Frandsen, J.K., Zhang, J., Poddar, A., Ma, X., Henkin, T. M., Ha, T., and **C. K. Vanderpool***. 2019. Determinants of target prioritization and regulatory hierarchy for the small RNA SgrS. *Mol. Micro*. 112:1199-1218.

47. Ragunathan, P. T., and **C. K. Vanderpool***. 2019. Cryptic-Prophage-Encoded Small Protein DicB Protects *Escherichia coli* from Phage Infection by Inhibiting Inner Membrane Receptor Proteins. *J. Bacteriol.* doi: 10.1128/JB.00475-19.

48. Azam, M.S., and **C. K. Vanderpool*#**. 2020. Translation inhibition from a distance: the small RNA SgrS interferes with a ribosomal protein S1-dependent enhancer. *Mol. Microbiol.* doi: 10.1111/mmi.14514. #This article was selected by the *Molecular Microbiology* editors for a Micro Commentary.

49. Bianchi, D.M., Brier, T.A., Poddar, A., Azam, M.S., **Vanderpool, C.K.**, Ha, T., and Z. Luthey-Schulten. 2020. Stochastic Analysis Demonstrates the Dual Role of Hfq in Chaperoning *E. coli* Sugar Shock Response. *Front. Mol. Biosci.* https://doi.org/10.3389/fmolb.2020.593826

50. Poddar, A., Zhang, J., Azam, M.S., Bobrovskyy, M., Labhsetwar, P., Fei, J., Singh, D., Luthey-Schulten, Z., **Vanderpool, C.K.***, and T. Ha*. 2021. Effects of Individual Base-pairs on *in vivo* target search and destruction kinetics of small RNA*. Nat. Comm.* 12:874.

51. Adams, A.N.D., Azam, M.S., Costliow, Z.A., Ma, X., Degnan, P.H., and **C.K. Vanderpool*.** 2021. A Novel Family of RNA-Binding Proteins Regulate Polysaccharide Metabolism in *Bacteroides thetaiotaomicron. J. Bacteriol.* 203:e0021721. doi: 10.1128/JB.00217-21. #This article was selected by the *Journal of Bacteriology* editors for a special Commentary.

52. Reyer, M.A., Chennakesavalu, S., Heideman, E.M., Ma, X., Bujnowska, M., Hong, L., Dinner, A.R., **Vanderpool, C.K.**, and J. Fei. 2021. Kinetic modeling reveals additional regulation at co-transcriptional level by post-transcriptional sRNA regulators. *Cell Reports* 36:109764. doi: 10.1016/j.celrep.2021.109764

53. Lalaouna, D., Prévost, K., Park, S., Chénard, T., Bouchard, M. P., Caron, M. P., **Vanderpool, C. K.**, Fei, J., and E. M. Massé. 2021. Binding of the RNA Chaperone Hfq on Target mRNAs Promotes the Small RNA RyhB-Induced Degradation in *Escherichia coli. Non-coding RNA* 7:64. doi: 10.3390/ncrna7040064

54. Cakar, F., Golubeva, Y., **Vanderpool C.K.**, and J.M. Slauch. 2022. The sRNA MicC downregulates *hilD* translation to control the SPI1 T3SS in *Salmonella enterica* serovar Typhimurium. *J. Bacteriol.* 204:e0037821. doi: 10.1128/JB.00378-21.

55. Abdulla, S.Z., Azam, M.S., Kim, K., Golubeva, Y., Slauch, J.M., and **C.K. Vanderpool***. 2023. Small RNAs activate *Salmonella* pathogenicity island 1 by modulating mRNA stability through the *hilD* mRNA 3' untranslated region. *J. Bacteriol.* 205:e0033322. doi: 10.1128/jb.00333-22.

56. Ragunathan, P.T., Lim, E.N.K., Ma, X., Massé, E., and **C.K. Vanderpool***. 2023. Mechanisms of transcriptional regulation of cryptic prophage-encoded gene products in *Escherichia coli. In Review, J. Bacteriol.*

57. Costliow, Z.A., Degnan, P.H., and **C.K. Vanderpool***. Thiamine pyrophosphate riboswitches in *Bacteroides* species regulate transcription or translation of thiamine transport and biosynthesis genes. *bioRxiv.* doi: https://doi.org/10.1101/867226

58. Adams, A.N.D., Dutta, D., Campbell, D.E., **Vanderpool, C.K.**, and P.H. Degnan. 2023. Strain engineering unmasks unstable genomic structural variation in a model gut anaerobe leading to altered carbohydrate utilization. *In Review.*

CURRICULUM VITAE

Rachel Jane Whitaker
Professor
Department of Microbiology
University of Illinois at Urbana-Champaign
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EDUCATION

2004 – 2006	Postdoctoral Research, Environmental Genomics, University of California, Berkeley. *Advisor*: Jillian F. Banfield.
2004	Ph.D. Microbiology, University of California, Berkeley. Berkeley, CA *Thesis title*: Estimating population parameters in the archaeon *Sulfolobus islandicus.* *Advisor*: John W. Taylor.
1993	B.A. Biology, Wesleyan University. Middletown, CT

ACADEMIC APPOINTMENTS

2018 – present	Director: Microbial Diversity Course, Marine Biological Labs, Woods Hole, MA.
2018 – present	Theme Leader: Infection Genomics for One Health, University of Illinois at Urbana-Champaign.
2018 – present	Professor, Department of Microbiology, University of Illinois at Urbana-Champaign.
2013 – 2018	Associate Professor, Department of Microbiology, University of Illinois at Urbana-Champaign.
2007 – present	Faculty member, Program in Ecology Evolution and Conservation.
2006 – 2013	Assistant Professor, Department of Microbiology, University of Illinois at Urbana-Champaign.

ACADEMIC AFFILIATIONS

Biocomplexity	Theme, Carl R. Woese Institute of Genomic Biology, University of Illinois.
Faculty	Program in Ecology Evolution and Conservation, University of Illinois.

HONORS

2022	Harry E. Preble Professor in Liberal Arts and Sciences
2020	University Scholar
2019	American Academy of Microbiology Fellow
2017	Allen Distinguished Investigator
2016	University of Illinois List of Teachers Ranked as Excellent
2015	University of Illinois List of Teachers Ranked as Excellent
2015	National Academy of Sciences Kavli Fellow
2004	NSF Postdoctoral Fellowship (awarded)
2001 – 2004	NASA Graduate Student Research Fellowship
2000	Daniel I. Arnon Teaching Scholar Award, University of California, Berkeley

COURSES AND TEACHING

- MCB435: Evolution of Infectious Disease (Spring 2007-2021)
- MCB300: General Microbiology (Spring 2009 – 2014)

- MCB493: Exploring Microbial Diversity (Fall 2020-2021)
- MCB493: The Rise of Antimicrobial Resistance (Spring 2020)
- MCB493: Archaeal Cell Biology (Spring 2019)
- MCB493: Working with Genomic Sequence (Spring 2014-2016)
- MCB585: Viruses of Microbes (Spring 2013-2016)

CURRENTLY FUNDED RESEARCH

- Rachel J. Whitaker (PI), Katy Heath (co-PI), Carla Caceres(co-PI), Mercedes Pascual (co-PI), Irene Newton (co-PI), May Berenbaum, Adam Dolezal, Carin Vanderpool, Chris Brooke, Zoi Rapti, Alex Harmon -Threat, Saurabh Sinha, Tandy Warnow, Jessica Brinkworth, Tony Yannarell, Becky Smith, Luda Mainzer, Amy Marshal-Colon, William Metcalf, Joy Bergelson, Stefano Allesina, Jenn Lau, Jay Lennon, Barbara Hug, Ayesha Boyce. NSF Biology Integration Institute. 07/01/2020 – 06/30/2025. $12,500,000.

  Title: BII-Implementation: GEMS: Genomics and Eco-evolution of Multi-scale Symbioses

- Rachel J. Whitaker (PI), Mercedes Pascual, Mark Young, Hee-Sun Han. Gordon and Betty Moore Foundation: 5/1/2020 – 5/1/2025. $1,907,596. Direct

  Title: Dynamic Virus-Microbe Symbiosis in Geothermal Hot Spring Metapopulations

- Christina Kris (PI)t, Barbara Hug, Rachel Whitaker, Rebecca Smith, Ellen Moodie, Helen Nguyen, Jacinda Dariotis, David Krist, Brittany Vill, Enrique Suárez and Monica Ko. University of Illinois, Call to Action Special Programs. 7/1/2022 – 6/30/2023. $25,000.

  Title: Establishing a Community-Based Curriculum Materials Collaborative for Health Justice Science Education

- Rachel J. Whitaker (PI), Mark Young (co-PI). NSF: IOS. 9/9/2017 – 8/31/2021. (NCE) $450,909 direct.

  Title: Killer Archaea: An emergent property of virus-host symbiosis in Archaeal cells with active CRISPR-Cas immunity.

PREVIOUSLY FUNDED RESEARCH

- Rachel J. Whitaker (PI), Paul G. Allen Family Foundation: Allen Distinguished Investigator. 5/31/2017 – 4/30/2020. $1,500,000 direct.

  Title: Microbial gene flow through viral infection in natural populations.

- Rachel J. Whitaker (PI), Jessica Brinkworth, Korinta Maldonado, Ellen Moodie, Gilberto Rosas. CUPHD/IDHS/Coronavirus Relief Fund. 11/1/20 – 12/30/20. $11.952.

  Title: Expanding COVID testing to underserved populations.

- Helen Nguyen (PI), Antarpreet Jutla, Avinash Unnikrishnan, Rachel J. Whitaker (co-PI). NSF Rapid: 08/11/2018-8/10/2019. $60,000 direct.

  Title: RAPID: Characterization of Pathogens in Water, Soil and Animal Facilities for Resilience Assessment of Civil Infrastructure After Extreme Weather Events.

  Helen Nguyen (PI), Joanna Shisler, Rebecca Smith, Rachel Whitaker (co-PI). 6/1/19 – 5/31/21. USDA. Characterization of Pathogens in Water, Soil and Animal Facilities for Resilience Assessment of Civil Infrastructure After Extreme Weather Events.

- Rachel J. Whitaker (PI), George O'Toole (co-PI). Cystic Fibrosis Foundation. 11/1/2016 – 10/31/2018 (NCE). $160,000 direct.

  Title: Surveillance of virulent epidemic P. aeruginosa clones in CF patients.

- Rachel J. Whitaker (PI), Mark Young (co-PI), Kate Campbell (co-PI). NASA: Exobiology and Evolutionary Biology. 12/14/2013-12/13/2017. $400,000 of $462,000 total direct costs.

  Title: Mosaics of natural selection in model microbial genomes from geothermal environments.

- Rachel J. Whitaker (PI), NSF: DEB: Evolutionary Processes. 4/1/2014-3/31/2017. $327,826 total direct.

  Title: Maintenance of microbial species in a model organism from the Archaeal Domain.

- Nigel Goldenfeld (PI), Rachel J. Whitaker *(co-PI),* Lee DeVille (co-PI), Elbert Branscomb (co-PI), Isaac Cann (co-PI), Bruce Fouke (co-PI), Rod Mackie (co-PI), Gary Olsen (co-PI), Zan Schulten (co-PI), Charlie Werth (co-PI), Carl Woese (co-PI). National Aeronautics and Space Administration. 1/9/2013 – 1/8/2018. $123,500 of $5,655,258 total direct.

  Title: Towards Universal Biology: Constraints from Early and Continuing Evolutionary Dynamics of Life on Earth

- Mark Young (PI), Rachel J. Whitaker *(co-PI),* Joshua Weitz (co-PI). NSF: Dimensions of Diversity. 9/1/13 – 8/31/18. $541,000 of $1,135,646 total direct costs.

  Title: Costs and benefits of chronic viral infections.

- Patrick Degnan, Rachel J. Whitaker (co-PI), Rebecca Stumpf (co-PI). Gates Grand Challenges Antimicrobial Resistance. 09/01/2016 - 8/31/2017. $100,000 direct.

  Title: CRISPR capture: surveillance of AMR in mobile microbiomes.

- Patrick Degnan (PI), **Rachel J. Whitaker** (Co-PI). I-POC (Campus award) 9/15/2016 – 9/14/2017. $50,000 direct.

  Title: CRISPR-Capture for enrichment of mobile elements from microbial metagenomes.

- Rachel J. Whitaker (PI), Katrine Whiteson, James Phillips and Bryan White. IGB Seed Funding. 1/15/2014 – 1/14/2015. $100,000 total direct.

  Title: Co-evolutionary Genomics: Investigating the impact of host-virus co-evolution on the dynamics of infectious disease.

KEY SERVICE

- National/International

Guest Editor: Proceedings of the Royal Society, B Special issue on CRISPR Ecology and Evolution.
Editor, ASMPress book on Women in Microbiology published May 8, 2018.
Chair: Gordon Research Conference Archaea: Ecology, Metabolism & Molecular Biology, 2019
Session Chair, Microbial Population Biology Gordon Conference, Hanover New Hampshire, 2017.
Scientific Organizing Committee: Molecular Biology of Archaea 5, 2016
General Meeting Planning Committee: ASM 2016
Counselor: ASM Division R, Evolutionary and Genomic Microbiology, 2015
Editor: Environmental Microbiology, 2012-2017
Associate Editor: Genome Biology and Evolution
Guest Editor: PLoS Genetics, 2014
Panelist: NSF Dimensions of Diversity, Evolutionary Ecology, DOE Joint Genome Institute Panel on Microbial Genomes, NASA Exobiology and Evolutionary Biology

- University

Current:

Co-Team Lead: LAS Engaged Unit Team.
Covid-19 pandemic Service: Built a coalition faculty, university, and community members Labor Health Equity Access Project (LHEAP) to bring resources for testing and vaccination to underserved immigrant and migrant populations.
Community Compact: Inclusive Education Advisory Committee
Institute for Genomic Biology Executive Committee
LAS Inclusion and Equity Committee
MCB Promotion and Tenure Committee
MCB Courses and Curriculum Committee
Microbiology Courses and Curriculum Committee
Microbiology Graduate Student Advisory Committee
Outside Thesis Committee Civil and Environmental Engineering (2)
MCB Diversity Equity and Inclusion Committee

Past:

Advisory Committee Program Ecology Evolution and Conservation
LAS Awards Committee 2016-2019
University of Illinois representative: North Central Region Antibiotic Resistance Roundtable
Carver Biotechnology Center Advisory Committee
Microbiology Faculty Search Committee
Organizing Committee for Carl Woese and The New Biology Symposium
Organizing Committee for Microbe Monday by Microbiology@Illinois
IGB 10th Anniversary Advisory Committee
Organizing Committee for Illinois Network Seminar, Microbe Monday
Carl R. Woese Fellowship Committee
Thesis committees from Program in Ecology, Evolution and Conservation (2), Plant Biology (2), Civil and Environmental Engineering (2), Physics (2), Animal Sciences (2), Pathobiology (2).

- Educational Outreach

  - Director, Microbial Diversity Course, Woods Hole, MA, 2018-2022.

  Launched in 1971 by Holger Jannasch, the Microbial Diversity summer course at the Marine Biological Laboratory has trained generations of scientists from diverse backgrounds. The course is an intense immersion experience for 20 students that lasts 6.5 weeks. The goal of the course is to teach professors, postdocs, and advanced graduate students how to discover, cultivate, and isolate diverse microorganisms, catalyzing a breadth of chemical transformations, as well as how to perform molecular and computational analyses relevant to their study. We also emphasize quantitative approaches to microbial diversity, including teaching students how to describe the energetic potential of diverse metabolisms. A dedicated team of resident course instructors and guest-lecturers participate, exposing students to exciting current research. The opportunity to interact one-on-one with these individuals often leads to future collaborations. Course directors have received competitive funding for the course from NSF, DOE, NASA, the Simons Foundation, and the Argouron Institute.

  - Academic Director: ProjectMICROBE

  In collaboration with Dr. Barbara Hug, Clinical Associate Professor in the Department of Curriculum and Instruction, University of Illinois, ProjectMICROBE is a seven-lesson active learning curriculum targeting 7-10th grade aligned to the NGSS life science performance expectations. Through professional development workshops, we have reached urban and rural classrooms in 5 states and are continuing to run programs in Urbana Middle School and in Chicago Public Schools. We anticipate summer workshops in Saint Louis and Washington DC in 2019.

- Founder and Science Coordinator: Cena y Ciencias

  As a joint effort between Urbana School District #116 Dual Language Program, University of Illinois SACNAS chapter, and Illinois Extension; and funded by the NSF awards to Whitaker, we have built a very successful outreach program in which interactive science activities are delivered in Spanish to K-8 public school students. Our objectives are to cultivate cooperative learning skills through hands-on science activities, to disrupt existing class and language dynamics through necessary collaboration in the sciences, and to provide and support Spanish-language literacy in the sciences. We have run this program for six years. During this time it has expanded in numbers (> 60 student participants) and delivered content in simple machines, microbiology, chemistry, energy, astronomy, and material science. This effort now includes faculty in Physics, Engineering, and Chemistry and over 20 Spanish speaking graduate and undergraduate volunteers. We are extending the program to the Urbana Middle School to have continuing students in the program act as student leaders for their elementary peers.

  SACNAS 2014 was awarded the Role Model Chapter Award at their national meeting, on October 16, 2014 Los Angeles, California and at the Diversity in STEM Conference in Washington DC in 2016 for their role in Cena y Ciencias.

- Chair: Genome Day Institute of Genomic Biology

  Genome Day is an opportunity to educate the community about genomes, genes, DNA, and evolution, held each year at the Orpheum Children's Science Museum in Champaign. Although

primarily for children of grade-school age, all members of the community are welcomed to attend this free event. Exhibits and activities are designed to present energy use and production, environmental, health, and other fundamental research at the IGB in an approachable manner for all ages. In recent years, members of the UIUC chapter of SACNAS (Society Devoted to Advancing Hispanics, Chicanos & Native Americans in Science) have provided bilingual support for the activities.

- Speaker and Participant, World of Genomics

The World of Genomics, presented by the Carl R. Woese Institute for Genomic Biology (IGB), brings the full scope of our research in health, technology, and the environment to the public with hands-on activities and exhibits for all ages, designed to make the broadest impact on the largest audience. This outreach and educational activity has highlighted the University of Illinois at the Field Museum in Chicago, IL, St. Louis Museum of Science, St. Louis, MO and will be presented that the National Academies of Science in Washington DC.

- Instructor MOOC: Genomics Decoding the Language of life.

- Instructor Genomes in Society, Osher Life Long Learning Center. Champaign, IL.

LAB PERSONNEL

- Doctoral Students:
  - Nicole Held, Ph.D., 2006 – 2012, Current: Researcher at University Multispectral Laboratories, Ponca City, OK.
    *Thesis Title: "*Examining Patterns of CRISPR Immunity in Natural Populations of *Sulfolobus islandicus."*

  - Nicholas Youngblut, Ph.D. 2008 – 2014, Current: Project Leader, Max Planck Institute for Developmental Biology, Tübingen, Germany.
    Thesis Title: "Identifying Ecological Differentiation in Microbial Communities Across Taxonomic Scales."

  - Maria Bautista, Ph.D., 2009 – 2016, Current: Postdoctoral Researcher, Department of Biological Sciences, University of Calgary, EEEL Building 509E.
    Thesis Title: "Viral Diversity and Host-Virus Interactions in the Model Crenarchaeon *Sulfolobus islandicus."*

  - David Krause, Ph.D., 2010 – 2016, Current: Postdoctoral researcher, Laboratory of Genetics, Genome Center of Wisconsin, Wisconsin Energy Institute, J. F. Crow Institute for the Study of Evolution, University of Wisconsin-Madison, Madison, WI 53706.
    *Thesis Title: "*Population Genomics of *Sulfolobus islandicus*: Genome-wide Recombination and Antagonistic Interactions."

  - Whitney England, Ph.D., 2010 – 2016, Current: Research Associate, Dept. of Molecular Biology and Biosciences, Dept. of Pharmaceutical Sciences, University of California, Irvine.
    Thesis Title: "CRISPR Immune Diversity in Simulated and Natural Microbial Populations"

- Elizabeth Rowland, 2013 – 2020. Current: Postdoctoral Researcher. Department of Microbiology, University of Illinois.
  Thesis Topic: Resistance and entry of *Sulfolobus* viruses.

- Samantha DeWerff, 2013 – 2020.
  Thesis Topic: Impacts of chronic virus infection on population dynamics.

- Danielle Campbell, 2012 - 2020. Current: Postdoctoral Research Associate at Washington University in St. Louis.
  Thesis Topic: Mobile genetic elements as modulators of the human gut symbiont Bacteroides.

- Alex Phillips, 2015 – 2021, Ph.D. Current: Postdoctoral Research Associate at Duke University.
  Thesis Topic: Essential gene model Crenarchaea *Sulfolobus islandicus.*

- Ted Kim, 2014 – 2022, Ph.D. candidate. Deceased
  Thesis Topic: CRISPR diversity and dynamics in *Pseudomonas* populations.

- Ruben Sanchez-Nieves, 2017 – present.
  Thesis Topic: Mechanisms of gene transfer in *Sulfolobus islandicus.*

- Laura Suttenfield, 2018 – present.
  Thesis Topic: Evolution of horizontal and vertical transmission in *Pseudomonas* phage DMS3.

- Isabelle Lakis, 2019 – present.
  Thesis Topic: Virus-host dynamics in natural populations of *Streptomycetes.*

- Sierra Bedwell, 2020 – present. Co-Advised (Katy Heath)/
  Thesis topic: Differentiation of Rhizobia populations in soil and root nodules of clover.

- Jiayue Yang 2020 – present.
  Thesis topic: Predicting viral epidemics in microbial populations with CRISPR-Cas.

- Abigail Finn 2022 -- present
  Thesis topic: Cell biology of chromosome segregation in model crenarchaea.

- Masters Students:
  - Michael Reno, 2007 – 2009, Masters in Microbiology.
    Thesis Topic: Biogeography of the microbial pangenome.

- Postdoctoral Researchers:
  - Kim Milferstedt, 2008-2012. Current: Research Scientist French National Institute for Agricultural Research (INRA).

  - Angela Kouris, 2008 – 2013. Current: Research Associate Canada First Research Excellence Fund. University of Calgary.

  - Hinsby Cadillo-Quiroz, 2012-2014. Current: Associate Professor School of Life Sciences, Arizona State University.

- Rika Anderson, 2015-2016. Current: Assistant Professor of Biology, Carleton College.
- Matthew Pauly, 2015-2017. Current: Research Associate, CDC, Atlanta, GA.

- Undergraduate students: 19 previous, 7 current.

PUBLICATIONS

1. **Rachel J. Whitaker**, Dennis W. Grogan and John W. Taylor. Geographic barriers isolate endemic populations of hyperthermophilic Archaea. Science. 2003. 301, 976-978.

   Featured in the New York Times, The International Herald Tribune and on National Public Radio.

2. **Rachel J. Whitaker**, Dennis W. Grogan and John W. Taylor. Recombination shapes the natural population structure of the hyperthermophilic Archaeon *Sulfolobus islandicus*. Molecular Biology and Evolution. 2005. 22 (11), 1-8.

3. Jillian F. Banfield, Gene W. Tyson, Eric A. Allen and **Rachel J. Whitaker**. The search for a molecular-level understanding of the processes that underpin the earth's biogeochemical cycles. Reviews in Mineralogy and Geochemistry. 2005. 59, 1-7.

4. **Rachel J. Whitaker** and Jillian F. Banfield. Population dynamics through the lens of extreme environments. Reviews in Mineralogy and Geochemistry. 2005. 59, 259-277.

5. **Rachel J. Whitaker** and Jillian F. Banfield. Population genomics in natural microbial communities. Trends in Ecology and Evolution. 2006. 21 (9), 508-516. doi:10.1016/j.tree.2006.07.001.

6. **Rachel J. Whitaker**. Allopatric origins of microbial species. Philosophical Transactions of the Royal Society: Biology. 2006. 361 (1475), 1975-1984. doi:10.1098/rstb.2006.1927.

7. Eric E. Allen, Gene Tyson, **Rachel J. Whitaker**, Chris Detter, Paul Richardson, Jillian F. Banfield. Recent evolutionary modes deduced by isolate vs. environmental strain population comparative genomics. Proceedings of the National Academy of Sciences U.S.A. 2007. 104 (6), 1883-1888.

8. Jessica L. Green, Brendan J. M. Bohannan and **Rachel J. Whitaker**. Microbial biogeography: taxonomy to traits. Science. 2008. 320 (5879), 1039-1043.

9. Nicole L. Held and **Rachel J. Whitaker**. Viral biogeography revealed by signatures in *Sulfolobus islandicus* genomes. Environmental Microbiology. 2009. 11, 457-466.

   Cited on Faculty of 1000. One of the top 25 most cited articles in Environmental Microbiology 2009. One of the top 50 most cited articles in Environmental Microbiology in 2010.

10. Michael L. Reno, Nicole L. Held, Christopher J. Fields, Patricia V. Burke and **Rachel J. Whitaker**. Biogeography in the pan-genome of *Sulfolobus islandicus*. Proceedings of the National Academy of Sciences U.S.A. 2009. 106 (21), 8605-8610.

11. **Rachel J. Whitaker.** Evolution: spatial scaling of microbial interactions. Current Biology. 2009. 19 (20), R954-956.

12. Kim Milferstedt, Nicholas Youngblut and **Rachel J. Whitaker**. Spatial structure and persistence in methanogen populations from humic bog lakes. 2010. ISME Journal 4 (6), 764-776.

13. Nicole L. Held, Alfa Herrera, Hinsby Cadillo-Quiroz, **Rachel J. Whitaker**. CRISPR associated diversity within a natural population of *Sulfolobus islandicus*. 2010. PLoS ONE. 5 (9), e12988.

14. **Rachel J. Whitaker**. Crystal Ball-2011: An appreciation for natural variation. 2011. Environmental Microbiology. 3 (1), 1–26.

15. **Rachel J. Whitaker**. A new age of naturalists. 2011. Microbe 6 (11), 491-494. Featured excerpt from book chapter: **Rachel J. Whitaker.** A new age of naturalists. In *Microbes and Evolution: The World that Darwin Never Saw.* R. Kolter and S. Maloy [eds]. 2012 ASM Press. 255-262.

16. Hinsby Cadillo-Quiroz, Xavier Didelot, Nicole L. Held, Alfa Herrera, Aaron Darling, Michael L. Reno, David J. Krause, and **Rachel J**. **Whitaker.** Patterns of gene flow define species of thermophilic Archaea. 2012. PLoS Biol 10, e1001265.

    Featured in *Nature Highlights, 483 (9), 01 March 2012, doi:10.1038/483009a; Faculty of 1000; Microbe Magazine June 2012; National Public Radio; Science Daily;and Discover Magazine.*

17. Lauren. M. Childs, Nicole L. Held, Mark J. Young, **Rachel J. Whitaker** * and Joshua S. Weitz*. Multiscale model of CRISPR-induced coevolutionary dynamics: diversification at the interface of Lamarck and Darwin. 2012. Evolution. doi 10.1111/j.1558-5646.2012.01595.x. *co-corresponding authors.

18. Changyi Zhang and **Rachel J. Whitaker.** A broadly applicable gene knockout system for the thermoacidophilic Archaea *Sulfolobus islandicus* based on simvastatin selection. 2012. Microbiology. doi 10.1099/mic.0.058289-0.

19. Ashley Shade, Jordan S. Read, Nicholas D. Youngblut, Noah Fierer, Rob Knight, Timothy K. Kratz, Noah R. Lottig, Eric E. Roden, Emily H. Stanley, Jesse Stombaugh, **Rachel J. Whitaker,** Chin H. Wu, Katherine D. McMahon. Lake microbial communities are resilient after a whole-ecosystem disturbance. 2012. ISME Journal. doi: 10.1038/ismej.2012.56.

20. Nicole L. Held, Lauren M. Childs, Michelle Davison, Joshua S. Weitz, **Rachel J. Whitaker,** Devaki Bhaya. CRISPR-Cas systems to probe ecological diversity and host-viral interactions. *CRISPR* (Springer Press, 2013), 221–250.

21. Nicholas D. Youngblut, Ashley Shade, Jordan S. Read, Katherine D. McMahon, **Rachel J. Whitaker.** Lineage-specific responses of microbial communities to environmental change. Appl Environ Microbiol. 2013 Jan;79(1):39-47. doi: 10.1128/AEM.02226-12.

22. Changyi Zhang, David Krause, **Rachel J. Whitaker.** *Sulfolobus islandicus*: a model system for evolutionary genomics. *Biochem. Soc. Trans.* **41,** 458–462 (2013).

23. Nicole L. Held, Alfa Herrera, **Rachel J. Whitaker**. Reassortment of CRISPR repeat-spacer loci in *S. islandicus.* 2013. Environmental Microbiology. doi: 10.1111/1462-2920.12146.

24. Changyi Zhang, David Krause, Tara Cooper, **Rachel J. Whitaker**. Augmenting the genetic toolbox for *Sulfolobus islandicus* with the stringent positive selectable marker for agmatine protrotrophy. *Applied and Environmental Microbiology* 79, no. 18 (September 15, 2013): 5539–49. doi:10.1128/AEM.01608-13.

25. Nicholas Youngblut, Mark Dell'aringa, **Rachel J. Whitaker**. Differentiation between sediment and hypolimnion methanogen communities in humic lakes. Environ Microbiol. 2013 Nov 14. doi: 10.1111/1462-2920.12330.

26. David J. Krause, Xavier Didelot, Hinsby Cadillo-Quiroz, **Rachel J. Whitaker**. Recombination shapes genome architecture in an organism from the Archaeal domain. Genome Biol Evol. 2014 Jan;6 (1):170-8. doi: 10.1093/gbe/evu003.

27. Matthew N. Benedict, James R. Henriksen, William W. Metcalf, **Rachel J Whitaker**, Nathan D. Price ND. ITEP: an integrated toolkit for exploration of microbial pan-genomes. BMC Genomics. 2014 Jan 3;15:8. doi: 10.1186/1471-2164-15-8.

28. Whitney England and **Rachel J. Whitaker.** Causes and consequences of CRISPR immunity. Biochem Soc Trans. 2013 Dec;41(6):1431-6. doi: 10.1042/BST20130243.

28. Sara F. Paver, Nicholas D. Youngblut, **Rachel J. Whitaker**, Angela D. Kent. Phytoplankton succession affects the composition of *Polynucleobacter* subtypes in humic lakes. Environmental Microbiology 17, no. 3 March 2014: 816–28. doi:10.1111/1462-2920.12529.

29. Lauren M. Childs, Whitney E. England, Mark J. Young, Joshua S. Weitz, **Rachel J. Whitaker**. CRISPR-induced distributed immunity in microbial populations. PloS One 9, no. 7 (2014). doi:10.1371/journal.pone.0101710.

30. Chandana, Jasti, Barbara Hug, Jillian L. Waters, and **Rachel J. Whitaker**. "How Do Small Things Make a Big Difference? Activities to Teach about Human-Microbe Interactions." *The American Biology Teacher* 76, no. 9 (November 2014). doi:10.1525/abt.2014.76.9.6.

31. Nicholas D. Youngblut, Joseph S. Wirth, James R. Henriksen, Maria Smith, Holly Simon, William W. Metcalf, **Rachel J. Whitaker**. Genomic and phenotypic differentiation among *Methanosarcina mazei* populations from Columbia River sediment." The ISME Journal, March 10, 2015. doi:10.1038/ismej.2015.31.

32. Maria A. Bautista, Changyi Zhang, **Rachel J. Whitaker**. Virus-induced dormancy in the Archaeon *Sulfolobus islandicus*. mBio 6, no. 2 (2015). doi:10.1128/mBio.02565-14.

33. David Krause, Changyi Zhang, **Rachel J. Whitaker**. Inferring Speciation Processes from Patterns of Natural Variation in Microbial Genomes. Systematic Biology. 2015 Nov; 64(6): 926–935. doi:10.1093/sysbio/syv050

34. **Rachel J. Whitaker**, Carin K. Vanderpool. "CRISPR-Cas Gatekeeper: Slow on the Uptake but Gets the Job Done." Cell Host & Microbe 19, no. 2 (February 10, 2016): 135–37. doi:10.1016/j.chom.2016.01.015.

35. Changyi Zhang, Qunxin She, Hongkai Bi, **Rachel J. Whitaker**. "The apt/6-Methylpurine Counterselection System and Its Applications in Genetic Studies in the Hyperthermophilic

Archaeon *Sulfolobus islandicus*." Applied and Environmental Microbiology, March 11, 2016, AEM.00455–16. doi:10.1128/AEM.00455-16.

36. Wagner, Alexander, Rachel J. Whitaker, David J. Krause, Jan-Hendrik Heilers, Marleen van Wolferen, Chris van der Does, and Sonja-Verena Albers. "Mechanisms of Gene Flow in Archaea." *Nature Reviews Microbiology* advance online publication (May 15, 2017). https://doi.org/10.1038/nrmicro.2017.41.

37. Campbell, Kate M., Angela Kouris, Whitney England, Rika E. Anderson, R. Blaine McCleskey, D. Kirk Nordstrom, and **Rachel J. Whitaker.** "Sulfolobus Islandicus Meta-Populations in Yellowstone National Park Hot Springs." *Environmental Microbiology*, March 1, 2017, doi:10.1111/1462-2920.13728.

38. Bautista, Maria A., Jesse A. Black, Nicholas D. Youngblut, and Rachel J. Whitaker. "Differentiation and Structure in Sulfolobus Islandicus Rod-Shaped Virus Populations." Viruses 9, no. 5 (May 19, 2017): 120. https://doi.org/10.3390/v9050120.

39. Anderson, Rika E., Angela Kouris, Christopher H. Seward, Kate M. Campbell, and **Rachel J. Whitaker**. "Structured Populations of Sulfolobus acidocaldarius with Susceptibility to Mobile Genetic Elements." Genome Biology and Evolution 9, no. 6 (June 1, 2017): 1699–1710. https://doi.org/10.1093/gbe/evx104.

40. Munson-McGee, Jacob H., Shengyun Peng, Samantha Dewerff, Ramunas Stepanauskas, **Rachel J. Whitaker**, Joshua S. Weitz, and Mark J. Young. "A Virus or More in (nearly) Every Cell: Ubiquitous Networks of Virus–host Interactions in Extreme Environments." The ISME Journal, February 21, 2018, 1. https://doi.org/10.1038/s41396-018-0071-7.

41. Zhang, Changyi, and **Rachel J. Whitaker**. "Microhomology-Mediated High-Throughput Gene Inactivation Strategy for the Hyperthermophilic Crenarchaeon Sulfolobus Islandicus." Applied and Environmental Microbiology 84, no. 1 (January 1, 2018): e02167–17. https://doi.org/10.1128/AEM.02167-17.

42. England, Whitney E., Ted Kim, and **Rachel J. Whitaker**. "Metapopulation Structure of CRISPR-Cas Immunity in Pseudomonas Aeruginosa and Its Viruses." *MSystems* 3, no. 5 (October 30, 2018): e00075-18. https://doi.org/10.1128/mSystems.00075-18.

43. Zhang, Changyi, Alex P. R. Phillips, Rebecca L. Wipfler, Gary J. Olsen, and **Rachel J. Whitaker**. "The Essential Genome of the Crenarchaeal Model *Sulfolobus islandicus*." *Nature Communications* 9, no. 1 (November 21, 2018): 4908. https://doi.org/10.1038/s41467-018-07379-4.

44. Weitz, Joshua S., Guanlin Li, Hayriye Gulbudak, Michael H. Cortez, and **Rachel J. Whitaker**. "Viral Invasion Fitness across a Continuum from Lysis to Latency." *Virus Evolution* 5, no. 1 (January 1, 2019). https://doi.org/10.1093/ve/vez006.

45. Pauly, Matthew D., Bautista Maria A., Black Jesse A., and **Rachel J. Whitaker.** "Diversified Local CRISPR-Cas Immunity to Viruses of *Sulfolobus islandicus*." *Philosophical Transactions of the Royal Society B: Biological Sciences* 374, no. 1772 (May 13, 2019): 20180093. https://doi.org/10.1098/rstb.2018.0093.

46. Westra, Edze R., Stineke van Houte, Sylvain Gandon, and **Rachel J. Whitaker**. "The Ecology and Evolution of Microbial CRISPR-Cas Adaptive Immune Systems." *Philosophical Transactions of the Royal Society B: Biological Sciences* 374, no. 1772 (May 13, 2019): 20190101. https://doi.org/10.1098/rstb.2019.0101.

47. Zhang, Changyi, Rebecca L. Wipfler, Yuan Li, Zhiyu Wang, Emily N. Hallett, and **Rachel J. Whitaker.** "Cell Structure Changes in the Hyperthermophilic Crenarchaeon *Sulfolobus islandicus* Lacking the S-Layer." *MBio* 10, no. 4 (August 27, 2019): e01589-19. https://doi.org/10.1128/mBio.01589-19.

48. Clifton, Sara M., Ted Kim, Jayadevi H. Chandrashekhar, George A. O'Toole, Zoi Rapti, and **Rachel J. Whitaker.** "Lying in Wait: Modeling the Control of Bacterial Infections via Antibiotic-Induced Proviruses." *mSystems* 4, no. 5 (October 29, 2019): e00221-19. https://doi.org/10.1128/mSystems.00221-19.

49. Ozer, E.A., Nnah, E., Didelot, X., Whitaker, R.J., Hauser, A.R.. The Population Structure of Pseudomonas aeruginosa Is Characterized by Genetic Isolation of exoU+ and exoS+ Lineages. Genome Biol Evol 11, 1780–1796 (2019). https://doi.org/10.1093/gbe/evz119

50. Athukoralage, Januka S., Stephen A. McMahon, Changyi Zhang, Sabine Grüschow, Shirley Graham, Mart Krupovic, **Rachel J. Whitaker**, Tracey M. Gloster, and Malcolm F. White. "An Anti-CRISPR Viral Ring Nuclease Subverts Type III CRISPR Immunity." *Nature* 577, no. 7791 (January 2020): 572–75. https://doi.org/10.1038/s41586-019-1909-5.

51. Rowland, Elizabeth F., Maria A. Bautista, Changyi Zhang, and **Rachel J. Whitaker**. "Surface Resistance to SSVs and SIRVs in Pilin Deletions of *Sulfolobus islandicus*." *Molecular Microbiology*, (January 21, 2020.) https://doi.org/10.1111/mmi.14435.

52. C. S. Weitzel, L. Li, C. Zhang, K. K. Eilts, N. M. Bretz, A. L. Gatten, **R. J. Whitaker**, S. A. Martinis, Duplication of leucyl-tRNA synthetase in an archaeal extremophile may play a role in adaptation to variable environmental conditions. *J Biol Chem*. **295**, 4563–4576 (2020). https://doi.org/10.1074/jbc.RA118.006481.

53. S. J. DeWerff, M. A. Bautista, M. Pauly, C. Zhang, **R. J. Whitaker,** Killer Archaea: Virus-Mediated Antagonism to CRISPR-Immune Populations Results in Emergent Virus-Host Mutualism. *mBio*. **11** (2020), https://doi.org/10.1128/mBio.00404-20 .

54. D. E. Campbell, L. K. Ly, J. M. Ridlon, A. Hsiao, **R. J. Whitaker**, P. H. Degnan, Infection with Bacteroides Phage BV01 Alters the Host Transcriptome and Bile Acid Metabolism in a Common Human Gut Microbe. *Cell Rep*. **32**, 108142 (2020). doi: 10.1016/j.celrep.2020.108142

55. G. Urtecho, D. E. Campbell, D. M. Hershey, F. A. Hussain, R. J. Whitaker, G. A. O'Toole, Discovering the Molecular Determinants of Phaeobacter inhibens Susceptibility to Phaeobacter Phage MD18. *mSphere*. **5**, e00898-20 (2020). doi: 10.1128/mSphere.00898-20

56. S. Pilosof, S. A. Alcalá-Corona, T. Wang, T. Kim, S. Maslov, **R. J. Whitaker**, M. Pascual, The network structure and eco-evolutionary dynamics of CRISPR-induced immune diversification. *Nat Ecol Evol* (2020), https://doi.org/10.1038/s41559-020-01312-z.

57. Tsai, C.-L., Tripp, P., Sivabalasarma, S., Zhang, C., Rodriguez-Franco, M., Wipfler, R.L., Chaudhury, P., Banerjee, A., Beeby, M., Whitaker, R.J., Tainer, J.A., Albers, S.-V.,. The

structure of the periplasmic FlaG–FlaF complex and its essential role for archaellar swimming motility. Nat Microbiol 5, 216–225 (2020). https://doi.org/10.1038/s41564-019-0622-3

58. S. M. Clifton, **R. J. Whitaker**, Z. Rapti, Temperate and chronic virus competition leads to low lysogen frequency. Journal of Theoretical Biology. 523, 110710 (2021). https://doi.org/10.1016/j.jtbi.2021.110710.

59. O'Toole, George A., Aurélie Crabbé, Rolf Kümmerli, John J. LiPuma, Jennifer M. Bomberger, Jane C. Davies, Dominique Limoli, et al. "Model Systems to Study the Chronic, Polymicrobial Infections in Cystic Fibrosis: Current Approaches and Exploring Future Directions." *MBio* 0 (0): e01763-21 (2021). https://doi.org/10.1128/mBio.01763-21.

60. Landa, K.J., Mossman, L.M., Whitaker, R.J., Rapti, Z., Clifton, S.M., 2021. Phage-antibiotic synergy inhibited by temperate and chronic virus competition. arXiv:2104.08989 [q-bio] (2021).

61. DeWerff, S.J., Whitaker, R.J., 2021. Extreme Environments as a Model System to Study How Virus–Host Interactions Evolve Along the Symbiosis Continuum, in: Bamford, D.H., Zuckerman, M. (Eds.), Encyclopedia of Virology (Fourth Edition). Academic Press, Oxford, pp. 419–427 (2021). https://doi.org/10.1016/B978-0-12-814515-9.00096-5

62. Kim, Hye Won, Na Kyung Kim, Alex P. R. Phillips, David A. Parker, Ping Liu, Rachel J. Whitaker, Christopher V. Rao, and Roderick Ian Mackie. 2022. "Genome Sequence of a Thermoacidophilic Methanotroph Belonging to the Verrucomicrobiota Phylum from Geothermal Hot Springs in Yellowstone National Park: A Metagenomic Assembly and Reconstruction." *Microorganisms* 10 (1): 142 (2022). https://doi.org/10.3390/microorganisms10010142.

63. DeWerff, Samantha J., Changyi Zhang, John Schneider, and Rachel J. Whitaker. "Intraspecific Antagonism through Viral Toxin Encoded by Chronic Sulfolobus Spindle-Shaped Virus." *Philosophical Transactions of the Royal Society B*, January (2022). https://doi.org/10.1098/rstb.2020.0476.

64. A Rapid Targeted Gene Inactivation Approach in *Sulfolobus islandicus* Changyi Zhang, Serina M. Taluja, Emily N. Hallett, and Rachel J. Whitaker. *Methods in Molecular Biology*, 2022 In press.

65. Transposon insertion mutagenesis in hyperthermophilic crenarchaeon *Sulfolobus islandicus* Changyi Zhang, and Rachel J. Whitaker. *Methods in Molecular Biology*, 2022 In press.

66. Zeng, Zhifeng, Yu Chen, Rafael Pinilla-Redondo, Shiraz A. Shah, Fen Zhao, Chen Wang, Zeyu Hu, et al. May 2022. "A Short Prokaryotic Argonaute Activates Membrane Effector to Confer Antiviral Defense." *Cell Host & Microbe*, May. https://doi.org/10.1016/j.chom.2022.04.015.

67. Orazi, Giulia, Alan J. Collins, and Rachel J. Whitaker. 2022. "Prediction of Prophages and Their Host Ranges in Pathogenic and Commensal Neisseria Species." *MSystems* 7 (3): e00083-22. https://doi.org/10.1128/msystems.00083-22.

68. Zhang, Changyi, Serina M. Taluja, Emily N. Hallett, and Rachel J. Whitaker. 2022. "A Rapid Targeted Gene Inactivation Approach in Sulfolobus Islandicus." In *Archaea: Methods and Protocols*, edited by Sébastien Ferreira-Cerca, 145–62. Methods in

Molecular Biology. New York, NY: Springer US. https://doi.org/10.1007/978-1-0716-2445-6_9.

69. Zhang, Changyi, and Rachel J. Whitaker. 2022. "Transposon Insertion Mutagenesis in Hyperthermophilic Crenarchaeon Sulfolobus Islandicus." In *Archaea: Methods and Protocols*, edited by Sébastien Ferreira-Cerca, 163–76. Methods in Molecular Biology. New York, NY: Springer US. https://doi.org/10.1007/978-1-0716-2445-6_10.

70. Sanchez-Nieves, Ruben L., Changyi Zhang, and Rachel J. Whitaker. 2023. "Integrated Conjugative Plasmid Drives High Frequency Chromosomal Gene Transfer in Sulfolobus Islandicus." *Frontiers in Microbiology* 14. https://www.frontiersin.org/articles/10.3389/fmicb.2023.1114574.

71. Collins, Alan J., and Rachel J. Whitaker. 2022. "CRISPR Comparison Toolkit (CCTK): Rapid Identification, Visualization, and Analysis of CRISPR Array Diversity." bioRxiv. https://doi.org/10.1101/2022.07.31.502198. *in press: CRISPR Journal*

BOOK CHAPTERS

1. **Rachel J. Whitaker.** Abigail Salyers: An Almost Unbeatable Force. Women in Microbiology. American Society of Microbiology, 2018. http://www.asmscience.org/content/book/10.1128/9781555819545.

2. Krause, D.J., Whitaker, R.J., 2019. Population Genomics of Archaea: Signatures of Archaeal Biology from Natural Populations, in: Polz, M.F., Rajora, O.P. (Eds.), Population Genomics: Microorganisms, Population Genomics. Springer International Publishing, Cham, pp. 145–155. https://doi.org/10.1007/13836_2018_49

3. S. J. DeWerff, **R. J. Whitaker**, in *Encyclopedia of Virology (Fourth Edition)*, D. H. Bamford, M. Zuckerman, Eds. (Academic Press, Oxford, 2021; https://www.sciencedirect.com/science/article/pii/B9780128145159000965), pp. 419–427.

MANUSCRIPTS IN PREPARATION

1. David Krause, Changyi Zhang, **Rachel J. Whitaker**. "Hot spots and cold spots of recombination in the Archaeal chromosome".
2. Matthew Pauly, Jesse Black, Maria Bautista, **Rachel J. Whitaker**. "Characterization of *Sulfolobus* Supereliptical Virus (SSeV), a Novel Virus of the Hyperthermophilic Crenarchaeon *Sulfolobus islandicus* that Escapes Immunity by Posing as Host".
3. Alex Phillips, Gary Olsen, Changyi Zhang and Rachel J. Whitaker. "Distribution of essential genes in the genome architecture of *Sulfolobus islandicus."*
4. Ted Kim, Matt Pauly, Shai Pilosof, Sergio Acala, Mercedes Pascual, Rachel Whitaker. "Using CRISPR-Cas immune structure to predict epidemic outbreaks in bacteria."

INVITED PRESENTATIONS

1. Montana State University, Thermal Biology Institute, November 4, 2002, Bozeman, MT.

2. California Academy of Sciences, Bay Area Planetary Society, March 24, 2002, San Francisco, CA.

3. Chico State University, Biology Department, October 3, 2003, Chico, CA.

4. American Society for Microbiology, May 25, 2004, New Orleans, LA.

5. Marine Biological Laboratory, Microbial Diversity Course, July 15, 2004, Woods Hole, MA.

6. 15th Annual Goldschmidt Conference, May 20-25, 2005, Moscow, ID.

7. University of Southern California, Wrigley Institute for Environmental Studies Geobiology Course, June 25, 2005, Two Harbors, CA

8. University of California, Berkeley, Molecular Geomicrobiology Short Course, December 3-4, 2005, Berkeley, CA.

9. Department of Energy Joint Genome Institute, Users Meeting, March 31, 2006, Walnut Creek, CA.

10. Joint Genomics, GTL Workshop, February 14, 2006, Bethesda, MD.

11. Royal Society of London, Microbial Species and Speciation, March 14, 2006, London, UK.

12. Montana State University, Thermal Biology Institute, February 8, 2007, Bozeman, MT.

13. American Museum of Natural History, Small Matters: Microbes and Their Role in Conservation, April 27, 2007, New York, NY.

14. Marine Biological Laboratory, Microbial Diversity Course, July 19, 2007, Woods Hole, MA.

15. Thermophiles 2007, September 27, 2007, Bergen, Norway.

16. University of Southern Illinois, Department of Microbiology, October 26, 2007, Carbondale, IL.

17. University of Georgia, Department of Microbiology, November 7, 2007, Athens, GA.

18. Cornell University, Department of Microbiology, November 29, 2007, Ithaca, NY.

19. Portland State University, Department of Biology, May 25, 2008, Portland, OR.

20. University of Washington, Department of Microbiology, May 22, 2008, Seattle, WA.

21. Marine Biological Laboratory, Microbial Diversity Course, July 22, 2008, Woods Hole, MA.

22. University of Michigan, Microbial Ecology, Relationship to the Environment and Human Health II Symposium, March 13, 2009, Ann Arbor, MI.

23. Michigan State University, W. K. Kellogg Biological Station, April 3, 2009, Hickory Corners, MI.

24. Society for Molecular Biology and Evolution, June 4, 2009, Iowa City, IA.

25. Symposium on the Origin of Microbial Species, Microbial Diversity Course, July 11, 2009, Woods Hole, MA.

26. CRISPR2009 Conference, July 23-25, 2009, Berkeley, CA.

27. Indiana University, Department of Biology, September 29, 2009, Bloomington, IN.

28. University of Wisconsin, Elizabeth McCoy Distinguished Lecture in Microbiology November 12, 2009, Madison, WI.

29. Nordic Archaea Network, May 19-23, 2010, Stockholm, Sweden.

30. Cold Spring Harbor Laboratory, Advanced Bacterial Genetics Course, June 4-5, 2010, Cold Spring Harbor, NY.

31. Viruses of Microbes, June 21-25, 2010, Paris, France.

32. International Society for Microbial Ecology, August 23-27, 2010, Seattle, WA.

33. University of Pennsylvania, Department of Biology, November 17, 2010, Philadelphia, PA.

34. University of California, Santa Barbara, Kavli Institute for Theoretical Physics, Workshop on Microbial and Viral Evolution, January 6, 2011, Santa Barbara, CA.

35. American Society of Microbiology, Plenary Session: From Clonal Populations to Communities May 21-24, 2011, New Orleans, LA.

36. Gordon Research Conference on Archaea: Ecology, Metabolism and Molecular Biology, August 1, 2011, Waterville Valley, NH.

37. Thermophiles Conference, September 13, 2011, Big Sky, MT.

38. Harvard University, Microbial Sciences Initiative, November 10, 2011, Cambridge, MA.

39. Canadian Institute for Advanced Research meeting of the Integrated Microbial Biodiversity (IMB) Program. May 10, 2012, Quebec City, Canada.

40. CRISPR2012, June 22, 2012, Berkeley, CA.

41. International Society for Microbial Ecology, August 19, 2012, Copenhagen, Denmark.

42. University of Montana, October 1, 2012, Missoula, MT.

43. Oregon Health and Science University, October 5, 2012, Portland, OR.

44. Southern Illinois University, October 19, 2012, Carbondale, IL.

45. Biochemical Society Focused Meeting “CRISPR: evolution, mechanisms and infection” June 17-19, 2013, St. Andrews University, Scotland, UK.

46. Evolution 2013, June 21-25, 2013, Snowbird, Utah.

47. Society for Molecular Biology and Evolution, July 7-11, 2013, Chicago, IL.

48. Gordon Research Conference on Microbial Population Biology, July 21-26, 2013, Proctor Academy, Andover, NH.

49. Gordon Research Conference on Archaea Ecology, Metabolism & Molecular Biology, July 28 – August 1, 2013. Renaissance Tuscany II Ciocco Resort, Luca, Italy.

50. Pennsylvania State University, April 14, 2014. State College, PA.

51. International Society for Microbial Ecology, August 24-29, 2014. Seoul, South Korea.

52. Midwest Pathogenesis Meeting, September 12 - 14, 2014. Chicago, IL.

53. Montana State University, September 24, 2014. Bozeman, MT.

54. Israel-US, National Academy of Sciences Kavli Symposium, February 21-27, 2015 Jerusalem, Israel.

55. Plenary Presentation. AbSciCon 2015. June 12-15, 2015. Chicago, IL.

56. Gordon Research Conference on Archaea Ecology, Metabolism & Molecular Biology, July 28 – August 1, 2015.

57. Microbial Diversity Symposium on Host Microbe Interactions, August 8-10, 2015. Woods Hole, MA.

58. Thermophiles, August 31-September 5, 2015. Santiago, Chile.

59. Center for Archaeal Research, September 28, 2015, Copenhagen, Denmark.

60. University of Vienna, September 30, 2015, Vienna, Austria.

61. Uppsala University, October 4, 2015, Uppsala, Sweden.

62. University of California, Berkeley, October 28, 2015, Berkeley, CA.

63. University of California, Davis, October 29, 2015, Davis, CA.

64. Symposium on Early Life, University of Missouri, Saint Louis, April 9, 2016, St. Louis, MO.

65. Dartmouth University, April 25, 2015, Hanover, NH.

66. ASM: MICROBE2016, June 19, 2016, Boston, MA.

67. Viruses of Microbes, July 19, 2016, Liverpool, UK.

68. Molecular Biology of Archaea, August 2, 2016, London, UK.

69. University of Iowa, September 20, 2016, Iowa City, IA.

70. University of Cincinnati, October 17, 2016, Cincinnati, OH.

71. Evolution of Host Microbe Interactions, October 10, 2016, Chicago, IL.

72. West Coast Microbial Physiologist Meeting, December 9, 2016, Asilomar, CA.

73. Virus Evolution, March 9-12, 2017, State College, PA.

74. Armour Seminar, Field Museum, May 17th, 2017, Chicago, IL.
75. ASM: MICROBE2017, June 5, 2017, New Orleans, LA.
76. Keynote Speaker American Society of Virology, June 22, 2017, Madison, WI.
77. Session Leader, Microbial Population Biology Gordon Conference. July 13, Andover, NH.
78. Speaker, Archaea Gordon Conference. July 26, Waterville Valley, NH.
79. University of Chicago, October 18th, 2017, Chicago, IL.
80. Allen Frontiers Symposium, October 26th, 2017, San Francisco, CA.
81. Virus Replication Conference, February 9th, 2018, Barcelona, Spain.
82. I2SysBio, March 25th, 2018, Valencia, Spain.
83. Microbiology Department Seminar, University of Freiburg, April 24, 2018, Freiburg, Germany.
84. Department of Biochemistry, May 21, 2018, St. Andrews University, St. Andrews Scotland.
85. Department of Plant and Microbial Biology, October 9, 2018, University of Minnesota, St. Paul, MN.
86. Nebraska Center for Virology, October 12, 2018, University of Nebraska, Lincoln, NE.
87. Allen Frontiers Symposium, October 17, 2018, Allen Institute, Seattle, WA.
88. World of Genomics, October 20, 2018, St. Louis Museum of Science, St. Louis, MO.
89. Indiana University, Microbiology Seminar Series, December 4, 2018, Bloomington, IN.
90. CRISPR Ecology and Evolution, March 18-19, 2019, Royal Society of London, London, UK.
91. Virus Evolution Meeting, April 7-10, 2019, State College, PA.
92. University of Michigan, March 27-19, 2019, Ann Arbor, Michigan.
93. Harvard Microbial Sciences Initiative, April 12-14, 2019, Cambridge, MA.
94. Department of Ecology and Evolution, September 2-5, 2019, Montpellier, France.
95. Allen Frontiers Symposium, October 15-17, 2019, Boston, MA.
96. Committee on Microbiology, University of Chicago, November 12-15, 2019, Chicago, IL.
97. JGI VEGA Symposium, May 25th, 2021. Virtual.
98. CRISPR 2021, June 3, 2021. Virtual.

99. University of Colorado, Boulder, October 5, 2021. Virtual.

100. Harvey Mudd College Seminar, December 8, 2021. Virtual.

101. International Viruses of Microbes (iVoM), January 8, 2022. Virtual.

102. Presidential Advisory Council on Combatting Antibiotic Resistance. September 12-13, 2022. Virtual

103. University of California, Irvine, September, 30, 2022, Irvine, CA.

104. ASM Council of Microbial Science, EEB Retreat, April 10th, 2023. Virtual.

INVITED PRESENTATIONS AT THE UNIVERSITY OF ILLINOIS AT URBANA CHAMPAIGN

1. Institute for Genomic Biology, Fellows Symposium on The Future of Biology, February 24-25, 2007, Urbana, IL

2. Program in Ecology, Evolution and Conservation, October 24, 2007, Urbana, IL

3. Department of Physics, April 29, 2011, Urbana, IL.

4. IACAT Seminar, April 17, 2013, Urbana, IL.

5. Salyers' Symposium, November 8, 2014. Urbana, IL.

6. Biocomplexity Seminar, April 28, 2015. Urbana, IL.

7. Carl R. Woese Symposium, September, 22, 2015. Urbana, IL.

8. Astronomy Department Seminar, December 8, 2015, Urbana, IL.

9. Extension Annual Conference, November 21, 2016, Urbana, IL.

10. Spiegelman Symposium, October 21, 2017, Urbana, IL.

11. UIUC Covid Course, September 15, 2020, Urbana, IL.

12. Molecular Biology of Archaea, Virtual presentation, October 8, 2020.

13. LAS Impact Seminar, October 10, 2020, Urbana, IL.

14. Ecology and Evolutionary Biology Department University of Colorado, Boulder. November 5, 2021.

15. VEGA, Joint Genomics Insitute, May 6, 2021.

16. CRISPR 2021. Virtual Symposium, June 9, 2021.

17. Harvey Mudd College, December 8, 2021.

18. International Viruses of Microbes Virtual Seminar Series. January 10, 2022.

19. Allen Foundation Pioneers Symposium, March 29, 2022.

20. Microbiology and Plant Biology, University of Oklahoma, April 22, 2022.

21. Covid Courts Initiative, Virtual workshop, May 14, 2022.

22. Astrobiology: Astrovirology session. Atlanta, GA, May 16, 2022.

23. Metagenomics Ecology and Evolution Virtual Symposium. June 28, 2022.

PEER REVIEW FOR JOURNALS

American Naturalist
Cell
Cell Host Microbe
Current Biology
eLife
Evolution
Genome Biology and Evolution
Journal of Bacteriology
mBio
Molecular Biology and Evolution
Molecular Microbiology
Nature
Nature Ecology and Evolution
Nature Microbiology
Nature Reviews Microbiology
Nucleic Acids Research
PLoS Biology
PLoS Genetics
PNAS
Science
Systematic and Applied Microbiology

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E-mail: wilson7@illinois.edu

URL: http://mcb.illinois.edu/faculty/profile/wilson7

EDUCATION

Barnard College/Columbia University New York, New York	**BA**	1977-1981	Biochemistry & German (Chemistry minor)
Institut für Biochemie, Ludwig-Maximilians Universität München Munich, Germany	**Diplomarbeit Postbaccalaureate**	1981–1982	Biochemistry Advisor: Dr. Ernst L. Winnacker
University of Arkansas for Medical Sciences Little Rock, Arkansas	**Research Assistant**	1983	Gerontology Research Supervisor: Dr. Arun Srivastava
Johns Hopkins University Baltimore, Maryland	**MA/PhD**	1983-1989	Chemistry (BioOrganic) Mentor: Dr. Craig A. Townsend
Harvard Medical School Boston, Massachusetts	**Postdoctorate**	1989-1993	Microbiology & Molecular Genetics Mentor: Dr. R. John Collier

ACADEMIC POSITIONS

Harvard Medical School, Boston, Massachusetts: Department of Microbiology and Molecular Genetics, Postdoctoral Research Fellow and Course Instructor, 1/89-8/93

Wright State University, School of Medicine, Dayton, Ohio: Department of Biochemistry and Molecular Biology, Assistant-Associate Professor (tenured), 9/93-8/99

University of Illinois at Urbana-Champaign, Urbana, Illinois: Department of Microbiology, Associate Professor (tenured), 8/99-8/14; Full Professor, 8/14-now

University of Illinois at Urbana-Champaign, Urbana, Illinois:

Theme Leader, Host-Microbe Systems Theme, Institute for Genomic Biology, 3/04-7/13

Member, Mining Microbial Genomes Theme, Institute for Genomic Biology, 3/04-8/19

Affiliate Member, Center for African Studies & Center for Global Studies, Illinois Global Institute, 10/13-now

Affiliate Member, Beckman Institute for Advanced Science and Technology, 3/14-8/20

Associate Director for Undergraduate Education, School of Molecular and Cellular Biology, 5/14-now

Inaugural Professor, Department of Biomedical and Translational Sciences, Carle Illinois College of Medicine, 4/17-now

Adjunct Professor, Department of Pathobiology, College of Veterinary Medicine, 5/17-now

Sandia National Laboratories Faculty Fellow, Office of the Vice Chancellor for Research and Innovation, 6/19-7/22; Senior Faculty Fellow, 8/22-now

Fellow, American Academy of Microbiology, American Society for Microbiology, 2020-now

OTHER AFFILIATIONS

Center for Zoonoses Research, UIUC, Member, 2/00-now; Co-Director, 3/05-now

Great Lakes Regional Center of Excellence (RCE) for Biodefense and Emerging Infectious Disease Research, Executive Board Member and UIUC Representative, 9/03-3/13

Arms Control, Domestic and International Security (ACDIS) Program, Executive Committee Member – Biosecurity, 10/04-now

FruitVaccine, Inc., Technical Consultant – 12/18-now

DOAR, Inc., Subject Matter Expert Witness & Consultant – 3/19-6/20

WIT-Legal, LLC, Subject Matter Expert Witness & Consultant – 7/20-now

Sigma Xi: The Scientific Research Honor Society, Faculty Member – 2020-now

Vebleo Science, Engineering and Technology, Stockholm, Sweden, Fellow, 2021-now

Guidepoint Global Advisors, LLC, Consultant – 1/23-now

GRANT AWARDS

National:

Department of Defense - Intelligent Automation, Inc. IAI-UIUC DTRA 19B-002 STTR Topic Award (role: PI of subcontracts) –"DOEYK: Detecting Objects with Enhanced YOLOv3 and Knowledge Graph" Phase I contract awarded $54,167 total direct costs to BAW (03/20/20-07/31/20), Phase II contract awarded $330,000 total direct costs to BAW (11/09/21-09/08/23)

NSF Award #2026281 FruitVaccine, Inc. (role: Technical Consultant, PI: Indu Rupassara) – SBIR Phase I: "Stabilization of the desired epitopes of hRSV-F protein for efficient absorption through the gut" total direct costs $256,000, $15,000 to BAW (12/01/20-11/30/21), supplemental $20,000 for NSF iCorp Program participation, $5,000 to BAW (07/20/21-09/03/21) – Note: FruitVaccine, Inc. is a small biotechnology company located in the EnterpriseWorks business incubator within the UIUC Research Park.

Department of Defense - Intelligent Automation, Inc. IAI-UIUC DTRA172-004 SBIR Topic Award (role: PI of subcontracts) –"A scalable and automated tool to analyze and identify dual use research of concern from scientific publications: SAT-DURC" Phase I contract awarded $37,500 total direct costs to BAW (01/23/18-08/22/18), Phase II contract awarded $250,000 total direct costs to BAW (2/10/20-12/17/21)

Department of Energy - Sandia National Laboratories Academic Alliance Award SAND2018-9509 PR – Plus-up Supplemental to Laboratory Directed Research & Development Award (role: PI of subaward; Sandia PI: Jerilyn Timlin) "Expanding the validation data for open-source analytic tools: Signatures of genome editing" $60,000 total direct costs to BAW (10/01/18-09/30/19)

NIH/NIAID Award R21-R33 AI101504 (role: PI) "Neuronal-specific cargo-delivery platforms as post-exposure botulism therapies" $1,167,065 total direct costs (06/01/12-5/31/17, NCE to 5/31/19)

NIH/NIAID Award R21 AI118434 (role: PI) "Bacterial toxin-inspired drug delivery (BTIDD) platforms against latent HIV" $418,287 total costs (04/14/15-03/31/17, NCE to 3/31/18)

DARPA-Department of Army #W911NF-14-1-0311 (role: PI) "Multi-omics approach to identify metabolic biomarkers of vaginal microbiome health and disease" $218,249 total costs (06/30/14-06/29/16, NCE to 12/29/16)

NIH/NIGMS Award R01 GM107533 (Role: Co-I, PI: Raven Huang) "Structure and Function of the Elongator Complex" $25,000 total direct costs to BA Wilson (9/30/14-7/31/15)

NIH/NIAID Award N01 AI70013-4-0-1 (role: PI on Subcontract; PI: Dorothy Patton), "Dynamics of normal pigtailed macaque vaginal and intestinal microbiota" $143,380 total direct costs of subcontract to BAW (02/01/11-12/01/12)

NIH/NIAID Award R56 AI085096 (role: Co-PI, Co-PI: Bryan White) "The human vaginal microbiome and bacterial vaginosis" $659,510 total direct costs (09/07/10-09/06/12, no-cost extension to 09/06/13)

NSF/Human Origins HOMINID Award #09-35347 (role: Co-I, PI: Steven Leigh) "Microbes, diet and hominin evolution: Comparative and metagenomic approaches" $2,449,427 total direct costs (9/01/09-8/31/14)

John D. and Catherine T. MacArthur Foundation Award #08-85854-000-GSS (role: Co-PI, PI: Colin Flint) "Security Policy Formation: Bringing Scientific Expertise and Dialogue to Policymakers" $450,000 total direct costs (01/01/09-12/31/10)

NSF Award #BCS-0820709 (role: Co-PI, Co-PI: Rebecca Stumpf), "Comparative Primate Vaginal Microbial Ecology" $299,998 total direct costs (8/15/08 – 7/31/11, no-cost extension to 7/31/14)

NIH/NIAID Award R03 AI070245 (role: Co-I, PI: Gary Olsen), "Optimization of rRNA-based microbial analyses" $158,500 total direct costs (12/07-11/09)

NIH/NIAID Award U01 AI075502 (role: PI), "Targeted Antitoxin Delivery Platforms as Post-exposure Therapies for Botulism" $1,125,864 total direct costs (7/1/07 – 6/30/11, no-cost extension to 6/30/12)

NIH/NIAID Award T35 RR020292 (role: Co-I, Co-PI: Lois Hoyer), "Summer Research Training in Infectious Diseases" $239,290 total direct costs (09/25/05 - 07/31/10)

NIH/NIAID Award R01 AI038396 (role: PI), "*Pasteurella multocida* Toxin: Structure and Activity" $1,125,000 total direct costs (3/1/04 – 2/28/11)

NIH/NIAID Award U54 AI057153 (role: Co-PI, PI: Susan West), "Development of ETA/BoNT Chimeras for Vaccine Use" $50,000 total direct costs (3/1/04-2/28/05)

Roy J. Carver Charitable Trust Award (role: PI), "Establishment of a Center for Metabolomics Research at UIUC" $1,107,620 total direct costs (10/31/03-10/31/05)

NIH/NIAID Award U54 AI057153 (role: PI on subcontract, PI: Joseph Barbieri), "Vaccines and Therapies against Botulism" $852,330 total direct costs of subcontract to BAW (9/03-2/09)

NIH/NIAID Award U54 AI057153 (role: Co-PI on subcontract, PI: Paul Bohn), "Nanofluidic Devices for Recognition of Neurotoxins" $465,126 total direct costs (9/03-3/05)

NIH/NIAID Award R13 AI066868 (role: Co-PI, Co-PI: Robert Munson, Susan West, Carmel Rufolo), "International Pasteurellaceae 2005 Meeting" $19,800 total direct costs (10/05)

ASM Conferences Award (role: Co-PI, Co-PIs: Susan West, Carmel Rufolo, Robert Munson), "International Pasteurellaceae 2005 Meeting" $10,000 total direct costs (10/05)

USDA Conferences Award (role: Co-PI, Co-PIs: Susan West, Carmel Rufolo, Robert Munson), "International Pasteurellaceae 2005 Meeting" $10,000 total direct costs (10/05)

USDA/NRI Grant #0002295 (role: PI), "*Pasteurella multocida*-Related Toxins: Structure and Biochemical Activity" $280,000 total direct costs (10/99–9/01, no cost extension to 9/02)

NIH/NIAID Award R29 AI038936 (role: PI), "*Pasteurella multocida* Toxin: Structure and Activity" $350,000 total direct costs (8/96–7/01, no cost extension to 7/02)

USDA/NRI Grant (role: PI), "*Pasteurella multocida* Toxin: Structure and Biochemical Activity" $230,000 total direct costs (9/96–8/99) [declined to accept NIH award]

NIH/NIAID Award R01 (role: Co-I, PI: Neal S. Rote), "Antiphospholipid Antibodies and Disorders of Pregnancy" $652,253 total direct costs (4/97–3/01)

University of Illinois at Urbana-Champaign:

Hebrew University of Jerusalem and University of Illinois Joint Research and Innovation Seed Grants Program (role: Illinois PI; HUJI Co-PI: Asaf Levy), "Genome-wide discovery and characterization of novel microbial toxins for environmental and biomedical applications" $50,000 total direct costs (11/20-11/22)

Illinois Interdisciplinary Health Sciences Institute Gnotobiotic Seed Grant (role: Co-I; PI: Joseph Irudayaraj), "Understanding host-microbe interaction of a persistent environmental toxicant - Perfluoroalkyl substances" $5,000 total direct costs (7/07/20-7/06/21)

Campus Research Board Grant RB#18122 – seed grant for new project (role: PI), "Functional characterization of modular bacterial proteins with cytotoxic necrotizing factor (CNF) toxin-like effector domains" $27,500 total direct costs (3/05/18-9/30/19)

Office of Vice Chancellor for Research Special Programs: Sesquicentennial Symposium Proposal #4967 (role: Co-PI, PI: Rebecca Smith), "Uniting Infection Biology for One Health" $17,810 total direct costs (6/17-6/18)

Campus Research Board Grant RB#14055 (role: PI), "Optimization of neuronal-specific cargo-delivery platforms as post-exposure botulism therapies" $29,973 total direct costs (12/01/13-6/30/15)

Office of Vice Chancellor for Research and School of Molecular and Cellular Biology (role: PI), "Establishment of a Center for Metabolomics Research at UIUC" $150,000 (from OVCR) + $200,000 (from SMCB) total direct costs (10/31/03-10/31/05)

Office of Vice Chancellor for Research (role: PI), "Infection Biology Initiative" $10,000 (1/06-12/07)

Campus Research Board Grant #05244 (role: PI), "Surveying the Microbial and Immunologic Content of the Human Vaginal Ecosystem" $17,220 total direct costs (6/05-5/06)

Carle-UIUC Translational Research Program (role: PI), "Evolutionary Medicine and Women's Vaginal Health" $75,000 total direct costs (10/06-12/07)

Earth & Society Initiative on Emerging Diseases and Ecosystem Health, $4,500 (6/06-8/06)

UIUC Campus Honors Program, $500 (6/06), $600 (6/07), $2,000 (6/11)

ASM Undergraduate Research: $600 (6/02); $900 (6/05); $1,000 (6/10); $4,000 (6/12)

Minority Undergraduate Research, $1,000 (6/03)

Howard Hughes Undergraduate Research, $1,500 (6/03); $1,500 (6/04)

Zygmunt Undergraduate Research, $2,500 (6/07), $500 (6/21)

Campus Research Board Equipment Grant (role: Co-I, PI: Jeffrey Gardner), "Studies on Recombination, DNA Damage, Dermonecrotic Toxins, Integrin Function and Chromosome Structure" $20,000 total direct costs (10/00)

Minority Undergraduate Research, $1,000 (10/00); $2,000 (6/01); $2,000 (6/02)

School of MCB Undergraduate Research: $500 (6/13), $500 (6/14), $500 (6/15), $500 (6/17), $500 (6/18), $500 (6/19)

Ohio State:

American Cancer Society, Ohio Division (role: PI), "Selective Inhibition of Raf-dependent Transformation: Small Peptide Substrates of Raf Kinase as Templates for Inhibitor Design" $15,000 total direct costs (11/96–10/97)

Ohio Research Challenge Grant (role: PI), "*Pasteurella multocida* Toxin: Structure and Function", $25,000 total direct costs (2/95–6/96)

Ohio Research Challenge Grant (role: Co-I, PI: Mengfei Ho), "Phosphorylation of Protein Phosphatase Regulatory Subunit by Raf Kinase" $20,000 total direct costs (7/97–6/98)

Ohio Board of Regents Instrumentation Grant (role: Co-I, PI: Ming-Daw Tsai/OSU), WSU, "Ohio High Field NMR Consortium," $10,000 total direct costs to BAW (7/97-6/98)

Wright State University:

Ohio Research Initiation Grant (role: PI), "Defining the Receptor-Binding Domain of *Pasteurella multocida* toxin", $7,500 total direct costs (2/95–6/96)

Biomedical Research Grant (role: PI), "Development of an Assay System for Determining the Functional Domains of *Pasteurella multocida* toxin", $7,500 total direct costs (2/95–6/96)

International:

Schlumberger Foundation Inc., Postdoctoral Fellowship (role: Mentor, recipient: Dr. Elizabeth A. Amosun, from University of Ibadan, Nigeria) "Faculty of the Future" $48,000 annual direct costs ($5,000 to BAW) (08/14/15-08/13/16)

Industrial:

Colgate-Palmolive Undergraduate Research, $1,000 (10/03)

Texas A&M Research Foundation (role: PI), "GFP-BoNT/A-HC protein" $1,000 (6/11)

Calbiochem-Novabiochem (role: PI), "Recombinant *Pasteurella multocida* Toxin" $4,500 (11/00); $4,500 (11/02)

Colgate-Palmolive Undergraduate Research, $1,000 (11/99); $1,000 (10/00); $1,000 (10/02)

New England BioLabs (role: PI), "*E. coli* Clone of Raf Kinase Catalytic Domain" $1,000 (6/97)

Calbiochem-Novabiochem (role: PI), "Recombinant *Pasteurella multocida* Toxin" $2,400 (4/97)

GRANTS FOR SUPPORT OF TEACHING ACTIVITIES

2023 Sandia-Illinois-CINT Award (role: Program Director) Sandia National Laboratories Contract (pending), $20,000 for "FY23 Center for Integrative Nanotechnologies Undergraduate or Graduate Research Initiative Program (CINTernship)" to support students for 8-week summer research internship experience performed at Sandia National Laboratories under joint supervision and mentoring of CINT-affiliated scientists and UIUC faculty preceptors.

2022 Sandia-Illinois-CINT Award (role: Program Director) Sandia National Laboratories Contract#2270722, $10,000 for "FY22 Center for Integrative Nanotechnologies Undergraduate or Graduate Research Initiative Program (CINTernship)" to support students for 8-week summer research internship experience performed at Sandia National Laboratories under joint supervision and mentoring of CINT-affiliated scientists and UIUC faculty preceptors.

2021 Sandia-Illinois-CINT Award#104986 (role: Program Director) Sandia National Laboratories Contract#2270722, $30,000 for "FY21 Center for Integrative Nanotechnologies Undergraduate or Graduate Research Initiative Program (CINTernship)" to support students for 8-week summer research internship experience performed at Sandia National Laboratories under joint supervision and mentoring of CINT-affiliated scientists and UIUC faculty preceptors.

2017 Provost's Faculty Retreat Grant – $4,000 grant to "Introduce team-based projects with peer-evaluation to enhance engagement in a large classroom" in MCB 436 for Fall semester 2017.

2016 MCB Innovative Teaching and Learning Grant – 25% TA and technology resource support for enhancing student engagement by implementing active learning instructional elements in MCB 436 and MCB 426 for Fall semester 2016.

2001 LAS Teaching Support Grant – $3,000 grant to procure online state-of-the-art E-Textbook license from ASM Press for course: Biology of Bacterial Pathogens MCBIO 326.

FELLOWSHIPS, AWARDS AND HONORS

PLoS ONE Editorial Board 2023 Long Service Award

AAUW-CU 2018 Marion Talbot Award for Outstanding Service Contribution to the Mission of Advancing Equity for Women and Girls, American Association of University Women Champaign-Urbana Branch

UIUC 2018 School of Molecular and Cellular Biology Teaching Excellence Award

UIUC 2017 Larine Y. Cowan "Make a Difference" Award for Leadership in Diversity
URL: http://mcb.illinois.edu/video/brenda_wilson_leadership_in_diversity_award.mp4

YWCA 2015 Leadership in Science, Technology, Engineering and Mathematics (STEM) Award

UIUC Teachers Ranked as Excellent by Their Students (FA03, FA04, FA06, FA07, FA08, FA09, FA10, FA11, FA12, FA14, FA15, FA16, FA17)

ASM Recognition for Outstanding Service to the International Board of the American Society for Microbiology (2011)

Invited Participant/Panel Discussant & UIUC Representative, FBI Conference (co-sponsored by U.S. Department of State, CDC and AAAS) on "Synthetic Biology: Building Bridges around Building Genomes" San Francisco, California (8/09)

Invited Guest Professor, Fujian Agriculture & Forestry University, Fuzhou, P. R. China (7/09)

Invited Guest Professor, Zhongshan Medical University, Guangzhou, P. R. China (6/09)

Invited Guest Professor, Southern Medical University, Guangzhou, P. R. China (6/09)

Opening Address Speaker, Schauinsland International Toxin Conference, Freiburg, Germany, (2/08)

Invited Member of UIUC Delegation to GEM^4 Conference at MIT, UIUC delegation to promote international interactions with a Global Enterprises for Micro-Mechanics and Molecular Medicine (GEM^4), Massachusetts Institute of Technology, Boston, Massachusetts (10/05)

Invited Member of UIUC Delegation to Singapore, UIUC delegation to promote relations with the National University of Singapore, Nanyang Technical University, and the Research Institutes under the Agency for Science Technology and Research, A*Star and the Singapore Economic Development Board, Singapore (6/04), (1/05)

Invited Participant/UIUC Representative, Stony Brook University Forum on Global Security, Conference on "Preparing Experts to Combat Bioterrorism: Bridging the Science-Policy Gap" Stony Brook Manhattan, New York (11/03)

Invited Guest Professor, Institut für Experimentelle und Klinische Pharmakologie und Toxikologie, Albert-Ludwigs-Universität Freiburg, Germany (11/02); (06/03-08/03); (11/03); (03/08); (07/08); (04/09); (06/11); (06/13)

George Lynn Cross Distinguished Lecturer, University of Oklahoma at Norman (01/03)

Opening Keynote Speaker, Ninth Midwest Microbial Pathogenesis Meeting, Indiana (9/02)

Lilly Travel Grant Award, Seventh Symposium of the Protein Society, San Diego (7/93)

NRSA/NIAID NIH Postdoctoral Fellowship, Harvard Medical School, Boston (8/90–7/93)

Postdoctoral Fellowship, Harvard Medical School, Boston (1/89–7/90)

Ernest M. Marks Achievement Award in Chemistry, Johns Hopkins University, Baltimore (5/88)

AAUW Doctoral Fellowship, Johns Hopkins University, Baltimore (7/87–6/88)

Doctoral Fellowship, Johns Hopkins University, Baltimore (9/83–11/88)

DAAD Fellowship, Ludwig-Maximilians Universität München, Germany (10/81–8/82)

German Scholarship Prize, Barnard College, New York (5/80)

Barnard College Scholarship (4-years), Barnard College, New York (9/77–5/81)

NSF Scholarship, University of Georgia, Athens (6/76–7/76)

GRANT & AWARD REVIEWER

USDA/NRI, Ad Hoc Grant Reviewer: 1997, 1998, 1999, 2000, 2002, 2004, 2005, 2006

UIUC Research Board, Ad Hoc Grant Reviewer: 1999-now

NSF/U.S. Department of State, Cooperative Grants Program, Ad Hoc Grant Reviewer: 2001

USDA/NRI Animal Health & Well-Being Study Panel B, Member: 2001

NIH Special Emphasis Study Sections, Member:

Bacteriology & Mycology: BM2, 2001; *BM1/BM2*, 2002; *BM2,* 2003

Vaccines: VACC 10, VACC 01, VACC 11, VACC12, 2002; *VACC02, VACC 11,* 2003; *VATID-2&3*, 2004; *BFPVV*, 2004

Council Anthrax Program Projects: ZRG1 EVR40M, 2003

Vaccines against Microbial Diseases: VMD-01, 2004; *MBC-1*, 2004; *BM-1&2 IDM-F*, 2004

Botulinum Neurotoxin Contract Review (Chair), 2004

Challenge Grants: Biodefense Product Development Council: *ZAI1,* 2005; *ZAI1-LR-M-M1*, 2006; *ZRG1-IDM-C, IMM-E*, 2009; *RC4*, 2010

Non-Antibiotic Selectable Markers for Biodefense: ZAI1-MH-M-M1, 2007

Cooperative Research into Therapeutics and Diagnostics for Category B Bacteria, Viruses and Parasites: ZAI1-MH-M-M2, 2007

Cooperative Research for Biodefense: ZAI1-MH-M-M2, 2007

Cooperative Research Partnerships for Biodefense and Emerging Infectious Diseases – Immunotherapeutics: ZAI1-BLG-M(J2)1, 2008

DMID Antimicrobials & Antitoxins: C1, C4 (Chair), 2010

Partnerships for Biodefense: *ZAI1-LG-M-J3,* 2010; *R01*, 2011, 2012

Microbiome Study Section: ZRG1-IDM-M(50) 2009

Post-menopausal Symptoms and Causes – Microbiome: *ZAG1-ZIJ-5(06),* 2012; *MsFLASH ZAG1-ZIJ-3-M1*, 2014

International Collaborations in Infectious Diseases: *ICIDR U01 & U19* (Co-Chair), 2014

R15 Drug Discovery and Molecular Pharmacology: Bacterial pathogenesis and host interactions: ZRG1-IDM-R (02), 2015

R15 Bioengineering Sciences and Technologies – Drug Delivery, Bacteria and Signal Transduction: ZRG1 BST-F, 2015; BST-W(80)A, 2016

NHLBI SBIR Phase I – Novel Methods for Protein Delivery: Topic 91 – therapeutic delivery of ADP-ribosylarginine hydrolase ZHL1 CCT-X(C1)-1, 2015; *Phase II*, 2017

Bacterial Pathogenesis (BACP): 2015, 2016

Topics in Bacterial Pathogenesis: ZRG1-IDM-B(81) 2017

In vitro Assessments of Antimicrobial Activity (IVAAA), NIH/NIAID Contracts: ZAI1-AWA-M-C1, ZAI1-SM-M-C2, ZAI1-AWA-M-C2, ZAI1-SM-M-C1, 2018 (Co-Chair)

NIH-CSR Social Sciences International, Inc. "Anonymization Project": Program Evaluation of NIH Peer Review Process: The Role of Anonymization, R01 Expert Reviewer, 2018

NIH/NIA R03 GEMSSTAR Aging Special Emphasis Panel: 2020/05 ZAG1ZIJ-3(M1), 2020

NIH/NIGMS Intramural PRAT (Postdoctoral Research Associate Training) Fellowships: ZGM1 TWD-V (PR), 2022

NIH/NIAID Special Emphasis Panel on Clostridioides difficile Infection (U19): ZAI1-MFH-M-J1, 2022

NIH/NIAID Special Emphasis Panel on Lyme Disease (R01): ZAI1-MFH-M-M1, 2023 (Chair)

NIH Study Sections, Standing Member*:*

Great Lakes Region V Regional Center for Excellence in Biodefense and Emerging Infectious Diseases (GLRCE), Internal Scientific Advisory Committee & Executive Board: 2002-2013

Bacteriology & Mycology 1 (*BM1):* 2003-2004

Host Interaction with Bacterial Pathogens (HIBP): 2004-2007

Microbiology and Infectious Diseases Research (MID-B): 2008-2014

Children's Research Center of Michigan: Ad Hoc Grant Reviewer: 2002

U.S. Army Medical Research and Material Command (USAMRMC), Ad Hoc Grant Reviewer: 2002-2011

NSF/U.S. Civilian Research & Development Foundation: Ad Hoc Grant Reviewer: 2007

DHS/National Biodefense Analysis and Countermeasures Center: Ad Hoc Grant Reviewer: 2007

ASM International Morrison Rogosa Award Review Committee: Member: 2006-2012

U.S. Defense Threat Reduction Agency - Biological Therapeutics: Grant Panel Member: 2007-2011

United Kingdom Engineering & Physical Sciences Research Council: Ad Hoc Grant Reviewer: 2009

IBEST Pilot Grant Program - University of Idaho: Ad Hoc Grant Reviewer: 2010

Kentucky Science & Engineering Foundation: Ad Hoc Grant Reviewer: 2011

Mayo-Illinois Health Alliance – Microbiome Program Research Projects and Clinical Trials Grants, Panel Reviewer: 2012, 2013

Italian Ministry of Health – Clinical and Biomedical Research: International Grant Reviewer: 2013, 2014

United Kingdom Medical Research Council: International Grant Reviewer: 2013

University of Kansas Medical Center: External Grant Reviewer: 2014

Cluster of Excellence in Inflammation at Interfaces, Christian-Albrechts-Universität zu Kiel, Germany: International Grant Reviewer: 2014

Biotechnology and Biological Sciences Research Council, United Kingdom: International Grant Reviewer: 2015, 2016

Gravitation Consortium Program Projects, Netherlands Organization for Scientific Research, Ministry of Education, Culture and Science: International Grant Reviewer: 2016

Canada Foundation for Innovation: John R. Evans Leaders Fund: International Grant Reviewer: 2016

Wellbeing of Women Charitable Organization: British Clinical Research Training Fellowship, International Grant Reviewer: 2017

Kansas State University IDeA Grants: K-INBRE Bridging Grants External Reviewer: 2018

Centro de Investigaçao Interdisciplinar em Sanidade Animal, University of Lisbon, Portugal: Project CONT/INOV Reviewer: 2020

Agence Nationale de la Recherche (ANR), France, "CE35 – Maladies infectieuses et environnement" International Grant Reviewer: 2021

German-Israeli Foundation for Scientific Research & Development, Grant Proposal Reviewer: 2022

Hebrew University of Jerusalem and University of Illinois Joint Research and Innovation Seed Grants program, Discovery Partners Institute, Grant Proposal Reviewer: 2022

JOURNAL EDITORIAL BOARD MEMBERSHIP

Infection and Immunity, Editorial Board Member, 1998-now

Clinical Medicine Insights: Ear, Nose and Throat, Editorial Board Member, 2007-2008; Associate Editor, 2009-2010; Editor-in-Chief, 2010-2019

Microbiology Insights, Editor-in-Chief, 2018-now

Archives of Clinical Microbiology, Associate Editor, 2009-now

ISRN Toxicology, Editorial Board Member, 2011-now

Microbial Ecology, Associate Editor, 2012-now

Microbiome Science and Medicine, Editor-in-Chief, 2012-2016

Journal of Toxins, Editorial Board Member, 2012-now

European Journal of Toxicological Sciences, Editorial Board Member, 2012-now

Advances in Biology – Microbiology Section, Editorial Board Member, 2013-2017

American Journal of Bioterrorism, Biosecurity and Biodefense, Editorial Board Member, 2014-now

PLoS ONE, Editorial Board Member, 2014-now; Academic Editor, 2015-now

JOURNAL & BOOK AD HOC REVIEWER

Journals:

Infection and Immunity, Molecular Microbiology, *Cellular Microbiology, Proceedings of the National Academy of Science*, *Journal of Bacteriology, Journal of Clinical Microbiology, Acta Tropica, Biotechnology Progress*, *Protein Science, Biochemistry, Journal of Experimental Biology and Medicine, Eukaryotic Cell, NeuroSignals, BMC Biochemistry, Nature Structural and Molecular Biology, Microbial Ecology, Journal of Veterinary Diagnostic Investigation, Journal of Leukocyte Biology, Science and Engineering Ethics, Cell Biology and Toxicology, Journal of Biological Chemistry, Journal of Medical Microbiology, Journal of Applied and Environmental Microbiology, The ISME Journal, Clinical and Vaccine Immunology, Journal of the American Chemical Society, African Journal of Microbiology Research, FEBS Journal, Frontiers in Microbiology, PLoS ONE, African Journal of Agricultural Research, PLoS Pathogens, Nanomedicine, Science Translational Medicine, International Journal of Molecular Sciences, Vaccine, Nature Chemical Biology, BMC Veterinary Research, Toxins, Journal of Toxicology, Journal of Toxins, ISRN Toxicology, European Journal of Toxicological Sciences, International Journal of Molecular Sciences, Veterinary Research Communications, Journal of Visualized Experiments, Annual Review & Research in Biology, Letters in Organic Chemistry, Advances in Biology, Journal of Infectious Diseases, Molecular Biology Reports, mBio, Journal of Molecular Microbiology and Biotechnology, International Journal of Nanomedicine, The Lancet Infectious Diseases, Veterinary Microbiology, International Journal of Molecular Sciences, BMC Genomics, Nature Communications, Computational and Structural Biotechnology Journal, Monoclonal Antibodies in Immunodiagnosis & Immunotherapy, Journal of Genital Systems & Disorders, Cellular and Molecular Biology Letters, Molecular Medicine Reports, SciTechnol, Biofouling, Microbiome, Molecular and Cellular Biochemistry, Cytokine, BMC Gastroenterology, BMC Infectious Diseases, Molecular Pharmacology, Case Reports in Infectious Diseases, Gene Reports, Molecular Genetics and Genomics, Current Proteomics, Life Science Alliance, Vector-*

Borne and Zoonotic Diseases, Microbial Genomics, International Journal of Veterinary Science & Technology, Aging, Protein & Peptide Letters, Journal of Microbiological Methods, Science Advances, Royal Society of Chemistry Medicinal Chemistry, Frontiers in Cellular and Infection Microbiology, Frontiers in Medicine, Biomedical Reports, Vaccines, Current Topics in Medicinal Chemistry, Journal of Cellular and Molecular Medicine, Cell Reports, iScience, Molecules

Books:

ASM News, *ASM Publishing, Benjamin/Cummings Publishing*, *Addison Wesley Longman Publishing, Kluwer Publishing, Taylor & Francis Publishing, Springer Publishing, Elsevier, iConcept Research & Biology of Cancer, Cambridge University Press, CRC Press, Island Press*

MEETINGS & WORKSHOPS ORGANIZER/CONVENER

Co-Organizer, Midwest Prokaryotic Molecular Genetics and Physiology Meetings (2000-2002) – Convener: University of Illinois, Urbana, Illinois (9/00)

Co-Organizer & Convener, Eighth Annual Midwest Microbial Pathogenesis Meeting, University of Illinois, Urbana, Illinois (10/01)

Co-Organizer & Convener, Annual Conference on New and Re-Emerging Infectious Diseases, University of Illinois, Urbana, Illinois (4/02)

Co-Organizer, Midwest Prokaryotic Molecular Genetics and Physiology Meetings (2003-2005) – Convener: University of Illinois, Urbana, Illinois. (4/3/04)

Co-Organizer & Convener, Annual Conference on New and Re-Emerging Infectious Diseases, University of Illinois, Urbana, Illinois (4/03) (4/04) (4/05) (4/06) (4/07) (4/08) (4/09) (4/11) (4/12)

Co-Organizer, Center for Nanoscale Science and Technology Workshop on "Nanotechnology Industry" University of Illinois, Urbana, Illinois (05/03)

Co-Organizer & Session Chair, Center for Nanoscale Science and Technology Workshop on "Nanotechnology in Homeland Security" University of Illinois, Urbana, Illinois (05/04)

Organizer & Convener, ASM Workshop on "Microbiological Application of RNAi Technologies" 104th ASM General Meeting, New Orleans, Louisiana (5/04)

Co-Organizer & Convener, BioDefense 2004 – Boston, Waltham, Massachusetts (11/8-9/04)

Organizer & Convener, ASM Workshop on "Microbiological Applications of RNAi Technologies" 105th ASM General Meeting, Atlanta, Georgia (6/05)

Co-Organizer & Convener, International *Pasteurellaceae* Society Conference, Hawai'i, U.S.A. (10/05)

Co-Organizer, Infocast Conference on "Applications of Nanobiology to Biodefense: Diagnostics, Detection, Therapeutics, and Biodefense Immunology" Rockville, Maryland (11/05)

Organizer & Convener, American Society for Microbiology, 2006 General Meeting, Orlando, Florida, Division B/D Symposium on "Emerging Models in Toxin-Host Interactions" (5/06)

Co-Organizer & Convener, American Society for Microbiology, 2008 General Meeting, Boston, Massachusetts, Division B Symposium on "Mechanisms of Complex Polymicrobial Disease: Walking a Fine Line between Symbiosis and Pathophysiology" (6/08)

Convener, 2010 US-NSF-NSC Summer Institute on Biosensing-Bioactuation, UIUC, Session Chair for "Nanotoxicology and Nanomaterials Characterization", "Advances in Cytomics-Cellular Measurement Technologies", and "Bacterial Light Scatter as an Opportunity for Development of Biodefense Systems" (7/10)

Co-Organizer & Convener, ASM Biodefense and Emerging Diseases Research Meeting – 2013, Session Moderator for "Potential strategies for curing BoNT intoxication", Washington, D.C. (2/13)

Convener, ETOX16 2013 European Workshop on Bacterial Protein Toxins – Session Chair for "Toxins and signaling pathways", Freiburg, Germany (6/13)

Convener, 7th Annual Botulinum Research Symposium – 2013, Session III Chair, University of Massachusetts, Dartmouth, Massachusetts (8/13)

Organizer, Convener & Speaker, Memorial Symposium – "Microbial Diversity: A Tribute to the Life and Work of Abigail A. Salyers" University of Illinois, Urbana, Illinois (11/14)

Convener, ETOX17 2015 European Workshop on Bacterial Protein Toxins – Session Chair for "Toxins: pathogenicity and immunity", Braga, Portugal (6/15)

Organizer & Convener, ASM Milestones in Microbiology Plaque Designation Ceremony, University of Illinois at Urbana-Champaign, Illinois (10/15)

Organizer & Convener, 23rd Annual Midwest Microbial Pathogenesis Conference (MMPC), University of Illinois at Urbana-Champaign, Illinois (9/16)

Facilitator & Presenter, 1st Asian International HHMI & NSF-sponsored Mobile Summer Institute on Undergraduate Education, week-long training workshop for 43 ShanghaiTech University faculty on "Active-Learning and Scientific Teaching" (7/18)

Organizer, Convener & Session Moderator, Nalbandov Symposium: “Outpacing Antimicrobial Resistance,” University of Illinois at Urbana-Champaign, Illinois (9/18)

Organizer, Convener & Moderator, ASM Microbe 2019, American Society for Microbiology, San Francisco, California, Annual Meeting Division B Symposium on “Precision Editing of the Microbiome to Alter Health and Disease” (6/19)

Organizer, Facilitator & Presenter, Asian International HHMI & NSF-sponsored Mobile Summer Institute on Undergraduate Education, week-long training workshop for ShanghaiTech University faculty on "Active-Learning and Scientific Teaching" (7/19)

Convener & Sessions II and V Chair, 14th Annual Botulinum Research Symposium – 2020, University of Massachusetts, Dartmouth, Massachusetts (8/20)

Co-organizer, Co-convener & Moderator, Inaugural Sandia-UIUC Academic Alliance Partnership Workshop-Seminar Series, 2-day virtual workshop and discussions on “Resilient Energy Systems” (1/ 20-21/ 21)

Co-organizer, Co-convener & Moderator, Sandia-UIUC Academic Alliance Partnership Workshop-Seminar Series, 4 x 1-day virtual workshops and discussions on “Climate Security” (9/2/21), “Water Security” (10/21/21), “Energy Storage and Security” (11/18/21), and “Climate Modeling” (2/10/22)

Participant, Panel Discussant & UIUC Representative, Department of Homeland Security, Sandia National Laboratories, Health-Food-Agriculture-Resiliency and One Health, Consortium-Building Workshops, at Purdue University (10/20/22-10/21/22), at UIUC (12/08/22), via Zoom (12/09/22)

Organizer & Convener, UIUC Campus-wide Health-Food-Agriculture-Resiliency and One Health, Consortium-Building Focus-Groups and Idea-Exchange Discussions, weekly (01/16-now)

INVITED SEMINARS, MEETING PRESENTATIONS, AND LECTURES (since 9/93)

Seminars:

Institute of Biological Chemistry, Academia Sinica, National Taiwan University, Taipei, Taiwan (12/93)

Department of Biochemistry, Gettysburg College, Gettysburg, Pennsylvania (4/94)

Department of Molecular Genetics, Biochemistry & Microbiology, University of Cincinnati, Ohio (2/97)

Center for Biologicals Evaluation and Research, Food and Drug Administration, Washington, DC (5/97)

Department of Microbiology, Albert Chandler Medical Center, University of Kentucky, Lexington, Kentucky (8/97)

Department of Microbiology, University of Illinois, Urbana, Illinois (3/99)

Department of Microbiology-Immunology, Northwestern University Medical School, Chicago, Illinois (3/99)

Department of Microbiology & Immunology, College of Medicine, University of Illinois, Chicago, Illinois (4/99)

Department of Molecular Genetics & Microbiology, College of Medicine, University of Florida, Gainesville, Florida (5/99)

Department of Veterinary Pathobiology, College of Veterinary Medicine, University of Illinois, Urbana, Illinois (2/01)

Department of Microbiology & Immunology, University of Michigan Medical School, Ann Arbor, Michigan (5/01)

Department of Biology & Biochemistry, University of Houston, Houston, Texas (5/01)

Department of Pathobiological Sciences, University of Wisconsin, Madison, Wisconsin (6/01)

Department of Immunology & Microbiology, Wayne State University, Detroit, Michigan (2/02)

Department of Molecular Genetics & Biochemistry, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania (3/02)

Institüt für Experimentelle und Klinische Pharmakologie und Toxikologie, Albert-Ludwigs Universität Freiburg, Germany (11/02) (3/08) (7/08) (4/09) (6/11)

Department of Molecular Genetics & Microbiology, Center for Infectious Diseases, State University of New York at Stony Brook, New York (03/03)

Zentrum für Infektionsforschung, Universität Würzburg, Germany (6/03)

Department of Biological Sciences, Northern Illinois University, Dekalb, Illinois (2/04)

Department of Biological Sciences, University of Wisconsin - Parkside, Kenosha, Wisconsin (4/04)

School of Biological Sciences, Nanyang Technical University, Singapore (1/05)

Department of Microbiology, National University of Singapore, Singapore (1/05)

Department of Veterinary Pathobiology, College of Veterinary Medicine, University of Illinois, Urbana, Illinois (2/05)

Department of Biology, Indiana University – Bloomington, Indiana (5/05)

Bioinformatics Summit, Department of Computer Science, College of Engineering, University of Illinois, Urbana-Champaign, Illinois (3/06)

Department of Agricultural & Biological Engineering, College of Agricultural, Consumer and Environmental Sciences, University of Illinois, Urbana-Champaign, Illinois (4/06)

Department of Mechanical & Industrial Engineering, College of Engineering, University of Illinois, Urbana-Champaign, Illinois (4/06)

Department of Pharmacology & Physiology, University of Medicine and Dentistry of New Jersey, Newark, New Jersey (4/08) (3/11)

Department of Pathology, The Johns Hopkins University Medical Institutions, Baltimore, Maryland (5/08)

Department of Chemistry, The Johns Hopkins University, Baltimore, Maryland (10/08)

Department of Biology, Hope College, Holland, Michigan (1/09)

Laboratory of Biochemistry, National Heart, Lung and Blood Institute, Bethesda, Maryland (5/09)

School of Life Sciences, Fujian Agriculture and Forestry University, Jinshan, Fuzhou, Fujian Province, P. R. China (6/09)

Institute for Antibody Engineering, School of Biotechnology, Southern Medical University, Guangzhou, Guangdong Province, P. R. China (6/09)

School of Biotechnology, Zhongshan (Sun Yat-sen) Medical University, Guangzhou, Guangdong Province, P. R. China (6/09)

Infection Biology Working Group, University of Illinois at Urbana-Champaign, Urbana, Illinois (11/09)

Departments of Microbiology & Immunology and Center for Clinical and Translational Science, University of Illinois at Chicago, Chicago, Illinois (2/10)

Division of Biotechnology, Merz Pharmaceuticals GmbH, Frankfurt, Germany (6/11)

Department of Microbiology & Immunology, University of Rochester, Rochester, New York (2/12) (*student-invited speaker*)

Harris Graduate School of Public Policy, University of Chicago, Chicago, Illinois (2/12)

Department of Biology, Indiana University, Bloomington, Indiana (2/12)

Phi Delta Epsilon Pre-Med Fraternity Lecture Series, UIUC (3/12) (*student-invited speaker*)

Neuroscience Program Seminar Series, UIUC (4/12) (*student-invited speaker*)

Department of Immunology, Mayo Clinic, Rochester, Minnesota (10/12)

Department of Biology, Rensselaer Polytechnic Institute, Troy, New York (11/12)

Department of Biology, Bradley University, Peoria, Illinois (2/13) (*student-invited speaker*)

Department of Microbiology and Immunology, Cornell University, Ithaca, New York (2/13)

Department of Microbiology, Southern Illinois University, Carbondale, Illinois (9/13)

Department of Microbiology and Immunology, University of Kentucky, Lexington, Kentucky (3/14)

Department of Biological Sciences, Purdue University, West Lafayette, Indiana (4/15)

Department of Pathobiology, College of Veterinary Medicine, UIUC (4/17)

School of Biotechnology and Biomolecular Sciences, College of Science, University of New South Wales, Sydney, Australia (8/18)

Department of Plant Pathology and Microbiology, The Robert H. Smith Faculty of Agriculture, Food, and Environment, The Hebrew University of Jerusalem, Rehovot, Israel (9/20)

Innovation Grand Rounds, Carle Illinois College of Medicine, UIUC (5/21)

iGEM Team 2021, Indian Institute of Science Education and Research (IISER), virtual seminar, Tirupati, India (6/21) (*student-invited speaker*)

OSF Healthcare and University of Illinois College of Medicine, Continuing Medical Education for Illinois State Clinicians, virtual presentation (3/11/22)

Meetings and Symposia Presentations:

American Cancer Society Excalibur Meeting, Case Western Reserve University, Cleveland, Ohio (8/97)

Fourth Midwest Microbial Pathogenesis Meeting, University of Michigan, Ann Arbor, Michigan (10/97)

Ohio/Tennessee-Kentucky/Allegheny ASM Branch Meeting, Ohio State University, Columbus, Ohio (4/98)

Annual Southern Association of Agricultural Scientists Conference, Tennessee Technological University, Cookeville, Tennessee (2/99)

American Society for Microbiology, 2000 General Meeting, Division D Symposium on "Prokaryotic Modification of Eukaryotic Signal Transduction" Los Angeles, California (5/00)

Cold Spring Harbor Laboratory Meeting, Microbial Pathogenesis and Host Response, Cold Spring Harbor, New York (11/01)

American Society for Microbiology, 2002 General Meeting, Colloquium on “Novel Properties and Applications of Bacterial Toxins”, Salt Lake City, Utah (5/02)

Opening Keynote Speaker, Ninth Midwest Microbial Pathogenesis Meeting, University of Indiana, Indianapolis, Indiana (9/02)

BioDefense 2004 – Boston, Waltham, Massachusetts (11//04)

Great Lakes Regional Center of Excellence for Biodefense & Emerging Infectious Diseases, Annual Conference, Chicago, Illinois (12/04)

International *Pasteurellaceae* Society Conference, Hawai’i, U.S.A., "Interactions of *Pasteurella multocida* Toxin with Host Cells" (10/05)

Great Lakes Regional Center of Excellence for Biodefense & Emerging Infectious Diseases, Annual Conference, Hilton Head, South Carolina, "Novel Post-Exposure Anti-Toxin Therapeutics against Botulism" (12/05)

Fannie E. Rippel Foundation, "The Vaginal Microbial Ecosystem and Women’s Health" Basking Ridge, New Jersey (4/06)

6th Annual International Symposium on Understanding Complex Systems, Department of Physics, UIUC, "Biodefense and International Security" (5/06)

American Society for Microbiology, 2006 General Meeting, Division B/D Symposium on "Emerging Models in Toxin-Host Interactions" Orlando, Florida "Toxin interaction with host cells: the case of a multifunctional toxin" (5/06)

Fellows Symposium, Institute for Genomic Biology, UIUC, "Host-Microbes Systems" (2/07)

American Society for Microbiology Biodefense and Emerging Diseases Research Meeting, "Botulinum neurotoxin A: Novel post-exposure antitoxin therapeutics" Washington, D.C. (2/07)

Annual Meeting of the Great Lakes Regional Center for Biodefense and Emerging Infectious Diseases, "Robust, highly sensitive FRET-based assay to detect botulinum neurotoxin activity" Hilton Head, South Carolina (12/07)

Fellows Symposium, Institute for Genomic Biology, "The Vaginal Microbial Ecosystem and Women’s Health" UIUC, Illinois (2/08)

Opening Address, Schauinsland International Toxin Conference, Freiburg, Germany, "Downregulation of Gq-protein signaling by the mitogenic protein toxin from *Pasteurella multocida* (PMT) " (2/08)

Center for Science, Technology and Security Policy, American Association for the Advancement of Science, The DC Biosecurity Group, "Global health security: Overcoming the barriers among the public health, scientific and security communities" Washington, D.C. (5/08)

17th Annual Midwest Microbial Pathogenesis Conference, "Molecular structure, activity and consequences of bacterial dermonecrotic toxin modulation of host cell G-proteins" Washington University, St. Louis, Missouri (9/10)

ETOX15 2011 European Workshop on Bacterial Protein Toxins, "*Pasteurella multocida* toxin-mediated downregulation of G□q protein from detergent-resistant membranes" Oslo, Norway (6/11)

Symposium in Honor of Craig A. Townsend's 65th Birthday, "Post-exposure platforms for combating toxin-mediated diseases", Department of Chemistry, The Johns Hopkins University, Baltimore, Maryland (8/12)

6th Annual Botulinum Research Symposium – 2012, "Platforms for post-exposure antitoxins against botulism", University of Massachusetts, Dartmouth, Massachusetts (8/12)

ASM Biodefense and Emerging Diseases Research Meeting – 2013, Session Chair and Speaker, "Engineering BoNT-based inhibitor delivery platforms against botulism", Washington, D.C. (2/13)

7th Annual Botulinum Research Symposium – 2013, "Platforms for post-exposure antitoxins against botulism", University of Massachusetts, Dartmouth, Massachusetts (8/13)

Organizer, Convener & Speaker, Memorial Symposium: "Microbial Diversity – A Tribute to the Life and Work of Abigail Salyers", University of Illinois at Urbana-Champaign, Illinois (11/14)

Organizer & Speaker, 150-Year Celebration Symposium: "Uniting Infection Biology for One Health" Session on Dynamics of Antimicrobial Resistance, talk entitled: "Extensively drug resistant avian strain of *E. coli* Sanji – one step away from Superbug" University of Illinois at Urbana-Champaign, Illinois (4/18)

Discussion Facilitator, ASM Microbe 2019, American Society for Microbiology, San Francisco, California, "Meet the Experts: Fireside Chat with the Author, Brenda A. Wilson" (6/19)

Webinar Presenter (invited), The Scientist Magazine Webinar Series: "The Human Microbiome: Beyond the Gut", presentation on "The vaginal microbiome and reproductive health and disease" (9/19/19, >1400 registrants)

Presenter (invited), Lakeside Conference on Protein Toxins and Effectors, talk entitled: "Modular domain swapping and cargo delivery by G-protein-deamidating toxins" Online Conference hosted by Northwestern University (10/5/20 – 10/7/20, >300 registrants)

Webinar Keynote Vebleo Fellow Lecture Presenter (invited), Vebleo Conference on Material Science, Engineering and Technology, talk entitled: "Bacterial toxin-inspired drug delivery platforms (BTIDD): Modular domain swapping and cargo delivery by G-protein-deamidating toxins" Online International Conference hosted by Vebleo, Stockholm, Sweden (01/23-26/21), video lecture published on YouTube at: https://www.youtube.com/channel/UC_XXlkhk4fgCgfrClRHwrlw/videos

Co-Organizer, ACDI-Sandia Security Seminar Series, series of 6-8 speakers alternating between UIUC and Sandia National Laboratories, virtual (Fall 2021 - now)

Speaker & Session Moderator, Abigail Salyers Memorial Mini-Symposium, Marine Biology Laboratory, Woods Hole, Massachusetts (10/28/22-10/29/22)

Panelist (invited), Center for Digital Agriculture Conference, expert panel discussion on "How can digital agriculture help moderate the impacts of climate change?" hosted by CDA and NCSA, UIUC (03/08/23)

Organizer & Convener, Special Sandia-Illinois Partnership Leadership Series Seminar and Discussion Sessions, UIUC (03/22/23-03/23/23)

Invited Lectures:

Invited Guest Lecturer, *Current Topics in Advanced Pathogenic Mechanisms: Toxins,* (Course Director: Dr. Alison Weiss), Department of Molecular Genetics, Biochemistry, and Microbiology, University of Cincinnati, Ohio. Advanced graduate-level lecture on "Active-Site Studies and Enzyme Mechanism of Diphtheria Toxin" (2/97)

Invited Expert Panelist, *Anthrax Bioterrorism Forums*, 5 community-wide public forums in response to the anthrax bioterrorism events, sponsored by the UIUC ASM Student Chapter, Carle Hospital, McKinley Health Center, and the Chancellor's Office of the University of Illinois (10/01-11/01)

Invited Lecturer, *Anthrax Bioterrorism Lectures*, several public information sessions for community postal and mailroom workers, sponsored by University of Illinois Public Relations Office, US Postal Service, UIUC Secretariat, and various Champaign-Urbana area businesses (10/01-11/01)

Invited Guest Lecturer, *Microbial Pathogenesis* (Course Director: Dr. Tim Mietzner), Department of Molecular Genetics & Biochemistry, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania. Graduate-level lecture on "Bacterial Toxins" (3/02)

George Lynn Cross Distinguished Lecturer, Department of Botany & Microbiology, University of Oklahoma, Norman, Oklahoma, "*Pasteurella multocida* toxin interaction with host cells" (01/03)

Invited lecturer, *ASM National Meeting (Brown Bag Lunch Seminar Series)*, lecture on "Alternative Careers in Microbiology" (5/03)

Invited Guest Lecturer, *Molecular Biology & Bioinformatics III: Proteins* BIOS 455/655 (Course Director: Dr. Robert D. Barber), Department of Biological Sciences, University of Wisconsin – Parkside, Kenosha, Wisconsin. Upper undergraduate/graduate-level lecture on "Multifunctional Proteins" (4/04)

Invited Lecturer, Carle Forum *Clinical Research Lunch and Learn* Seminar Series (CME instruction), on "Vaginal Microbial Ecosystem and Bacterial Vaginosis" Carle Foundation Hospital, Urbana, Illinois (12/07)

Invited Guest Lecturer, *Immunology* (Course Director: Dr. Aaron Best), Department of Biology, Hope College, Holland, Michigan, undergraduate lecture on "Bacterial Toxins" (1/09)

Invited Lecturer, OLLI Course: The New Science of Genomic Biology and the Many Ways It Touches Your Life, on "The Vaginal Microbial Ecosystem and Women's Health" Osher Lifelong Learning Institute, Urbana, Illinois (2/09)

Invited Lecturer, on "Bacterial Toxins" School of Life Sciences, Fujian Agriculture and Forestry University, Jinshan, Fuzhou, Fujian, P. R. China (6/09)

Invited Lecturer, on "Bacterial Toxins" Institute for Antibody Engineering, School of Biotechnology, Southern Medical University, Guangzhou, Guangdong Province, P. R. China (6/09)

Invited Lecturer, on "Bacterial Toxin-Mediated Diseases: Where are the Post-Exposure Therapeutics? " teleconference seminar, part of the University of Texas Health Science Center Teleconference Network of Texas Infectious Disease Series, Continuing Medical Education Program (12/09)

Invited Oral Paper Presentation & Panel Discussant (Paper with Yuka Bannai, William P. Christensen, Julia L. E. Willett), on "Opening Pandora's box in the Middle East: the biothreat beneath the sands" New Horizons in International Security Conference, UIUC (4/10)

Invited Oral Paper Presentation & Panel Discussant (Paper with Jesse R. Grenz, Izabel Szary, Lucas D. Miller), on "Yes, we may have no bananas tomorrow: will current efforts to combat the banana wilt pandemic be enough? " New Horizons in International Security Conference, UIUC (4/10)

Invited Lecturer, Exploritas, on "Food Safety: the Case for Food Irradiation – Science Meets Law" and "Global Biosecurity" Elderhostel (Road Scholar) Adventures in Lifelong Learning Program, Urbana, Illinois (5/10)

Invited Lecturer, Institute for Genomic Biology-Beijing Genome Institute Evolutionary Genomics Summer Institute, 2-hr workshop on "Comparative and evolutionary perspectives on primate microbiomes", Urbana, Illinois (enrollment: 21; 5/13)

Invited Guest Lecturer, *University of Kentucky – Lexington, Mechanisms of Microbial Pathogenesis Course* (MI 710-02), 1.5-hr graduate-level lecture on "Microbe warfare: microbes living together…or not" (enrollment: ~15, 3/14)

Invited Lecturer, *University of Chicago, Harris Graduate School of Public Policy: Science, Technology and Policy Course* (Course Directors: Dr. James Sallee, Dr. Don Lamb), 2-hr graduate lecture on "Emerging (escalating)

issues in global biosecurity" (2/12) (4/13) (4/14) (enrollment: ~30); "Ebola 2014(-2015…): What have we learned and where do we go from here" (5/15) (enrollment: 35)

Invited Lecturer, *Associated Colleges of the Chicago Area (ACCA), consortium of 15 liberal arts colleges in the Chicago area, Biology Lecture Series* on "The Human Microbiome" – 2-hr lecture plus discussion on "Our Evolving Microbiomes" Benedictine University, Lisle, Illinois (11/07/17)

Invited Lecturer, *Cold Spring Harbor Laboratory, Graduate Student Seminar Series,* 1.5-hr lecture plus discussion on "The Vaginal Microbiome and Reproductive Health and Disease" Cold Spring Harbor Laboratory, New York (03/09/23 – attendees: 21)

PUBLICATIONS (IN PEER-REVIEWED JOURNALS)

Graduate work:

1. Townsend CA, Wilson BA "The role of nocardicin G in nocardicin A biosynthesis" *J Am Chem Soc* (1988) 110:3320-3321 [PMID: 9804844 – free text]
2. Wilson BA, Bantia S, Salituro GM, Reeve AM, Townsend CA "Cell-free biosynthesis of nocardicin A from nocardicin E and S-adenosylmethionine" *J Am Chem Soc* (1988) 110:8238-8239 [free text: doi: 10.1021/ja00232a047]

Postdoctoral work:

3. Wilson BA, Reich KA, Weinstein BR, Collier RJ "Active-site mutations of diphtheria toxin: Effects of replacing glutamic acid-148 with aspartic acid, glutamine or serine" *Biochem* (1990) 29(37):8643-8651 [PMID: 1980208]
4. Wilson BA, Blanke SR, Murphy JR, Pappenheimer AM, Collier RJ "Does diphtheria toxin have nuclease activity?" *Science* (1990) 250(4982):832-838 [PMID: 2237435 – free text]
5. Blanke SR, Huang K, Wilson BA, Papini E., Covacci A, Collier RJ "Active-site mutations of diphtheria toxin: Role of histidine-21 in nicotinamide adenine dinucleotide binding and ADP-ribosylation of elongation factor-2" *Biochem* (1994) 33(17):5155-5161 [PMID: 8142890]
6. Wilson BA, Blanke SR, Reich KA, Collier RJ "Active-site mutations of diphtheria toxin: Tryptophan-50 is a major determinant of NAD affinity" *J Biol Chem* (1994) 269(37):23296-23301 [PMID: 8083236]
7. Falnes PO, Choe S, Madshus IH, Wilson BA, Olsnes S "Inhibition of membrane translocation of diphtheria toxin A-fragment by internal disulfide bridges" *J Biol Chem* (1994) 269(11):8402-8407 [PMID: 8132565]
8. Marsischky GT, Wilson BA, Collier RJ "Role of glutamic acid 988 of human poly-ADP-ribose polymerase in polymer formation: Evidence for active-site similarities to the ADP-ribosylating toxins" *J Biol Chem* (1995) 270(7):3247-3254 [PMID: 7852410]

Work completed at Wright State University:

9. Ho M*, Wilson BA*, Katampe I "Adenine-arginine mimetics as bisubstrate analog inhibitors of cAMP-dependent protein kinase" *Bioorg Med Chem Lett* (1996) 6:899-902 (*co-senior authors) [free text: doi.org/10.1016/0960-894X(96)00140-0]
10. Xu B, Wilson BA, Lu L "Induction of human myeloblastic ML-1 cell G_1 arrest by suppression of K^+ channel activity" *Am J Physiol: Cell Physiol* 40 (1996) 271:C2037-C2044 [PMID: 8997206 – free text: doi: 10.1152/ajpcell.1996.271.6.C2037]
11. Wilson BA*, Zhu X, Ho M, Lu L "*Pasteurella multocida* toxin activates the inositol trisphosphate signaling pathway in *Xenopus* oocytes via G_q-coupled phospholipase C-β1" *J Biol Chem* (1997) 272(2):1268-1275 [PMID: 8995431 – free text]
12. Wilson BA*, Ponferrada VG, Vallance JE, Ho M "Localization of the intracellular activity domain of *Pasteurella multocida* toxin to the N terminus" *Infect Immun* (1999) 67(1):80-87 [PMCID: PMC96280]

13. Ho M, Wilson BA, Peterson JW "Bacterially expressed Raf-1 catalytic domain is highly associated with GroEL" *J Chin Chem Soc Taipei* (1999) 46:735-742 [free text: doi.org/10.1002/jccs.199900101]
14. Ferrell CM, Lauf PK, Wilson BA, Adragna NC "Lithium and protein kinase C modulators regulate swelling-activated K-Cl cotransport and reveal a complete phosphatidylinositol cycle in low K sheep erythrocytes" *J Membrane Biol* (2000) 177:81-93

Work completed at UIUC:

15. Seo B, Choy EW, Maudsley, Miller WE, Wilson BA, Luttrell LM "*Pasteurella multocida* toxin stimulates mitogen-activated protein kinase via G(q/11)-dependent transactivation of the epidermal growth factor receptor" *J Biol Chem* (2000) 275(3):2239-2245 [PMID: 10636931 – free text]
16. Sabri A, Pak E, Alcott SA, Wilson BA, Steinberg SF "Coupling function of endogenous α_1- and β-adrenergic receptors in mouse cardiomyocytes" *Circ Res* (2000) 86(10):1047-1053 [PMID: 10827134]
17. Wilson BA*, Aminova LR, Ponferrada VG, Ho M "Differential modulation and subsequent blockade of mitogenic signaling and cell cycle progression by *Pasteurella multocida* toxin" *Infect Immun* (2000) 68(8): 4531-4538 [PMCID: PMC98366]
18. Sagi SA, Seasholtz TM, Kobiashvili M, Wilson BA, Toksoz D, Brown JH "Physical and functional interactions of Gαq with Rho and its exchange factors" *J Biol Chem* (2001) 276(18):15445-15452 [PMCID: PMC1761691]
19. Sabri A, Wilson BA, Steinberg SF "Dual actions of the Gαq agonist *Pasteurella multocida* toxin to promote cardiomyocyte hypertrophy and enhance apoptosis susceptibility" *Circ Res* (2002) 90(8):850-857 [PMCID: PMC1866365]
20. Sleight SB, Wilson BA, Heimark DB, Larner J "$G_{q/11}$ is involved in insulin-stimulated inositol phosphoglycan putative mediator generation in rat liver membranes: co-localization of $G_{q/11}$ with the insulin receptor in membrane vesicles" *Biochem Biophys Res Comm* (2002) 295(2):561-569 [PMID: 12150987 – free text]
21. Baldwin MR, Tepp WH, Pier CL, Bradshaw M, Ho M, Wilson BA, Fritz RB, Johnson EA, Barbieri JT "Characterization of the antibody response to the receptor binding domain of botulinum neurotoxin serotypes A and E" *Infect Immun* (2005) 73(10):6998-7005 [PMCID: PMC1230911]
22. Obreztchikova M, Elouardighi H, Ho M, Wilson BA, Gertsberg Z, Steinberg SF "Distinct signaling functions for SHC isoforms in the heart" *J Biol Chem* (2006) 281(29):20197-20204 [PMCID: PMC1761690]
23. Aminova LR, Wilson BA* "Calcineurin-independent inhibition of 3T3-L1 adipogenesis by *Pasteurella multocida* toxin: Suppression of Notch1, stabilization of β-catenin and Pref1" *Cell Microbiol* (2007) 9(10): 2485-2496 [PMID: 17581254 – free article]
24. Luo S, Ho M, Wilson BA* "Application of intact cell-based NFAT-β-lactamase reporter assay for *Pasteurella multocida* toxin-mediated activation of calcium signaling pathway" *Toxicon* (2008) 51(4):597-605 [PMCID: PMC2681244]
25. Aminova LR, Luo S, Bannai Y, Ho M, Wilson BA* "The C3 domain of *Pasteurella multocida* toxin is the minimal domain responsible for activation of calcium and mitogenic signaling" *Protein Science* (2008) 17(17):945-949 [PMCID: PMC2327272]
26. Frank JA, Reich CI, Sharma S, Weisbaum JS, Wilson BA, Olsen GJ "Critical evaluation of two commonly used primers for amplification of bacterial 16S rRNA genes" *Appl Environ Microbiol* (2008) 74:2461-2470 [PMCID: PMC2293150]
27. Ozgen N, Obreztchikova M, Guo J, Elouardighi H, Dorn GW 2nd, Wilson BA, Steinberg SF "Protein kinase D links Gq-coupled receptors to cAMP response element-binding protein (CREB)-Ser133 phosphorylation in the heart" *J Biol Chem* (2008) 283(25):17009-17019 [PMCID: PMC2427335]

28. Orth JHC, Fester I, Preuß I, Agnoletto L, Wilson BA, Aktories K "Activation of Gαi and subsequent uncoupling of receptor-Gαi signaling by *Pasteurella multocida* toxin" *J Biol Chem* (2008) 283(34):23288-23294 [PMID: 18583341 – free text: doi: 10.1074/jbc.M803435200]

29. Pires-Alves M, Ho M, Aberle KK, Janda KD, Wilson BA* "Tandem fluorescent proteins as FRET-based substrates for botulinum neurotoxin activity" *Toxicon* (2009) 53(4):392-399 [ranked as *Toxicon*'s Top 25 Hottest Articles 2009] [PMCID: PMC2649687]

30. Kim TK, Thomas SM, Ho M, Sharma S, Reich C, Frank J, Yeater KM, Biggs D, Nakamura N, Stumpf R, Leigh SR, Tapping RI, Blanke SR, Slauch JM, Gaskins HR, Weisbaum JS, Olsen GJ, Hoyer LL, Wilson BA* "Heterogeneity of vaginal microbial communities within individuals" *J Clin Microbiol* (2009) 47(4):1181-1189 [PMCID: PMC2668325]

31. Orth JHC, Preuß I, Fester I, Schlosser A, Wilson BA, Aktories K "Molecular mode of action of *Pasteurella multocida* toxin: Activation of heterotrimeric G proteins by deamidation" *Proc Natl Acad Sci USA* (2009) 106(17):7179-7184 [PMCID: PMC2678484]

32. Grab DJ, Garcia-Garcia JC, Nikolskaia OV, Kim YV, Brown A, Pardo CA, Zhang Y, Becker KG, Wilson BA, de A. Lima APC, Scharfstein J, Dumler JS "Protease activated receptor signaling is required for African trypanosome traversal of human brain microvascular endothelial cells" *PLoS Negl Trop Dis* (2009) 3(7):e479 [PMCID: PMC2707606]

33. Rivera AJ, Frank JA, Stumpf RM, Salyers AA, Wilson BA, Olsen GJ, Leigh S "Differences between the normal vaginal bacterial community of baboons and that of humans" *Am J Primatol* (2010) 71:1-8 [PMID:20853395 – free text: doi: 10.1002/ajp.20851]

34. Rivera AJ, Stumpf RM, Wilson BA, Leigh S, Salyers AA "Baboon vaginal microbiota: an overlooked aspect of primate physiology" *Am J Primatol* (2010) 72(6):467-474 [PMID: 20095026 – free text: doi: 10.1002/ajp.20795]

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14. Gomez A (selected for platform presentation), Yeoman CJ, White BA, Petrželková K, Todd A, Stumpf RM, Nelson KE, Torralba M, Gillis M, Wilson BA, Leigh SR "Characterization of the gastrointestinal bacterial communities of western lowland gorillas (*G. gorilla gorilla*)" *Am J Phys Anthropol* (2013) 150(supp.56):132-133
15. Walther-Antonio MRS, Chia N, Jeraldo P, Yeoman CJ, Nelson KE, Wilson BA, White BA, Creedon DJ "Vaginal microbiome remains stable during normal pregnancy" *Reprod Sciences* (2013), 20 (suppl): Feb issue
16. Haywood EE, Ho M, Wilson BA* "Modular domain compatibility among cytotoxic necrotizing factors – finding a universal platform for BTIDD" *FASEB J* (2017), 31(1):suppl 922.3, April issue

PUBLISHED INVITED BOOK REVIEWS

1. Wilson BA (book review) "The Comprehensive Sourcebook of Bacterial Protein Toxins, 2nd ed. " *ASM News* (2000) 66:428.
2. Wilson BA (book review) "Cell Wall Deficient Forms: Stealth Pathogens, 3rd ed. " *ASM News* (2002) 68:195-196.
3. Wilson BA (book review) "Bacterial Protein Toxins. Handbook of Experimental Pharmacology, Volume 145" *ASM News (*2002) 68:196.
4. Wilson BA (book review) "Oral Bacterial Ecology: the Molecular Basis" *ASM News* (2002) 68:354.
5. Wilson BA (book review) "Infectious Causes of Cancer: Targets for Intervention" *ASM News* (2002) 68:354-355.
6. Wilson BA (book review) "The Biochemistry of Cell Signalling" *ASM News* (2003) 69:42.
7. Wilson BA (book review) "The Spirochetes: Molecular and Cellular Biology" *ASM News* (2003) 69:99.
8. Wilson BA (book review) "*Escherichia coli:* Virulence Mechanisms of a Versatile Pathogen" *ASM News* (2003) 69:308-309.

9. Wilson BA (book review) "Bacterial Disease Mechanisms: An Introduction to Cellular Microbiology" *ASM News* (2003) 69:572.
10. Wilson BA (book review) "Molecular Infection Biology" *ASM News* (2003) 6: 623.
11. Wilson BA (book review) "The Microbe Files: Cases in Microbiology for the Undergraduate" *ASM News* (2004) 70:197.
12. Wilson BA (book review) "Bacterial Protein Toxins" *ASM News* (2004) 70:249-250.
13. Wilson BA (book review) "Pioneers of Microbiology and the Nobel Prize" *ASM News* (2004) 70:296-297.
14. Wilson BA (book review) "Microbial Subversion of Host Cells" *ASM News* (2005) 71:44-45.
15. Wilson BA (book review) "Gene Delivery to Mammalian Cells. Volume 2: Viral Gene Transfer Techniques" *ASM News* (2005) 71:551-552.

PUBLISHED MEETING SUMMARIES

1. Kitron U, Wilson B (conference summary) "New and Re-emerging Infectious Diseases" *Emerging Infectious Diseases* (2005) 11(10):792.
2. Wilson BA, Kitron U (conference summary) "9th Annual conference on new and re-emerging infectious diseases" *Emerging Infectious Diseases* (2007) 13(1): Jan.
3. Kitron U, Wilson BA (conference summary) "10th Annual conference on new and re-emerging infectious diseases" *Emerging Infectious Diseases* (2007) 13(11): Nov.

ABSTRACTS (POSTER PRESENTATIONS AT MEETINGS/CONFERENCES)

– over 150 since 1993

EXTERNAL TENURE AND PROMOTION EVALUATOR

2000–now *External Consultant/Evaluator*: served on 35 external faculty tenure and promotion reviews

2018 *External Advisor to the Dean*, Professorial Evaluation of Tenure & Promotion Procedures, Harvard Medical School, Boston, Massachusetts (5/18)

2019 *External Ad Hoc Member*, Tenure & Promotion Committee, Harvard Medical School, Boston, Massachusetts (1/19)

PROFESSIONAL MEMBERSHIPS

American Society for Microbiology (ASM), 1994-now; American Academy of Microbiology (AAM) Fellow, 2020-now

American Society for Biochemistry and Molecular Biology (ASBMB), 1996-now

American Association for the Advancement of Science (AAAS), 1992-now

Protein Society, 1990-now

American Chemical Society (ACS), 1994-now

American Association of University Women (AAUW), 1987-now

Sigma Xi: The Scientific Research Honor Society Fellow, 2020-now

TEACHING ACTIVITIES

DIDACTIC COURSES TAUGHT AT UIUC:

MCB 100 Introductory Microbiology (Co-Instructor, 22 contact hours)

General Education Course in the Life Sciences for undergraduate students in non-MCB majors with lectures on "Introductory Microbiology" – FA19 (enrollment: 226), SP20 (enrollment: 261), FA20 (enrollment: 247), SP21 (enrollment: 258), FA21 (enrollment: 253), SP22 (enrollment: 267), FA22 (enrollment: 215), SP23 (enrollment: 248)

MCB 250 Molecular Genetics (Co-Instructor, 22 contact hours)

Core molecular genetics lectures for sophomore-level undergraduate students on "Molecular Genetics and the Central Dogma" – SP15 (enrollment: 214), SP16 (enrollment: 193)

Guest Lectures (1 or 2 contact hours) (enrollment: ~450): FA17, FA19

MCB 300 Microbiology (Co-Instructor, 22 contact hours)

Advanced Core microbiology lectures for upper-level undergraduate students on "Microbial Pathogenesis" – SP12 (enrollment: 242), FA12 (enrollment: 142), SP13 (enrollment: 221), FA13 (enrollment: 127), SP14 (enrollment: 152)

Guest Lectures (1 contact hours) (enrollment: ~150): SP15, SP17, SP18, SP19

MCB 426 Bacterial Pathogenesis (Sole Instructor, 45 contact hours)

Advanced microbiology lectures for upper-level undergraduate and graduate students on “Bacterial Pathogenesis” – FA04 (enrollment: 72), FA05 (enrollment: 62), FA06 (enrollment: 91), FA07 (enrollment: 66), FA08 (enrollment: 60), FA09 (enrollment: 50), FA10 (enrollment: 52), FA11 (enrollment: 50), FA12 (enrollment: 50), FA13 (enrollment: 68), FA14 (enrollment: 67), FA15 (enrollment: 56), FA16 (enrollment: 50), FA17 (enrollment: 49), FA18 (enrollment: 27)

MCB 526 Advanced Bacterial Pathogenesis (Sole Instructor, 15 contact hours)

Primary literature-based discussions and review paper writing for graduate students and honors undergraduate students in *MCB 426* – FA09 (enrollment: 11), FA10 (enrollment: 11), FA11 (enrollment: 14), FA12 (enrollment: 14), FA13 (enrollment: 13), FA14 (enrollment: 9), FA15 (enrollment: 9), FA16 (enrollment: 7), FA17 (enrollment: 9), FA18 (enrollment: 5)

MCB 436 Global Biosecurity (Course Director and Instructor, 15 contact hours)

Lecture and seminar-based discussions of special topics with 6-7 guest lecturers, oral presentation and paper writing for advanced undergraduate (juniors and seniors) and graduate students – FA12 (enrollment: 63), FA13 (enrollment: 109), FA14 (enrollment: 100), FA15 (enrollment: 103), FA16 (enrollment: 92), FA17 (enrollment: 96), FA18 (enrollment: 120), FA19 (enrollment: 130), FA20 (enrollment: 110), FA21 (enrollment: 110), FA22 (enrollment: 108)

MCB 493 Special Topics in Molecular and Cellular Biology – Global Biosecurity (Course Director and Instructor, 15 contact hours)

Fall – lecture and seminar-based discussions of special topics with 6-8 guest lecturers, oral presentation and paper writing for advanced undergraduate and graduate students – FA09 (enrollment: 18), FA10 (enrollment: 37), FA11 (enrollment: 59)

Spring – discussions, oral presentation at an international conference, and paper writing of special topics for selected (invitation only) advanced undergraduate and graduate students – SP10 (enrollment: 6)

MCB 195 Introduction to Laboratory Research (Co-Instructor, 8 contact hours)

Introductory laboratory research discussions for undergraduate freshmen and sophomores – FA08 (enrollment: 48)

MCB 585 Current Topics in Microbiology (Co-Instructor, 1 contact hour)

Team-taught literature review and discussions of special topics in microbiology and molecular biology for first-year graduate students: FA08 (enrollment: 15), SA10 (enrollment: 12), SP11 (enrollment: 12), SP12 (enrollment: 11), SP13 (enrollment: 6), SP14 (enrollment: 14); SP19 (enrollment: 4), SP21 (enrollment: 17), SP22 (enrollment:)

MICR 590B Individual Topics (Sole Instructor, 15 contact hours)

Primary literature-based discussions and review paper writing for graduate students in *MCB 426* – FA04 (enrollment: 17), FA05 (enrollment: 9), FA06 (enrollment: 13), FA07 (enrollment: 11), FA08 (enrollment: 12)

MCBIO 326 Biology of Bacterial Pathogens (Sole Instructor, 45 contact hours)

Advanced microbiology lectures for upper-level undergraduate and graduate students on "Bacterial Pathogenesis" – FA99 (enrollment: 135), FA00 (enrollment: 150), FA01 (enrollment: 110), FA02 (enrollment: 103), FA03 (enrollment: 86)

MCBIO 490B Individual Problems (Sole Instructor, 15 contact hours)

Primary literature-based discussions for graduate students in *MCBIO 326* – FA99, FA00, FA01, FA02 (enrollment: ~15), FA03 (enrollment: ~15)

MCBIO 412 Advances in Microbiology (Sole Instructor, 30 contact hours)

Graduate-level discussion and critical review writing on current topics in "Bacterial Pathogenesis" – FA00 (enrollment: 7)

CSB 410 Selected Topics in Cell Biology (Co-Instructor, 3 contact hours)

Graduate-level primary literature-based discussions on "Bacterial effects on host cell cytoskeleton, membrane trafficking, and signal transduction" – SP01 (enrollment: 11)

Laboratory Biosafety Training – (Sole Instructor, 1 contact hour)

Annual laboratory-specific training session on laboratory safety and security for handling highly toxic, biohazardous, and infectious material – SP00-SP18 (attendees: 10-20), SP19 (attendees: 16), SP21 (attendees: 11), FA21 (attendees: 12), FA22 (attendees: 10)

DIDACTIC GUEST LECTURES AT UIUC:

UIUC Microbiology Club (ASM Student Chapter), invited lecture on "Anthrax Pathogenesis" (2/00)

UIUC/BIOCH 360, Biochemistry Senior Seminar, invited lecture on "Bioterrorism and Information" (4/02)

UIUC/HHMI Biotechnology Education and Outreach Program (BEOP), invited lecture on "Current Topics in Microbiology and their Impact on Education" (6/02)

UIUC/HHMI Undergraduate Programs (HURF, UMEB, ChemPrime), open forum and panel discussion on "Overcoming Barriers in Science" (7/02)

UIUC LAS Teaching Academy Allerton Workshop, open forum on "Tenure Strategies: Balancing Teaching and Research" (8/02)

UIUC ACDIS Millennium Seminar Series, invited lecture on "Anthrax and Bioterrorism: Impact and Implications on Research, Education, Society, and Security" (4/03 – enrollment: 30)

NPRE/GLBL 383: Seminar on Security, UIUC ACDIS Global Studies Seminar Course, invited lecture on "Anthrax and Bioterrorism: Impact and Implications on Research and Education" (10/03 – enrollment: 17)

CZR Summer Training Program in Infectious Disease Research for Veterinary Students, invited lecture on "Bacterial Protein Toxins: Development of Novel Vaccines and Anti-Toxin Therapeutics" (7/04 – enrollment: ~15)

LAS 199 Discovery Course: Introduction to International Studies, invited lecture on "WMDs: Chemical and Biological Weapons" (9/04 – enrollment: ~20)

NPRE/GLBL 483: Seminar on Security, UIUC ACDIS Global Studies Seminar Course, invited lecture on "Anthrax and Bioterrorism: Impact and Implications on Research and Education" (9/04 – enrollment: ~15)

UIUC, LIGASE-sponsored MCB Open House, invited lecture on "Anthrax and Bioterrorism: Impact and Implications on Research, Education, and Society" (4/05 – attendees: ~35)

UIUC/ABE 594, Agricultural & Biological Engineering I[4] Seminar Series, invited lecture on "Combating toxin-mediated diseases: from bacterial offense to host defense (with a little help from bioengineering) " (4/06 – attendees: ~50)

UIUC/MIE 598, Mechanical and Industrial Engineering Bio-Interest Group Seminar Series, invited lecture on "Combating toxin-mediated diseases: from bacterial offense to host defense (with a little help from bioengineering) " (4/06 – attendees: ~60)

NPRE/GLBL 483 Seminar on Security, *UIUC ACDIS Global Studies Seminar Course*, invited lecture on "The use of irradiation technology to enhance food defense capabilities" (9/07 – attendees: ~70)

UIUC/MCB Open House, invited lecture on "Global biosecurity in a complex, dynamic world: Is a killer pandemic inevitable? " (4/08 – attendees: ~50)

NPRE/GLBL483 Seminar on Security, *UIUC ACDIS Global Studies Seminar Course*, invited lecture on "The use of irradiation technology to enhance food defense capabilities" (9/08 – attendees: ~25)

PS 590 ACD, UIUC ACDIS Focal Point Seminar Series, ACDIS graduate seminar on Science, Technology, and Security: New Institutions to Manage Global Security in the 21st Century, invited lecture on "Genomics and the global challenge of persisting and emerging infectious diseases" (11/09 – attendees: ~15) [URL:http://acdis.illinois.edu/students/courses-current/focal-point-seminar/Wilson-genomics.html]

MCB Undergraduate Research Workshop, invited discussion on "Graduating with Distinction" (2/10) (2/09) (2/10) (10/10) (2/11) (1/12) (2/13) (attendees: 10-40)

CZR Summer Research Training Program for Veterinary Students, invited lecture on "Balancing a career in science and family" (6/10 – attendees: ~20)

Phi Delta Epsilon Premed Fraternity UIUC Chapter – 1.5-hr lecture on "Combatting botulism" (3/12 – attendees: 25)

American Medical Student Association UIUC Chapter: Forum on Medical and Research Careers for High School Students – 1-hr lecture on "Being a Research Scientist" (4/12 – attendees: 15)

ACDIS Summer Workshop in International Security, invited workshop discussant and 1.5-hr lecture on "Biological Weapons of Mass Destruction" (7/12 – attendees: 20), (7/13 – attendees: 25), (7/14 – attendees: 21), (6/15 – attendees: 25)

MCB 429 Cellular Microbiology (Guest Lecturer, 2 contact hours), lecture and discussion for advanced undergraduates and graduate students on "Toxin-producing *Clostridia*" and "Fundamental Principles of Host-Pathogen Interactions" (1/13 – enrollment: 35)

Integrative Immunology and Behavior Program (ANSC/NUTR 590 SP13), student-invited lecture on "Infection from the Pathogen's POV" (3/13 – enrollment: 29)

American Medical Student Association UIUC Chapter: Global Health Series – "~~Emerging~~(Escalating) Issues in Global Biosecurity: Genomics and the global challenge of persisting and emerging infectious diseases" (2/14 – attendees: 20)

Microbes Meeting, student-invited seminar on "Microbial Pathogenesis from a Pathogen's Point of View" (3/14 – enrollment: 12)

Contemporary Nutrition (FSHN 120), student-invited seminar on "Genetically Modified Organisms: Impact on the Food Industry" (5/14 – enrollment: 220)

MCB Undergraduate Research Workshop, invited 2-hour panel discussion on "Undergraduate Research Opportunities" (9/14 – attendees: 10-40)

American Medical Student Association UIUC Chapter: Global Health Series – "Genomics, Ebola and Biosecurity" (11/14 – attendees: 20)

ACIDS Spring Security Group Seminar Series, "Ebola 2014(–2015…): What have we learned and where do we go from here?" (4/15 – attendees: 25) – talk posted online on ACDIS website at URL:

http://acdis.illinois.edu/newsarchive/newsitem-ebola2014whathavewelearnedandwheredowegofromhere.html

ACDIS Security Group Seminar Series, "~~Emerging~~Escalating Issues in Global Biosecurity" (2/16 – attendees: 33)

T35 Summer Research Training Program for Veterinary Students and *R25 SURETox Summer Undergraduate Research Experience in Toxicology – Ethics Training*, 1.5 hr lecture + discussion session on the topics of "Mentor/mentee responsibilities and relationships; Data acquisition and laboratory tools – management, sharing and ownership; Contemporary ethical issues in biomedical research" (5/16 – attendees: 30)

Mandela Washington Fellowship for Young African Leaders Institute (YALI), 2.5-hr lecture + discussion session for professional development program in public management and leadership for representative young leaders from various African nations, on the topic of "~~Emerging~~Escalating Issues in Global Biosecurity: The Impact of Public Management on Global Health/Disease Crises" UIUC (6/22/16 – attendees: 26)

Path 527 Epidemiology: Contemporary Infectious Diseases Topics Course, 1-hr guest lecture on "Ebola: What have we learned and where do we go from here" (9/27/16 – attendees: 18)

HDFS494/FSHN499 Hispanic Health Promotion Course*,* 1-hr guest lecture on "Strategies for navigating and thriving in STEM fields: Building your CV/resume" (4/20/18 – attendees: 16)

ACDIS Security Studies Group, Seminar Series, "~~Emerging~~Escalating Issues in Global Biosecurity – The Threat of Biotoxins" (09/25/19 – attendees: 35)

RESEARCH LABORATORY COURSES TAUGHT AT UIUC: *[see below for list of students enrolled]*

MICR 590 Thesis Research (SU, FA, SP, Sole Instructor) – graduate student thesis research

MICR 599 Thesis Research (SU, FA, SP, Sole Instructor) – graduate student dissertation research

MCB 581,582,583 Individual Problems (FA, Sole Instructor) – graduate student laboratory rotations

MCB 290 Research (SU, FA, SP, Sole Instructor) – undergraduate student independent research

MCB 492 Research (SP, Sole Instructor) – undergraduate student senior thesis research

DIDACTIC COURSES TAUGHT AT WRIGHT STATE UNIVERSITY:

BMB/BMS 750 Biochemistry (Co-Instructor, ~10 contact hours)

Graduate-level lectures on "Molecular Mechanisms of Hormone Action: Intercellular Signaling and Signal Transduction" FA94, FA95, FA98 (enrollment: ~60)

BMB/BMS 752 Biochemistry (Co-Instructor, ~10 contact hours)

Graduate-level lectures on "Molecular Mechanisms of Hormone Action: Intercellular Signaling and Signal Transduction" Winter 1997, Winter 1998 (enrollment: ~40)

BCM 500 Medical Biochemistry/SMD 521 Molecular, Cellular, and Tissue Biology (Co-Instructor, ~20 contact hours)

First-year medical school lectures on "Molecular Mechanisms of Hormone Action: Intercellular Signaling and Signal Transduction" WI95, WI96, WI97, WI98, WI99 (enrollment: ~110)

BMB/BMS 753 Molecular Signaling-Molecular Cell Biology (Co-Instructor, ~20 contact hours)

Advanced graduate-level lectures on "Molecular Mechanisms of Intercellular Signaling and Signal Transduction" FA96, FA98 (enrollment: ~15)

BMB 800/BMS 990 Biochemistry Seminar (Course Director)

Graduate research seminar presentations, SP-WI-FA97, WI-SP-FA98, WI-SP99 (attendees: 30-50)

BMB/BMS 703 Research Ethics (Co-Instructor, ~2 contact hours)

Discussion facilitator on "Ownership of Data and Intellectual Property" SP97 (enrollment: 10-15)

Discussion facilitator on "Data Collection and Management" SP98 (enrollment: 10-15)

GRADUATE STUDENTS

CURRENT AT UIUC:

Nicholas (Nic) B. Handy, BS in Microbiology 2017, Colorado State University, Fort Collins, Colorado; MCB PhD Program, MS in Microbiology 2019, UIUC, (2022 Francis M. and Harlie Clark Microbiology Teaching Award), August 2017-now

FORMER AT UIUC:

PhD degree conferred:

Nathan (Nate) C. Clemons (URM), BS in Molecular & Cellular Biology 2007 UIUC, MS in Microbiology 2009, Microbiology PhD Program and NIH Infection Biology Training Program (IBTP), (2007, UIUC Educational Equity Programs SPI Fellowship Award; 2007-2010, UIUC Graduate College URM Fellow; 2009, Mame Shiao Debbie Graduate Award, 2011 Betsey Cronan Graduate Family Assistance Award; 2017, Graduate College Academic Excellence Award), August 2007 - August 2018; PhD degree in Microbiology, conferred 7/18. Thesis title: "Escape to the interior: Characterization of the cytosolic delivery of C-terminal cargo subdomains by the N-terminus of *Pasteurella multocida* toxin and subsequent toxin-mediated downregulation of Gαq-PLCβ1 signaling through depletion of Gαq from the plasma membrane"

Yuka Bannai, BS in Biochemistry 2002 Calvin College, Michigan, MS in Microbiology 2008 PhD Program (2009 & 2010, Francis & Harlie Clark Graduate Teaching Assistantship Awards), Fall 2005-Spring 2014, PhD degree in Microbiology, conferred 5/14. Thesis title: "Studies on the mode of action of dermonecrotic toxins: Effects of adipogenic signaling pathways and delivery of C-terminal cargo into the cytosol"

Michael C. Brothers, BS in Chemistry 2007 University of Cincinnati, Chemistry PhD Program– joint advisor with Dr. Chad Rienstra, Chemistry Biology Interface PhD Training Program (2008-2011, Department of Homeland Security Graduate Fellow), Fall 2008-Fall 2013, PhD degree in Chemistry, conferred 8/14. Thesis title: "Toxin-membrane interactions of *Pasteurella multocida* toxin and homologous domains using NMR and other biophysical techniques"

Tana L. Repella, BS in Biology and English 2003 University of Cincinnati, MD/PhD Medical Scholars and NIH Cellular & Molecular Biology PhD Training Program, Fall 2003-Fall 2011, M.D. degree, conferred 12/08; PhD degree in Microbiology, conferred 12/11. Thesis title: "Investigation of the intracellular trafficking pathways of the dermonecrotic toxin family"

Elizabeth (Libby) E. Haywood (nee: Mayberry), BS in Molecular Biology 2013, Illinois State University, Normal, Illinois, Microbiology PhD Program and Chemical Biology Interface Training Program (CBITP); (2014, DeBoer Graduate Fellowship; 2016 & 2019, Mame Shiao Debbie Graduate Award; 2017, 2019, ASBMB Travel Award; 2017 Best Talk – Microbiology Annual Conference; 2018, Outstanding Teaching Assistant; 2018, 2019,

National Conference for College Women Student Leaders, Washington DC, travel award recipient from AAUW), August 2013-August 2019)

MS degree conferred:

Rebecca A. Buonpane, Cellular & Molecular Biology PhD Program, Fall 2000-Spring 2002, MS degree conferred 5/02.

Melanie C. Romero, Cellular & Molecular Biology PhD Program, Fall 2000-Spring 2002, MS degree conferred 5/02.

Mark A. Waites, Cellular & Molecular Biology PhD Program, Fall 1999-Fall 2002, MS degree conferred 12/02. Thesis title: "Characterization of cellular receptors of *Pasteurella multocida* toxin"

Christopher A. Kors, BS in Microbiology 2003 UIUC, MS in Biology degree conferred 8/05. Thesis title: "Blockade of adipogenesis in 3T3-L1 cells by *Pasteurella multocida* toxin (PMT) and related toxins"

Allison L. Herron, MA in Biology degree conferred 8/05. Thesis title: "The effect of *Pasteurella multocida* toxin (PMT) on the target protein, Gq"

Karla (Kieser) Aberle, BS in Chemistry 2002 UIUC, MS in Microbiology degree conferred 12/06. Thesis title: "Substrate-based design of an scFv for neutralization of botulinum neurotoxin serotype A activity"

Li-Hsin Chang, BS in Pharmacy 2001 & MS in Biochemistry & Molecular Biology 2007 National Taiwan University, UIUC MS in Microbiology conferred 8/10; Thesis title: "Botulinum neurotoxin A heavy chain-based vehicles for cell-type specific inhibitor design"

Marinos Kalafatis, BS in Biology 2006 Democritus University of Thrace Greece, UIUC MS in Microbiology degree conferred 5/09; Thesis title: "Design of peptide substrate-based inhibitors for neutralization of botulinum neurotoxin serotype A"

Philemon Chan, BS in Neuroscience 2011 University of Southern California, Los Angeles, California, MS in Biology Program – Fall 2011-Spring 2014, MS in Biology degree conferred 5/14. Thesis title: "Construction of CNFy-CNF1 chimera protein for study of differential pH-dependent activity of CNF proteins"

Jesper Larsson, BS in Biotechnology in 2017, KTH Royale Institute of Technology, Stockholm, Sweden, MS in Medical Biotechnology conferred 6/19, joint thesis project exchange student, January-June 2019. Thesis title: "Genetic engineering of chimera DNA-cargo delivery vehicles"

Non-degree or Summer Program:

Stephanie A. French-Mischo, Microbiology PhD Program, Fall 1999-Spring 2001

Caroline Merrill, UIUC DVM Program, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2004

Stanford B. Oglesby (URM), UIUC Agricultural Genomics and Public Policy PhD Program, Fall 2004-Summer 2005

Miranda Bertram, UIUC DVM Program, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2005

Shuo Xi, Microbiology PhD Program, Fall 2004-Spring 2005

Corrin McCann, UIUC DVM Program, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2006

Jennifer Reinhart, UIUC DVM Program, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2007

Dusty Sachen, UIUC DVM Program, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2007

Jonathan Kolakowski-Villaron (URM), BS in Molecular & Cellular Biology 2007 UIUC, MS in Microbiology Program, Fall 2007

Abigail E. Wolf, UIUC DVM Program, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2010

Sasha Teymorian, BS in Chemistry and Cell & Molecular Biology 2009 University of Wisconsin – Green Bay, non-degree graduate research assistant, 11/09-9/10

Vishwendra Patel, BS in Physiology from India, visiting graduate student from UMDNJ Medical School, Newark, New Jersey, 4/11-5/11

Stephanie K. Tham, BS in Integrative Biology 2011 UIUC, MS in Biology Program – Fall 2011-Fall 2012

Daniel R. Walls (URM), BS in Microbiology 2012 Ohio State University, Columbus, Ohio, non-degree Microbiology graduate student – Fall 2013

Yueheng (Joy) Zhou, BS in Biotechnology, Shanghai Jiaotong University, China, Microbiology PhD program, Fall 2015

Abby Reising, BS in Molecular and Cellular Biology 2015, UIUC; UIUC DVM Program 2015-now, Center for Zoonoses Research Summer Training Program in Infectious Disease Research for Veterinary Students, Summer 2016

Elena Sindram, BS in Biology 2017, Albert-Ludwigs-Universität Freiburg, Germany; MS in Biology program, Albert-Ludwigs-Universität Freiburg, Germany; Deutscher Akademischer Austauschdienst (German Academic Exchange Service) Summer Internship, May-August 2018

Dara N. Zirlin, BA in Mathematics 2015, Mount Holyoke College, South Hadley, Massachusetts; Mathematics PhD Program and PI4 Graduate Training Program for Interdisciplinary and Industrial Internships at Illinois, May-August 2018

Catherine Chen, BS in Computer Science 2017, MS in Mathematics 2018, Georgia Institute of Technology, Atlanta, Georgia; Mathematics PhD Program and PI4 Graduate Training Program for Interdisciplinary and Industrial Internships at Illinois, May-August 2019

Cynthia Oluchi Obilor, BS in Microbiology 2015, Imo State University, Owerri, Nigeria; MS in Biotechnology 2019, Claflin University, Orangeberg, South Carolina; MCB PhD Program, UIUC, August 2019-January 2020

Elijah Gunther, BS in Mathematics Intensive magma cum laude 2018, Mathematics PhD Program University of Pennsylvania, Institute for Mathematical and Statistical Innovation Graduate Summer Program Intern at UIUC, May 25 – August 15, 2022

Ella Hiesmayr, BSc in Mathematics with Distinction 2013, University of Vienna, Vienna, Austria, MSc in Mathematics, Bogaziçi University, Istanbul, Turkey, Statistics PhD Program, University of California, Berkely, California, Institute for Mathematical and Statistical Innovation Graduate Summer Program Intern at UIUC, May 25 – August 15, 2022

Yishuo Jiang, BS in Biology 2019, University of Iowa, Iowa City, Iowa; MS in Integrated Biology, University of Iowa, Iowa City, Iowa; MCB PhD Program, UIUC, August 2021-March 2023

FORMER AT WRIGHT STATE UNIVERSITY:

PhD degree conferred:

Virgilio G. Ponferrada (URM), PhD degree conferred 12/99, Thesis title: “Cloning and characterization of *Pasteurella multocida* toxin”

John W. Peterson, PhD degree conferred 12/00, Thesis title: "*Pasteurella multocida* toxin effects on cytoskeleton and cell division in primary cell cultures"

MS degree conferred:

April N. Smith, MS degree conferred 12/99, Thesis title: “Blockade of 3T3-L1 adipogenesis by *Pasteurella multocida* toxin”

Jefferson E. Vallance, MS degree conferred 5/98, Thesis title: "The N-terminus of *Pasteurella multocida* toxin possesses the domain responsible for intracellular signaling activity "

Xinjun Zhu, BMed 1989 Nanjing Medical University P.R. China, MS degree conferred 8/96, Thesis title: "*Pasteurella multocida* toxin activates the inositol trisphosphate signaling pathway in *Xenopus* oocytes via G_q-coupled phospholipase C1"

Shubkirn Dubay, MS degree conferred 5/94, Thesis title: “Immunotoxins”

POSTDOCTORAL RESEARCH ASSOCIATES AND SENIOR SCIENTISTS

CURRENT AT UIUC:

Mengfei Ho, PhD in Chemistry (1984), Johns Hopkins University, Maryland; Senior Scientist and Research Assistant Professor, Department of Microbiology, UIUC, 8/99-now

FORMER AT UIUC:

Leila R. Aminova, PhD in Microbiology (1998), Russian Academy of Sciences-Pucchino, 9/99-8/01, 8/04-8/09, Microbiology senior scientist

Kathleen M. Yeater, PhD in Biometry and Statistics (2003), University of Illinois at Urbana-Champaign, 4/05-9/05, Institute for Genomic Biology Fellow

Shobha Sharma, PhD in Microbiology (2000), University of Innsbruck, Austria, 9/05-3/06, Institute for Genomic Biology Fellow

Ram P. Maharjan, PhD in Microbiology (2005), University of Sydney, Australia, 3/06-2/07, Microbiology postdoctoral research fellow

Shuhong Luo, PhD in Molecular Biology and Parasitology (1995), Nanjing Medical University, Nanjing, P.R. China, 2/05-9/08, Microbiology senior scientist

Susan M. Thomas, Sc.D. in Infectious Disease Epidemiology (2002), Harvard School of Public Health, 6/06-7/13, Institute for Genomic Biology Postdoctoral Research Associate

Xuanying (Lily) Fu, PhD Molecular Biology and Bionomy (2005), China Academy of Science, P. R. China, 9/06-8/07, Chinese government-sponsored visiting scholar

Tae Kyung (Sean) Kim, PhD in Microbiology (2006), University of Queensland, Brisbane, Australia, 8/06-3/08, Institute for Genomic Biology postdoctoral fellow

Ankita Puri-Taneja, PhD in Molecular Biology (2007), University of Illinois at Chicago, Chicago, Illinois, 3/08-8/09, Microbiology postdoctoral research associate

Zhengrong Gu, PhD in Chemical Engineering (2006), Iowa State University, Ames, Iowa, 3/08-12/08, Microbiology postdoctoral research associate

Jagdish Rai, PhD in Genetic Engineering & Biotechnology (2007), International Centre for Genetic Engineering and Biotechnology, Jawaharlal Nehru University, New Delhi, India, 3/08-3/09, Microbiology postdoctoral research associate

Cynthia Ginsberg, PhD in Chemistry & Chemical Biology (2008), Harvard University, 8/08-7/09, Medical Scholars Program postdoctoral fellow

Shihua Wang, PhD in Biochemistry & Molecular Biology (2004), Wuhan Institute of Virology, Chinese Academy of Sciences, Fujian Agriculture and Forestry University, PR China, 01/09-12/09, Microbiology Visiting Scholar

Lakshmi Chandramohan, PhD in Biochemistry & Microbiology (2009), University of Nebraska Medical Center, Omaha, Nebraska, 02/09-8/09, Microbiology postdoctoral research associate

Lopamuthra Giri, PhD in Biochemical Engineering (2009), University of Iowa, Iowa City, Iowa, 5/09-4/10, Microbiology postdoctoral research associate

Claudia I. Reich, PhD in Biology (1989), University of Buenos Aires, Argentina, 9/09-12/10, Institute for Genomic Biology Senior Scientist and Research Assistant Professor

Carl J. Yeoman, PhD in Microbial Genomics (2009), Massey University, Palmerston North, New Zealand, 9/09-8/12, Institute for Genomic Biology Postdoctoral Research Associate

Cheong-Hian Goh, PhD in Pharmacology (2009), University of Singapore, Singapore, 11/09-3/11, Microbiology Postdoctoral Research Associate

Suleyman Yildirim, PhD in Microbial Genomics (2006), North Carolina State University, Raleigh, NC, 11/08-8/11, Institute for Genomic Biology Postdoctoral Fellow

Steven C. Johnson, PhD in Chemistry (2010), Michigan Technical University, Houghton, Michigan, 5/10-8/11, Microbiology Postdoctoral Research Associate

Xiuwan Lan, PhD in Biochemistry and Molecular Biology (2007), Guangxi University, P. R. China, 3/11-8/11, Microbiology Postdoctoral Research Associate & Visiting Scholar

Melissa A. Cregger, PhD in Ecology & Evolutionary Biology (2012), University of Tennessee, 9/12-7/13, Institute for Genomic Biology Postdoctoral Fellow

Xianbai Deng, PhD in Veterinary Pharmacology (2007), South China Agriculture University, Guangzhou, P. R. China, (Microbiology Visiting Associate Professor) 3/13-3/14

Jun Yuan, PhD in Microbiology (2008), Xiamen University, Fujian Provence, Xiamen, P. R. China, (Microbiology Postdoctoral Research Associate) 10/13-10/14

Elizabeth Adesola Amosun (URM), DVM in Veterinary Medicine (2000), PhD in Veterinary Microbiology (2011), University of Ibadan, Ibadan, Nigeria; Lecturer, Department of Veterinary Microbiology and Parasitology, University of Ibadan, Ibadan, Nigeria, 2007-2014; Postdoctoral Research Associate, Department of Microbiology, UIUC, Schlumberger Foundation Faculty for the Future Fellowship 2015-2016, 1/15-8/16

Melissa Pires-Alves (URM), PhD in Cellular and Molecular Biology (2002), Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; Postdoctoral Research Associate, Department of Microbiology, UIUC, 1/05-6/08; Department of Pathobiology, UIUC (Postdoctoral Research Scientist), 7/08-12/11; Laboratory Director and CEO of ASA Laboratório de Análises Clínicas Medical Diagnostics Laboratory, Barra Mansa, Rio de Janeiro, Brazil, 1/12-12/14; Research Scientist, Department of Microbiology, UIUC, 1/15-3/18

Ryan Sarsfield, MS in Neuroscience (2010), Johns Hopkins University, Maryland, JD/MD (2018), University of Illinois at Urbana-Champaign, Psychiatry Residency Program, Carle-Illinois Interdisciplinary Health Sciences Institute, 9/18-11/18

UNDERGRADUATE STUDENTS – RESEARCH (MCBIO 290/MCB 290/BIOC 290) AND THESIS (MCBIO 292/MCB 492/BIOC 492)

CURRENT AT UIUC:

Jacob Sowizral (MCB 290, 2022 Alice Carlene Helm Scholarship for Microbiology Undergraduate Summer Research, 2023 Alice Carlene Helm Scholarship for Microbiology Undergraduate Summer Research)

Kevin Lemus (URM, MCB 290, 2022 Alice Carlene Helm Scholarship for Microbiology Undergraduate Summer Research)

Andrew Ghannad (MCB 290)

Eric Moom (MCB 290)

FORMER AT UIUC:

MCB 290 & Senior Research and/or Academic Distinction:

Allison Michael-Phelps (MCB 290, MCB 292 Microbiology Senior Thesis 2000)

Melinda J. Faulkner (MCB 290, 2002 ASM UG Research Fellow, Francis & Harlie Clark UG Research Fellow, MCB 292 Microbiology Honors Thesis 2003, Microbiology Distinction 2003, Life Sciences Distinction 2003)

Timothy J. Bauler (MCB 290, HURF, Cell & Structural Biology Distinction 2003)

John R. Jascur (MCB 290, General Biology Distinction 2003)

Kathy T. Shair (MCB 290, Colgate UG Research Fellow 2003, General Biology Distinction 2004)

Larissa A. Singletary (MCB 290, 2005 ASM UG Research Fellow, MCB 492 High Distinction 2006, Proctor & Gamble UG Research Award 2006)

Tracy Pei-Mei Chong (BIOC 290, BIOC 492 Highest Distinction Senior Thesis 2006, William T. and Lynn Jackson Senior Thesis Award in Biochemistry 2006)

Heather Taff (MCB 290, Chancellor's Scholar, Campus Honors Program Research Fellow, MCB 492 Distinction 2008)

Juliana Nga Man Lui (MCB 290, 2009 Francis & Harlie Clark UG Research Fellow, 2009 James R. Beck UG Research Fellow, MCB 492 Distinction 2010)

Jordan E. Bloom (MCB 290, James Scholar, 2010 ASM UG Research Fellow, 2010 Harvey L. Pretula Memorial UG Research Award, MCB 492 Senior Thesis 2011)

Carolyn Draus (BIOC 492 Senior Thesis, Graduated with High Distinction, 2013)

Michelle Wegscheid (BIOC 290/492; James Scholar; Biochemistry Honors Program; Harvey L. Pretula Memorial UG Research Award 2011; James Newton Matthew Scholar 2009-2013; Shelton M&R scholar 2009-2013; James Scholar Summer Research Award 2011; Wilson Scholarship 2009-2011; Applied Health Sciences Scholar Award 2009; Biochemistry Summer Research Scholarship 2012; Microbiology Helen Alford Hays Undergraduate Research Award 2012; ASM Undergraduate Research Fellowship 2012-2013, Graduation with Highest Distinction & Best Thesis Award 2013)

James D. Buschbach (MCB 290, MCB 492; BS degree in MCB graduated with Highest Distinction, 2014)

Jordan T. Holler (MCB 290, Helen Alford Hays Undergraduate Research Award 2014)

Hollis Johanson (MCB 290, MCB 492, MCB Summer Research Award 2013, Jenner Family Summer Research Award 2014, Helen Alford Hays Undergraduate Research Award 2014; Francis M. and Harlie M. Clark Research in Microbiology Award, 2015; MCB Highest Distinction, 2015)

Bingyan Wu (BIOC 290, BIOC 492 Biochemistry Honors, Alice Helm Undergraduate Research Award 2014; Francis M. and Harlie M. Clark Research in Microbiology Award, 2015; William T. and Lynn Jackson Senior Mertis Award, 2015; Biochemistry Highest Distinction 2015); laboratory research technician in my laboratory, 05/15-03/16

Jamie R. Perry (MCB 290, MCB 492, BS degree in MCB graduated with High Distinction, 2016)

Ross Skelly (MCB 290, James Scholar; MCB Honors Concentration; Chancellor's Scholar; National Merit Scholar; 2015 Peter C. and Gretchen Miller Markunas Scholar; 2015 MCB Summer Research Opportunities Program Award; 2016 Jenner Family MCB Summer Research Internship; 2017 UIUC Undergraduate Research Symposium Poster; 492 MCB Senior Thesis; 2017 Bronze Tablet Recipient; 2017, Graduated with MCB Honors with Academic Distinction & Highest Distinction)

Alaa E. F. Mansour (MCB 290, URM, 23rd Annual MMPC Poster; 2017 UIUC Undergraduate Research Symposium Poster; 492 MCB Senior Thesis; 2017, Graduated with MCB Distinction)

Julie Robin Dean (MCB 290, URM, 2017 Jenner Family Summer Research Internship)

Yiting Xu (MCB 290, 2017 Francis M. and Harlie M. Clark Undergraduate Research in Microbiology Award; 2018 Jenner Family Summer Research Internship; 2019, Helen Alford Hays Microbiology Scholarship Award; 2019, MCB 492 Senior Honors Thesis, Graduation with Highest Distinction and Academic Distinction; 2019, LAS Bronze Tablet)

Damee Moon (MCB 290; 2017 Dawn M. Carlson MD, MPH Research Award for Women in Science; 2018 Jenner Family Summer Research Internship; 2019, Helen Alford Hays Microbiology Scholarship Award; 2019, MCB 492 Senior Honors Thesis, Graduation with Highest Distinction)

Cormac Lucas (BIOC 290; 2017 MCB Summer Research Opportunity Program Award; 2018 MCB Undergraduate Summer Research Award; 2019, BIOC 492 Senior Honors Thesis, Graduation with Highest Distinction; 2019, William T. and Lynn Jackson Merit Award for Outstanding Thesis)

Sophia Watts (MCB 290; MCB Honors; LAS James Scholar; 2019, Harvey L. Pretula Microbiology Scholarship for Undergraduate Summer Research, Graduation with Honors, 2020)

Britney A. Naolhu (URM, MCB 290; MCB Honors Concentration; 2019 Living Learning Communities Undergraduate Researchers Initiative, Graduation with Distinction in MCB Honors, 2022)

James W. Lopez (URM, MCB 290; MCB Honors Concentration, LAS James Scholar; 2019 Living Learning Communities Undergraduate Researchers Initiative; 2020 and 2021 Dr. Walter and Loretta Zygmunt Undergraduate Summer Research Award, Graduation with Distinction in MCB Honors, 2022)

MCB 290 & Summer Research Internships:

Debra E. Kanter (MCB 290), Brian M. Beers (MCB 290), Emily C. Cyr (MCB 290), Neali D. Hendrix (MCB 290, SROP, Colgate UG Research Fellow, URM), Megan E. Papineau (MCB 290, Colgate UG Research Fellow), Vishal N. Patel (MCB 290), Amanda L. Wilson (MCB 290), Benjamin T. Circello (MCB 290), Sarah J. Vuolo (MCB 290), Daniel Ramirez (URM, SROP, MCB 290), Janice M. Villalobos (URM, SROP, MCB 290), Tabraiz Mohammed (MCB 290), Jill L. Waldhoff (MCB 290), Ijeoma M. Asota (MCB 290, SROP, URM), Carrie B. Jackson (MCB 290, Colgate UG Research Fellow), Limaris Ayala (URM, SROP, MCB 290), Rebecca B. Weinberg (MCB 290, HURF), Riddhi M. Patel (MCB 290), P. Justin Stec (MCB 290), Abdullah A. Mulahela (MCB 290), Frank Alonzo (URM, MCB 290), David Delgado (URM, SROP, MCB 290), Theresa Audino (MCB 290), Kristen Debus (MCB 290), Trina L. Westerman (MCB 290, Francis & Harlie Clark UG Research Fellow), Michelle A. Ruff (MCB 290), Justin Ziemba (MCB 290, HURF), Brian T. Ho (Harvard, UG Summer Internship), Aaron Goodman (MCB 290), Miri Kim (MCB 290; Francis & Harlie Clark UG Research Fellow), Steve Slivnick (MCB 290, HURF), Emily Holtan (MCB 290, Chancellor's Scholar), Eric Benz (MCB 290, James Scholar, Francis & Harlie Clark UG Research Fellow), Ashley Levato (MCB 290), Lindsay Bollinger (MCB 290, HURF, Zygmunt UG Research Fellow), Bryan L. Anderson (MCB 290, HURF), Jonathan Twu (MCB 290, James Scholar, Helen Hayes UG Research Fellow), Kyoochun Lee (MCB 290, James Scholar), David Bradshaw (MCB 290, James Scholar), Shreya Shah (MCB 290, James Scholar, Chancellor's Scholar), Zubin Wala (MCB 290), Daniel Abbott (MCB 290, James Scholar), Raymond J. Loza (MCB 290, URM), Michael Lai (MCB 290), Krishna Patel (MCB 290, James Scholar), Melody Engelbrecht (MCB 290, James Scholar), Jonathan Wiese (MCB 290, James Scholar), Rachelle Hernandez (MCB 290), Jasmine Lee (MCB 290, James Scholar), Esther Pak (MCB 290, MCB), Cameron Baldes (MCB 290, MCB Honors), Ryan Young (MCB 290, James Scholar, MCB Honors), Yuxiang (Sam) Ou (BIOC 290), Kathryn Witte (MCB 290, MCB Honors), Nicole R. Clevenger (MCB 290, James Scholar), Hyun Jeong (Kate) Song (MCB 290, James Scholar), David J. Bettinardi (MCB 290), Paige Poisson (MCB 290), Aku (Serena) Bedu (URM, MCB 290, James Scholar), Margo L. Bailey (URM, MCB 290, James Scholar), Michael J. Clarke (MCB 290), Kailiang (Adam) Li (MCB 290), Omar Dawood (MCB 290), Caitlin Christian (MCB 290, James Scholar), Bennett L. Klusas (MCB 290), Yonah Radousky (MCB 290), Osadebamwen (Deba) Ede-Imafidon (URM, MCB 290), Natalia I. Szynalik (MCB 290), Fei Wang (MCB 290, Biochemistry Honors), Mallorie K. Vest (MCB 290), Michael Clarke (MCB 290), Marisa Ascencio (URM, MCB 290), Jennifer McDonald (MCB 290), Ryan Gundersen (MCB 290), Kathleen Lao (MCB 290, James Scholar), Chris A. Muriel-Mundo (MCB 290, URM, SROP), Katherine Favia (MCB 290), Connor Forsyth (MCB 290), Sana Khan (MCB 290, MCB Honors Program, James Scholar), Keerthana Hogirala (LAS Independent Plans of Study advisee), Aishwarya Raj (MCB 290), HyunWoo (Richard) Choi (MCB 290), Tongyu Zhang (MCB 290), Shruti Shah (MCB 290), Ema Khan (MCB 290), Eddy Aguilar (MCB 290, URM), Kimberly S. Nalley (MCB 290, URM),

ZhanHao (Charley) Xi (MCB 290), Sarah Bounab (MCB 290, James Scholar), Lyndon Fabi (MCB 290, URM); Nathan R. Horner (MCB 290); Veronica Boron (BIOC 290; 2018 Harvey L. Pretula Undergraduate Research Award in Microbiology); Mathias Morales (MCB 290, URM; 2017 St. Francis Wildcats Summer Research Scholarship, 2017 Rev. George Ruffolo Summer Research Scholarship; OMSA Trio McNair Scholar); Jiahoa (Steven) Cen (BIOC 290); R. Logan Callaci (MCB 290); Angel Lopez (URM, CI-COM REACH SROP); Jessica W. Tiggelaar (MCB 290); Katherine Kim (MCB 290); Xinyi Lu (MCB 290); Weronika Hodorowicz (MCB 290; 2019, MCB Dawn M. Carlson Woman in Science Fellowship for Undergraduate Summer Research); Julia Ekiert (BIOC 290); Zhixing Dai (MCB 290), Jordan Matthews (URM, MCB 290), Jefrin Joseph (BIOC 290), Kaitlyn Ortgiesen (MCB 290), Matthew Crimmins (MCB 290), Meena Ashwin Gupta (MCB 290; 2021, Professor Alice Carlene Helm Microbiology Summer Research Scholarship), Anuprova Bhowmik (MCB 290, high school), Isabella (Bella) Licitra (MCB 290), Bryan Duong (MCB 290; 2021, Helen Alford Hayes Microbiology Summer Research Scholarship; 2021, LAS Life + Career Design Laboratory Scholarship), Jimin (Gina) Kim (MCB 290), Joseph Jung (MCB 290); Ohhyun Kwon (MCB 290), Yunjie (Hayley) Huang (MCB 290), Caroline Duffy (MCB 290, 2022 Alice Carlene Helm Scholarship for Microbiology Undergraduate Summer Research), Ekaterina (Katia) Tsytsarina (MCB 290, 2022 Alice Carlene Helm Scholarship for Microbiology Undergraduate Summer Research), Aditya Rao (MCB 290, 2022 Alice Carlene Helm Scholarship for Microbiology Undergraduate Summer Research), Daniel Kabanov (MCB 290)

FORMER AT WRIGHT STATE UNIVERSITY:

April L. Buehler (Senior Honors Thesis), Wesley C. Jackson (URM), Brooke A. Murphy (URM), Toni A. Williams (URM), Billy Thomas (URM), Christine Zucker, Brian R. Johnson (URM), Tina M. Caserta (URM), Neacol Humphrey (URM), Linda Colvin, John W. Peterson, Susan L. Stager, James P. Burgett, Tesfaye G-Michael (URM), Mohammad Sadat Hussain, Donna Dryer

PARTICIPATION IN GRADUATE TRAINING PROGRAMS AT UIUC

Center for Zoonoses Research NIH Training Grant on "Infectious Disease Training Program", Co-Program Director (09/05 - 07/10), faculty participant (09/05 – now)

"Chemistry-Biology Interface" NIH Training Grant, faculty participant (7/05-now)

"Infection Biology" NIH Training Grant, faculty participant and member of executive committee (4/10-6/15)

"Cellular and Molecular Biology" NIH Training Grant, faculty participant (9/99-6/13), member of executive committee and student and faculty member selection committee (4/07-6/13), Associate Director (1/12-1/15)

"Agricultural Genomics and Public Policy" USDA Training Grant, faculty participant (2003-2005)

"Globalizing Genomic Technologies" IGERT NSF Training Grant, faculty participant and member of executive committee, member of planning committee, grant submitted (1/06-10/07)

SERVICE ACTIVITIES

SERVICE ACTIVITIES AT UIUC:

Department of Microbiology:

1999-now	Numerous Graduate Student Advisory, Preliminary Examination and Thesis Committees, Member or Chair
1999-2003	Microbiology Faculty Search Committee, Member
2002-now	Undergraduate Microbiology Emphasis Advisor
2002-now	Microbiology Tenure & Promotion Committee, Member
2003-2007	MCBIO 301 Laboratory Course Curriculum Committee, Member
2004-2012	Microbiology Academic Affirmative Action Officer

2019-2020 Microbiome Faculty Search Committee, Member

School of Molecular and Cellular Biology:

1999-2001 Virology Faculty Search Committee, Member

1999-2002 Immunology Faculty Search Committee, Member

2002-2003 Awards Committee, Member

2002-2007 MCB 251 Laboratory Course Curriculum Committee, Member

2002-2014 Courses and Curricula Committee, Member

2004-2013 MCB Distinction Committee, Chair

2007-2009 MCB Public Relations/Communications Committee, Member

2007-2013 Cell and Molecular Biology Training Program, Executive Committee Member & Selection Committee Member

2012-2013 Cell and Molecular Biology Training Program, Executive Committee Member & Associate Director

2010-2015 Infection Biology Training Program, Executive Committee Member & Selection Committee Member

2014-now Courses and Curricula Committee, Chair

2016 Search Committee for Associate Director for Administrative & Business Affairs, Chair

2019-2020 Microbial Systems Faculty Search Committee, Member

2019-2021 Strategic Advisory Committee, Member

2021-now Strategic Advisory Committee, Chair

2022 Search Committee for Associate Director for Curriculum & Instruction, Chair

2023 Search Committee for RNA Biology Faculty, Member & Diversity Advocate

Schools of Molecular & Cellular Biology and Integrative Biology Joint Committees/Activities:

2002-2004 Biology Distinction Committee, Chair

2003 Proctor & Gamble Distinction Awards Committee, Member

2016, 2017 HHMI & NSF-sponsored National Mobile Summer Institute on Undergraduate Education, Co-Organizer, Fellow, and School of MCB Representative, week-long training workshop for ~35 UIUC faculty on "Active-Learning and Scientific Teaching"

2018, 2019 UIUC Regional Mobile Summer Institute on Undergraduate Education, Co-Organizer, Mentor/Facilitator, week-long training workshop for ~30 UIUC faculty on "Active-Learning and Scientific Teaching"

College of Liberal Arts and Sciences:

2005-2006 Committee on Committees, Member

2008-2010 Policy and Development Committee, Member

2013-2015 Committee on Admissions and Academic Standards, Member

2014-2016 Courses and Curricula Committee, Member

2015 Orange and Blue Days, faculty participant in new student recruitment activities

2016	Admitted Student Day, faculty participant in new student recruitment activities
2015-2017	Directors of Undergraduate Studies, discussion group participant
2017	UIUC LAS Teaching Academy Workshop, panelist on "How open should our assessments be?" – workshop to discuss incorporating emerging technologies for open-ended assessment strategies (essays, discussions, projects, papers, etc.)
2017-now	LAS Honors Council, Member
2018	LAS Nominating Committee, Member
2020	LAS 5-Year Administrative Review Committee for the Director of the School of Integrative Biology, Chair
2022	LAS Student Success Innovation Program, Proposal Review Committee, Chair
2023	LAS 5-Year Administrative Review Committee for the Director of the ACDIS Program, Elected Member

Institute for Genomic Biology:

2004-2013	Host-Microbe Systems Theme Leader and IGB Executive Committee Member
2011	IGB Director Search Committee, Member

Beckman Institute for Advanced Science and Technology:

2016	Beckman Integrative Imaging Theme, Bioimaging Science and Technology Research Group, Affiliate Member – participated in site visit for External Theme Review

College of Veterinary Medicine:

2000-2005	Graduate Student Advisory, Preliminary Examination and Thesis Committees, Member
2016-2017	Faculty Search Committee, Member: Department of Veterinary Clinical Medicine, Small Animal Soft Tissue/Oncology Surgery
2016-now	Several Graduate Student Advisory, Preliminary Examination and Thesis Committees, Member
2018-now	Several Junior Faculty Advisory Committees, Member

Carle-Illinois College of Medicine:

2016-2017	Interim Course Director, curriculum development for course/clerkship module on Digestion and Gastrointestinal Tract System, successful application for LCME Accreditation of new CI-COM
2017-2022	Curricular Content Expert and Thread Director for Microbiology and Immunology, reviewer of overall curriculum content development
2017-2022	Medical Student Admissions Evaluator
2017-2021	Faculty Executive Committee, Elected Member and Vice-Chair
2019	Search Committee for Head of Department of Biomedical and Translational Sciences, Member

2019-now Curriculum Oversight Committee, Elected Member, Vice-Chair (2020-2021), Interim Chair (2021-2022), Phase 2 Task Force, Member (2021-2022), Committee on the Evaluation of the Curriculum (2021-2022), Curriculum Evaluation Subcommittee (2022-now)

2019-2025 Admissions Committee, Elected Member (2019-2025), Competencies Subcommittee (2020-2025), Vice-Chair (2022-2023), Finalist Subcommittee (2022-2025)

2022 Search Committee for Associate Dean for Student Affairs of CI-COM, Member and Diversity Advocate

University of Illinois:

1999-2018 Research Board, Ad Hoc Grant Reviewer

2000-2006 Summer Research Opportunities Program for Minority Undergraduates – Mentor

2000-2006 Howard Hughes Undergraduate Research Program - Mentor

2000-2003 Graduate College Fellowship Board, Biological & Agricultural Sciences Area Committee, Member

2002-now Scientific Committee of the Center for Zoonoses Research (CZR) at UIUC

2002-now Institutional Biosafety Committee, Member

2002-2013 UIUC Representative on Executive Committee of the NIH-sponsored Great Lakes Regional Center for Excellence in Biodefense & Emerging Infectious Disease, Member

2002-2006 Planning Committee for the UIUC BSL-3 Biocontainment Facility, RBL (Regional Biocontainment Laboratory) proposal to the NIH in 2002, to Carver Trust in 2005

2002-2003 UIUC Competitive Research Initiatives Grant Review Committee, Member

2003-2007 MacArthur Foundation Senior Faculty Search Committee, Member

2003-2005 Workshop Organizing Committee, Center for Nanoscale Science & Technology, Member

2003-2005 Graduate College Fellowship Board, Biological & Agricultural Sciences Area Committee, Chair

2003-2005 Graduate College Fellowship Board Executive Committee, Member

2003 Invited UIUC Representative (at Chancellor's request) to the Stony Brook University Forum on Global Security, "Preparing Experts to Combat Bioterrorism: Bridging the Science-Policy Divide", New York, New York (11/7/03)

2004 Provost's Ad hoc Campus-wide Committee on Pathobiology, Chair

2004-2005 UIUC Relations-Building Delegation to Singapore

2004-2005 ACDIS Director Search Committee, Member

2004-now ACDIS Executive Committee, Member

2004-now Center for Zoonoses Research (CZR) at UIUC, Scientific Co-Director

2005-now Campus Strategic Planning Emergency Operations Committee – Infectious Disease Response Working Group, Member

2005-2017 Cross-campus Infection Biology Working Group Director and Training Grant Planning and Executive Committee Member

2006-2008 Chancellor's Steering Committee on Translational Research, Member

2006-2008 Faculty Senate, Member

2006-2012	Restricted Research Committee, Member
2006-2010	Graduate College Fellowship Board Executive Committee, Chair
2006-2008	Chancellor's Committee on Commencement, Member
2007	Invited Participant in One Medicine Colloquium
2007-2008	Advisory Committee on Public Engagement, Member
2009	Graduate College Director of External Fellowships Search Committee Member
2009-2010	UIUC Relations-Building Delegation to Southern Medical University, Guangzhou, Guangdong Province, P. R. China – successfully negotiated MOU between UIUC and SMU
2010-2012	Graduate College HHMI Fellowship Review Committee
2011	ACDIS Associate Director Search Committee, Chair
2013	Forum sponsored by the Chancellor, Provost, and Gender Equity Council on "Moving Forward: Advancing the Future of Women Faculty at Illinois", Group Facilitator
2013	UIUC Block Grant Competition, Area IV Biological and Agricultural Sciences Committee, Chair
2013	ACDIS Associate Director Search Committee, Chair
2013-2015	UIUC Mid-Career Faculty Advisory Group, Member
2014-2015	Association for Women in Science, Member
2014-2016	Faculty Senate, Member
2015	Spearheaded and secured the designation of UIUC as the 11th ASM Milestones in Microbiology Site for notable historical microbiological events and the outstanding achievements of UIUC microbiologists and their contributions to the field of microbiology; organized, convened and served as Master of Ceremonies for plaque dedication ceremony (10/16/15)
2016	Provost's Office-sponsored faculty mentoring workshop, participant: "How to Mentor"
2016-2018	Interdisciplinary Health Sciences Initiative (IHSI), NIH Grant Writing, mentor for junior faculty
2017	Pew Limited Submissions Biomedical Scholars Program, proposal reviewer
2017-2019	Interdisciplinary Health Sciences Initiative (IHSI), NIH Grant Writing Series, Specific Aims Workshop for junior faculty, convener, panelist and facilitator
2017	Provost's Strategic Planning Meeting, invited participant for "Goal 2 – Provide Transformative Learning Experiences"
2018-2021	Office of Minority Student Affairs, TRIO Ronald E. McNair Scholars Program, faculty mentor
2018	Campus Fulbright Scholars Program, priority grant application reviewer
2018-now	Campus Research Board, Member
2018	Campus Schmidt Postdoctoral Fellowship Program, priority grant application reviewer
2018	Campus WM Keck Foundation Medical Research Program, priority grant application reviewer
2019	Provost's General Education Assembly on Learning Outcomes for the Campus, Working Group for the Life Sciences, Member
2019	Pew Limited Submissions Biomedical Scholars Program, proposal reviewer
2019-2022	Faculty Fellow for Sandia National Laboratories, Office of the Vice Chancellor for Research and Innovation

2019-now OVCRI Campus Research Administrators Working Group, Member

2020-2021 Colleges of LAS and Engineering, Campus Professional Certificate or MS Degree in Pandemic Response Committee, Member

2021-2022 Search Committee for the Dean of the Carle Illinois College of Medicine, Member

2021-2023 Provost's General Education Assessment Committee, Chair

2022 ACDIS Office Manager Search Committee, Member & Diversity Advocate

2022-2024 Senior Faculty Fellow for Sandia National Laboratories, Office of the Vice Chancellor for Research and Innovation

American Society for Microbiology:

2001-now ASM Student Chapter (UIUC Microbiology Club) – Faculty Advisor

2002-2014 National ASM Student Membership Committee, Member

2003, 2004, 2013 National ASM Career Mentor at the ASM General Meeting

2006-2012 ASM International Board, Morrison Rogosa Award Review Committee, Member

2019-now American Academy of Microbiology, Fellow

2022-now Subcommittee on Elections, American Academy of Microbiology, Elected Member

National Society of Collegiate Scholars:

2022-now UIUC Chapter Faculty Advisor

Community/Public Service:

2000-now American Association for University Women (AAUW), Member, Vice-President of Programs (2015-2021), President (2021-now)

2004 Invited Guest for WILL Radio AM Focus 580 Talk Show on "Nanobiotechnology" (5/6/04)

2004 Invited Expert (at request of the National Academy of Engineering and the Radio Television News Directors' Foundation) to participate in Bioterrorism Workshop on "News and Terrorism: Communicating in a Crisis", Chicago, Illinois (8/11/04)

2006 UIUC Provost's Committee for Public Relations Outreach planning for communicating with the public about pandemic flu and bird flu

2007 Channel 15 News, Special Public Health Report on "Importance of Hand Washing"

2007 UIUC main website feature *A Minute With*™ on "Protect yourself against staph infections"

2008-2010 *Prevention Magazine*, advisory commentary in feature article and on-line article update about "How to Keep Household Items Safe for Health"

2009-2021 Committee on Publication Ethics (COPE) – International Committee Member

2010 *Self Magazine*, advisory commentary in feature article about "Room-by-Room Home Biohazard Guide"

2011 YMCA/YWCA and AAUW-sponsored public *Friday Forum* head-table discussion panelist on "Why So Few? Women in Science, Technology, Engineering and Mathematics" Urbana, Illinois (9/16/11)

2012 *American Medical Student Association UIUC Chapter: Forum on Medical and Research Careers for High School Students* – "Being a Research Scientist" (4/12)

2013 Successfully negotiated with Chancellor Phyllis Wise for joint UIUC-AAUW partnership to support women in higher education, particularly in the STEM areas.

2014 Ad Hoc scientific advisor for US Senator Mark Kirk regarding the Joint Health, Education, Labor and Pensions (HELP) and Labor, Health and Human Services (LHHS) Congressional Hearing on "Ebola in West Africa: A Global Challenge and Public Health Threat" (Tuesday, September 16, 2014 at 2:30pm, 216 Hart Senate Office Building) – prepared an executive summary and pertinent research questions regarding problems surrounding the development of rapid and effective Ebola treatment options, vaccination, containment and other associated biothreat issues.

2014 Invited interview for Chicago-based Groks Science Radio Show and Podcast, on topic of the "West African Ebola Outbreak"

Posted at URL: http://grokscience.wordpress.com)

2015 Ebola Teach-In: "Ebola 101" – 2-hr Lecture and Panel Discussion, 2 public forums sponsored by UIUC Center for Global Studies, Center for African Studies, Global Health Initiative, and the University YMCA (11/10/15, 11/17/15)

Posted at URL: http://globalhealth.illinois.edu/2014/11/05/ebola-101/

2015-now YWCA, promoting diversity and empowering women for Leadership in Science, Technology, Engineering and Mathematics (STEM), Member

2016 Health Professions Perspectives Discussion on "Global Health and Disease" sponsored by the UIUC Career Center, Global Health Initiative (2/18/16)

2016 Invited interview for Chicago-based Groks Science Radio Show and Podcast, on topic of the "Zika Virus and Health Risks"

Posted at URL: http://grokscience.wordpress.com)

2016 AAUW-CU-sponsored lecture for *Equal Pay Day*, on "The Gender Wage Gap: Pay equity is still an issue that impacts everyone!" (4/12/16)

2016 *Aahana Student Organization* – 2-hr Lecture and Panel Discussion on UN Sustainability Goals, "Genetically Modified Organisms (GMOs): Impact on Food Industry and Poverty in India" (4/23/16)

2017 *BioCafe: Science for your Community, from your Community*, 1.5 hour talk and discussion on topic of "Genetically modified organisms (GMOs): Impact on the Food Industry and You" sponsored by MCBees and the Champaign Public Library (3/7/17)

2017 AAUW-CU-sponsored lecture and discussion for *Equal Pay Day*, on "The Gender Wage Gap: Pay equity affects us all!" (4/4/17)

2017 Co-Organizer & Convener, AAUW-IL, Inc. 93rd State Chapter Convention, "Building on a Legacy of Leadership" with topics on "Equal means Equal", "Authentic Leadership", "Elect Her/Running Start", "Title IX", and "Equity and Diversity: Leading a Culture of Inclusivity," 2-day event hosted by AAUW-CU at iHotel, Champaign, IL (05/17)

2017 *United Against Inequities in Disease (UAID) Student Organization* – 2-hr lecture and discussion on “Emerging/Escalating Issues in Biosecurity” (10/19/17)

2017 *Associated Colleges of the Chicago Area (ACCA), consortium of 15 liberal arts colleges in the Chicago area, Biology Lecture Series* on “The Human Microbiome” – 2-hr lecture and discussion on “Our Evolving Microbiomes”, Benedictine University, Lisle, Illinois (11/07/17)

2017 Co-Organizer & Convener, AAUW-CU, *Jane Addams Day Celebration Event*, showing of the documentary film "Hull House: The House that Jane Built", Champaign Public Library (12/10/17)

2017-now Official Nominator for the "Japan Prize" Selection Committee, *The Japan Prize Foundation*, Tokyo, Japan

2018 Co-Organizer, Convener, Presenter & Panelist, *Women's Career Institute*, sponsored by AAUW-CU, YWCA, Women's Resource Center, Career Center, School of Molecular and Cellular Biology, UIUC (02/24/18)

2018 *Beta Psi Omega Student Organization* – 1-hr lecture and discussion on "Emerging-Escalating Issues in Biosecurity" (02/21/18)

2018 Co-Organizer, Convener & Panelist, "One Health: Interdisciplinary Knowledge of Infectious Diseases", sponsored by UIUC Center for Global Studies and Center for Health, Aging and Disability, 1-day workshop on educational aspects of One Health and infectious diseases from a global perspective" (04/10/18)

2018 Co-Organizer & Convener, AAUW-CU, public showing of the documentary film "Equal Means Equal", Champaign Public Library (04/15/18)

2018 *Beta Psi Omega Student Organization* and *Students for Environmental Concerns* – 1.5-hr public forum on "Climate Change and Human Health" (11/13/18)

2018, 2019 Co-Organizer, Facilitator & Presenter, Asian International HHMI & NSF-sponsored Mobile Summer Institute on Undergraduate Education, week-long training workshop for ShanghaiTech University faculty on "Active-Learning and Scientific Teaching"

2019 Co-Organizer, Convener, Presenter & Panelist, *Women's Career Institute*, sponsored by AAUW-CU, YWCA, Women's Resource Center, Career Center, School of Molecular and Cellular Biology, UIUC (02/23/19)

2019-2020 *Subject Matter Expert,* retained by corporate law firm DOAR, Inc., and subpoenaed as an Expert Witness for a Trial before the International Trade Commission in Washington DC, regarding litigation involving botulinum neurotoxin (3/19 – 6/20)

2019 Organizer & Convener, AAUW-CU-sponsored lecture & discussion for *Equal Pay Day*, on "Title IX: discrimination and gender-based harassment" (04/06/19)

2019 Session Presenter, Women in Chemistry Retreat, UIUC, session for women graduate students and postdocs on "Navigating Tricky Situations" (08/23/19, 40 attendees)

2019 *BioTechniques, "Combining engineering with medicine: an interview with Brenda Wilson"* online article by Abigail Sawyer, Digital Editor of the Journal *BioTechniques*, posted on 08/19/2019 at URL:

https://www.biotechniques.com/microbiology/combining-engineering-with-medicine-an-interview-with-brenda-wilson/

2021-now Sigma Xi: The Scientific Research Honor Society, Faculty Member

2021 *Science, "Decoy toxin harnessed to fight botulism,"* interview for a Biomedicine spotlight article by Kelly Servick, Journal Editor, commentary on a *Science* publication, volume 371 (issue 6525), pp. 113-114, posted on 01/08/21 at URL: https://www.science.org/doi/10.1126/science.371.6525.113

2021 Panelist Discussant (invited), Spotlight Research Forum for Celebration of Women's History Month: "Perspectives of Women in STEM" virtual conference hosted by Sandia National Laboratories (03/10/21, 89 attendees)

2021 Panelist Discussant (invited), Women@NCSA's Forum on: "Taking the Wheel: How to Navigate Difficult Conversations" virtual conference hosted by the National Center for Supercomputing Applications, UIUC (04/07/21, 109 attendees)

2021 iGEM Team 2021 International Mentor, Indian Institute of Science Education and Research (IISER), Tirupati, India – Worked with 10-membered iGEM team from IISER on their project for the international iGEM competition (6/21-10/21)

2021 Academic Faculty Job Search Discussion Panel for Postdoctoral Development, Panelist (8/24/21)

2022 Targeted outreach with Eisenhower High School, Decatur, Illinois. Perspective profession interview with URM student in a dual credit college preparatory course through Richland Community College and Decatur Public Schools (Instructor: Ron Lybarger)

2022 Academic Faculty Job Search Discussion Panel for Postdoctoral Development, Panelist (7/21/22)

2023 *Women's Career Institute*, Workshop Presenter for "Managing Difficult Conversations in the Workplace and Beyond" Breakout Session, sponsored by Women's Resource Center and UIUC Career Center (03/25/23)

SERVICE ACTIVITIES AT WRIGHT STATE UNIVERSITY

Department of Biochemistry and Molecular Biology:

1995-1999 Departmental Recording Secretary

1994-1999 BMB MS Degree Program Admissions Committee, Member

1994-1999 Departmental Graduate Education Committee, Member

1994-1999 Departmental Student Learning/Outcome Assessment Committee, Member

1997-1999 BMB Postdoctoral Program Proposal and Program Committees, Member

1998-1999 BMB Graduate Student Recruitment Committee, Member

Biomedical Sciences PhD Degree Program:

1995-1997 BMS PhD Degree Program Admissions Committee, Member & Chair (1996-1997)

1997-1999 BMS PhD Degree Program Curriculum Committee, Member

School of Medicine:

1996-1997 Second Year Medical School Curriculum Committee: Endocrine Content Group

1998 Grant Review Committee for SOM Basic Biomedical Research Program, Member

1998-1999 Department of Microbiology & Immunology Faculty Search Committee, Member

College of Science and Mathematics:

1996-1998 Academic Petitions Committee, Member

1998-1999 Academic Mediations Committee, Member

WSU University:

1997-1999 Radiation Safety Committee, Member

Community Outreach/Public Service:

1994 Summer Undergraduate Internship Program for Minorities & Women – Mentor

1994-1995	Science Apprenticeship Program for High School Minority & Women Students & Teachers – Mentor
1997-1998	STREAMS Undergraduate Internship Program for Minorities – Mentor
1997-1999	American Cancer Society Public Service Announcements – Participant
1998	Channel 7 News public health 2-part series on “safety and food-borne bacteria”
1998	BMB Community Outreach Educational Program – Participant

Biographical Sketch

Andrew S. Belmont Birth Date: 8/9/56

Education:

Princeton University, Princeton, NJ	AB	1977	Physics
Temple University, Phila., PA	M.D.	1982	Medicine
Temple University, Phila., PA	Ph.D.	1983	Physiology/Biophysics
The Johns Hopkins Univ, Baltimore, MD		1983	Postdoc
University of California, SF, CA		1983-89	Postdoc

Research and Professional Experience:

1977-1983	Medical and graduate student, Temple University Thesis Advisor: Claudio Nicolini
1983	Postdoctoral Fellow with Dr. Paul Ts'o, Division of Biophysics, School of Hygiene and Public Health, The Johns Hopkins University
1983-1989	Postdoctoral fellow with Dr. David Agard, Department of Biochemistry and Biophysics, University of California, San Francisco
1989-1995	Assistant Professor, Department of Cell and Structural Biology, University of Illinois, Urbana
1995-1999	Associate Professor, Department of Cell and Structural Biology, University of Illinois, Urbana
1999-2005	Professor, Department of Cell and Structural Biology University of Illinois, Urbana
1/04 - 6/04	Interim Head, Department of Cell and Structural Biology
2005-present	Professor, Department of Cell and Developmental Biology University of Illinois, Urbana
1/2008-12/2013	Head, Department of Cell and Developmental Biology University of Illinois, Urbana

Awards, Honors, Recognition:

1977	AB, magna cum laude, Phi Beta Kappa, Sigma Xi, Princeton University
1979-1980,1981-1982	University Graduate Fellowship, Temple University
1984-1986	Damon Runyon-Walter Winchell Postdoctoral Fellowship
1986-1987	NIH Postdoctoral Fellowship
1990-1994	Whitaker Foundation Biomedical Engineering Research Grant for New Researchers
1998	University Scholar, University of Illinois
2001, 2006-2008, 2010-2012	Incomplete List of Teachers Rated Excellent
2011	Program Committee for ASCB 2011 Annual Meeting
4/1/14-3/31/17	Visiting Professor at National Institute of Genetics (NIG), Japan
8/14-8/19	Lincoln Professorial Scholar, University of Illinois, Urbana-Champaign

Research Support:

1. NSF equipment grant, 6/15/89-11/30/91, $92,140, "Acquisition of an Optical Sectioning Workstation"
2. NIH R29 grant, 7/1/90-6/31/95, $348,900 direct costs total, "Nuclear and Chromosome Decondensation During G1-S"
3. The Whitaker Foundation, Biomedical Engineering Grant, 12/1/90-4/31/94, $149,859 direct costs total, "Computational Unraveling of Interphase Chromosome Structure"
4. BRSG, 4/01/90-9/3/91, $10,000, "Support for Optical Sectioning Workstation"
5. NIH BRSG Small Instrumentation Program, 6/91-5/92, $11,275, "Acquisition of a high vacuum evaporator"
6. NIH phase II SBIR grant, 5/1/94-4/30/96, $31,264 direct costs total (consultant costs, PI is Dr. Rick Powell, Nanoprobe, Inc.)
7. NSF Instrumentation grant, 6/15/94- 5/31/96, $266,382, "Acquisition of 200 Kev Transmission Electron Microscope" (co-PI)
8. NIH RO1 grant, 7/1/95-6/31/99, $649,453 direct costs total, "Large-scale Chromatin Structure and Function"
9. NIH SBC-B-0394, 3/1/98-2/28/00, $41,967 direct costs total, "Fluorescent and large metal cluster combination probes", (PI is Dr. Rick Powell, Nanoprobe, Inc)
10. NIH R01 GM58460, 2/1/99- 1/31//03, "$697,423 direct Chromatin Domain Structure and Function"
11. NIH R01 GM42516, 7/1/99-6/30/04, $688,057 direct, "Large-scale chromatin structure and function"
12. NIH R01 GM58460, 2/1/03-1/31/07, $810,000 direct, "Chromatin Domain Structure and Function"
13. Research Board Grant: 4/30/02- 4/30/03, "Probing Genome Organization using Chemical Genetics", $24,200 total (Arnold O. Beckman Research Award)
14. Human Frontier Science Program Organization, 6/03-1/07, $300,000 (to ASB) "Investigation of the changes in nuclear and chromosome organization during mammalian X inactivation"
15. NIH R01 GM42516, 7/1/04-6/30/09, $746,000 direct, "Large-scale chromatin structure and function"
16. NIH R01 GM58460-08S1, 2/1/06-7/31/07, $65,914 direct, “Chromatin Domain Structure and Function”
17. NIH R01 GM58460, 8/1/07-1/31/11, $902,702 direct, “Chromatin Domain Structure and Function”
18. Roy J. Carver Charitable Trust #08-3189, $330,000 “Acquisition of the OMX Light Microscope and Creation of a MCB Imaging Facility”
19. NIH R01 GM058460-10S1, 2/01/08-1/31/10, $71,260 Administrative Supplement in response to NOT-NS-08-013 for Human Pluripotent Stem Cell Research to “Chromatin Domain Structure and Function” grant
20. NIH SBIR grant R43 EB0008621-01A2 “3-15 nm Covalent Gold for High Resolution Electron microscopy, subcontract to A. Belmont, 7/15/09-1/14/10, $13,061 direct

21. NIH R01 GM058460-13, 6/1/11-5/31/15, $960,824 direct, $1,399,964 total, "Chromatin Domain Structure and Function"
22. NIH R01 GM098319-01, 8/15/2011- 7/31/2015, $760,000 direct, $1,158,112 total, " Engineering stable, independent multi-transgene expression in mammalian cells"
23. Internal Equipment Grant through VCR office, Upgrade of OMX Structured Illumination Microscope for Fast, Multi-Channel, Live-Cell Super-resolution Light Microscopy, $187,500.
24. NIH R01 GM058460-13, 6/1/15-8/31/16, 1 year supplement, $80,069 direct costs for year, $116,267 total, "Chromatin Domain Structure and Function"
25. NIH 1U54DK107965-01, 10/01/2015- 8/31-2020, $1,246,661 direct, $369,707 indirect, $1,616,368 total overall funding first year, PI Andrew Belmont, to PI laboratory first year-$277,964 direct, $451,399 total, "Combined Cytological, Genomic, and Functional Mapping of Nuclear Genome Organization" (PI plus 4 Co-I Center Grant)
26. NSF EAGER MCB 17-23008, 5/1/2017-4/30/2019, $300,000 total, PI Prasanth Kannanganattu, co-I Andrew Belmont, $147,359 total to Belmont laboratory, "Developing TSA-RNA-Seq for Subcellular Transcriptomics"
27. NIH R01 GM058460-18, 1/1/18-12/31/21, $250K direct per year "Chromatin Domain Structure and Function"
28. NIH U01DK127422, 9/15/20- 6/30/25, $882,505 total 1st year to 3 laboratories, PI Andrew Belmont, Identification of the active nuclear niche(s) using novel proteomic, genomic, transgenic, and live-cell microscopy technologies
29. NIH UM1HG011593-01, 9/22/20-6/30/25, $2,075,409 total 1st year to 8 laboratories, PI Jian Ma, co-PI Andrew Belmont, Multiscale Analyses of 4D Nucleome Structure and Function by Comprehensive Multimodal Data Integration
30. NIH R01058460-21, 8/1/2022 – 4/30/2026, $250K direct per year "Chromatin Domain Structure and Function"

Courses Taught:

Fall 1989- Spring 1990:	CSB 360: 13 contact hours Biophysics 301: 1.5 contact hours
Fall 1990- Spring 1991	CSB 360: 26 contact hours Biophysics 301: 1.5 contact hours
Fall 1991- Spring 1992	CSB 300: 25 contact hours CSB 335: 44 contact hours Biophysics 301: 1.5 contact hours
Fall 1992	CSB 300: 29 contact hours
Fall 1993- Spring 1994	CSB 300: 26 contact hours CSB 410: 42 contact hours Bio 350: 1 contact hour
Fall 1994	CSB 300: 36 contact hours
Spring 1995	Biophysics Tuturial
Fall 1995	CSB 300: 22 contact hours
Spring 1996	CSB 410: 42 contact hours, Biophysics Tutorial
Fall 1996	CSB 300: 20 contact hours
Fall 1997	CSB 300: 20 contact hours
Spring 1998	CSB 410 (Research Ethics): 8 contact hours

Fall 1998	CSB 300: 20 contact hours
	CSB 490: 5 contact hours
Spring 1999	Biochem 494A: 2 contact hours
Fall 1999	CSB 300: 20 contact hours
	CSB 490: 6 contact hours
Spring 2000	Biological Physics 001 Seminar: 1 hour
Fall 2000	CSB 300: 23 contact hours
Spring 2001	CSB 410G: 44 contact hours
	CSB 410: 4.5 contact hours
Fall 2002	CSB 300: 23 contact hours
Spring 2005	MCB 501: Functional genomics in Cell Biology Seminar, 44 contact hours
Spring 2006	MCB 529 AB1: Graduate Survey Course in Molecular Cell Biology, 17 contact hours teaching, course manager (44 hours overall)
Spring 2007	MCB 529AB1: Cell Biology, 31.5 contact hrs
Spring 2008	MCB 529AB1: Cell Biology, 29.5 contact hrs
Spring 2009	MCB 529AB1: Cell Biology, 22.5 contact hrs
Spring 2010	MCB 529AB1: Cell Biology, 13.5 contact hrs
Spring 2011	MCB 529AB1: Cell Biology, 19.5 contact hrs
Spring 2012	MCB 493.acb: Cell Biology, 17 contact hrs
Fall 2012	MCB 529WRI: Writing Class, 14 contact hrs
Spring 2013	MCB 493acb: Cell Biology, 17 contact hrs
Fall 2013	MCB 529WRI: Writing Class, 14 contact hrs
Spring 2014	MCB 493acb: Cell Biology, 14 contact hrs
Spring 2015	Sabbatical
Fall 2016	MCB 540 Scientific Writing, 19 contact hours
Spring 2017	MCB 493 Epigenetics, 43 contact hours
Spring 2018	MCB 493 Epigenetics, 43 contact hours
Spring 2019	MCB 493 Epigenetics, 43 contact hours
Fall, 2020	MCB 540 Scientific Writing, 22 contact hours
Fall, 2021	MCB 493 Epigenetics, 43 contact hours
Fall, 2022	MCB 493 Epigenetics, 43 contact hours

Previous and Current Students and Associates:

Undergraduate Research Projects:	Anja Thilenius, Madhuri Wadehra, Scott Hofman, Jason Hoeksam, Gina Gottlieb, Corrie Tolerico, Allison Kehoe, Jon Radosta, Gena Bloth, Sarah Scheiderich, Yvonne Kehinde, Shani Pullappally, Ashouri Anousheh, Mary Anne Floyd, Rebecca Taggart, Nazanin Ashourian, Rashi Chandra, Paul Donlin-Asp, Jurgis Alvikas, Sudeep Soni, Nathanial Ryckman, Taylor Graff, Jeonghun Park, Gene Kim, Disha Kuchangi, Wiktoria Kowalczyk
Master Thesis Advisor:	Carmen Robinett, Lan Zhao (Biology), Mei-Chun Lai

PhD Thesis Advisor:	Cell and Developmental Biology: Gang Li, Ann Nye, Chien-Hui Chuang, Yan Hu, Wei-Cheng Wu, Yu Chen, Xiang Deng, Nimish Khanna, Binhui Zhong, Liguo Zhang, Gabriela Hernadez, Pradeep Kumar, Shuting Liu, Neha Chivukula Venkata, Purnam Ghosh, Saireet Misra, Shreyasi Neogi Biophysics: Yuri Strukov, Tudorita Tumbar, Qian Bian, Jiah Kim
Visiting Graduate Student:	Sevinci Memedula (University of Bucharest)
PhD Research Advisor:	Alexander Delaney (Electrical and Computer Engineering)
Postdoctoral Fellow Advisor:	Steffen Dietzel, Sevi Memedula, Alena Rego, Paul Sinclair, Hanna Walukiewicz, Gabriela Sustackova, David Zimmerman, Pankaj Chaturvedi, Hatice Kaya, Joseph Dopie, Jiah Kim
Visiting Scientist:	Igor Kireev (Moscow State University)
Research Staff:	Gail Sudlow, Kim Anderson

On-Campus Activities:

Departmental:

Search Committee (1989,1990,1998)
Seminar Committee (1989-1995, 1996-1999)
Curriculum Committee (1989-1994, 1996-1997, 2000, 2002-2003)
Chair, Graduate Advising Committee (1996)
Graduate Advising Committee (1996-1997)
Chair, Seminar Committee (1997-1998)
Chair, Research Resources Committee (1998-2000)
Research Resources Committee (1998- 2003)
Advisory Committee (1998-2000, 2003- present)
Interim Department Head, Cell and Structural Biology (Spring 2004)
Graduate Program and Fellowship Committee (2006) (2020-2021)
Graduate Admissions Committee, Chair (2007)
Department Head, 1/08- 12/31/13
Preliminary Exam Committee, 1/14-8/15, 4/20
Advisory Committee, 8/15-present
Grant Mentoring Committee, Chair 8/15-8/19, member to fall 2020
CDB Courses and Curriculum Committee, Chair, 8/16-8/18
CDB Seminar Committee, 3/18- 5/18
Promotion and Tenure Committee, co-chair, 8/19-present

School:

Chair, MCB Seminar Committee (1998-1999)
Cell Biology Ad Hoc Search Committee (1999)
Strategic Planning Committee (1998, 2000-present)
MCB Executive Committee (2002-2004, 2008-2013)
Tenure and Promotion Committee (2003-present)
Head, Cell Biology Search Committee (2004-2005)
Review Committee for Biochemistry (Spring 2005)
Confocal Facility Committee Chair (2007- 2014)
Light Microscopy Facility Committee (2008-2009)
Promotion and Tenure Committee (2015-present)
Courses and Curriculum Committee (2016-2017)
MCB Strategic Advisory Committee (2017-present)
Chair, MCB Core Curriculum Review Committee (2019-Jan. 2021)
Chair, MCB Stem cell and Regeneration Biology faculty search committee (2022-2023)

Beckman:

Computer Visualization Committee (1989-1994)

College of LAS

Chair, 5-year Review Committee for School of Chemical Sciences Director (2017, Sp)

Campus:

Electron Microscopy Advisory Committee (1990-1991, 1993-1995)
Chairmain, CEM Review Committee (1995)
Biophysics Training Grant Advisory Committee (1992-1995)
Campus Research Board Reviewer
School of Life Sciences Reorganization Committee (1996)
Advisory Committee of Fluorescence Dynamics Laboratory, NIH Regional Resource (1999-present)
Cell as a Micromachine working group (2003-2004)
Review Committee for MCB Director (elected departmental representative) (2005)
University Scholars Award Committee (2006)
Chair, Graduate College Doctoral Candidacy and Tuition Committee (12/13-4/14)
Campus Senate departmental representative (8/16-present)

Off-Campus Activities

Program Committee for American Society for Cell Biology 2011 Meeting

Reviewer: BBRC, Biochemistry, Bioimaging, Biophysical Journal, Cell, Cell Reports, Chromosoma, Chromosome Research, Current Biology, Current Opinion in Cell Biology, Developmental Cell, EMBO, EMBO Reports, eLife, Epigenetics and Chromatin, Experimental Cell Research, Gene, Genes and Chromosomes, Genes and Development, Genome Biology, Genome Research, Human Genetics, IEEE Transactions in Biomedical Engineering, iScence, Journal of

Biological Structure, Journal Biomedical Optics, Journal of Biomolecular Structure and Dynamics, Journal of Cell Biology, Journal of Cell Science, Journal of Cellular Biochemistry, Journal of Histochemistry and Cytochemistry, Journal of Structural Biology, JOVE, Microbiology and Molecular Biology Reviews, Molecular and Cellular Biology, Molecular Biology of the Cell, Molecular Cell, Nature, Nature Communications, Nature Genetics, Nature Cell Biology, Nature Methods, Nucleic Acid Research, Nucleus, Physics Review E, PLOS Biology, PLOS Genetics, PNAS, RNA, RNA Biology, Science, Trends in Cell Biology

Reviewer:
NIH Special Review Section, 1990, 1994
NIH Reviewer, Special Genetics Study Section, 1991
NIH Reviewer, Shared Instrumentation Special Study Section, 1993-1994
NIH Special Reviewer, Molecular Cytology Study Section, 1994, 1995
NIH Site Visit member, Shared Instrument Study Section, 1994
NIH Special Reviewer, Molecular Biology Study Section, 1995
NSF Panel Member, Cellular Organization, 1995
NSF Panel Member, Cellular Organization, 1996 (declined)
NIH Reviewer, Shared Instrumentation Special Study Section, 1997 (declined)
NIH Reviewer, Postdoctoral Fellowship, Molecular Cytology Study Section, 1997 (declined)
NIH, Site visit, Visualization of Biological Complexity Resource, ZRG1 SSSI 03S
NIH, Special Emphasis Panel ZRG1 CDF-3 (01)
National Science Foundation, Cell Biology Panel (1998)
NIH CDF-2 study section, ad hoc 10/02, 6/04
NIH NCSD, ad hoc 2/12
United States-Isreal Binational Science Foundation
Human Frontier Science Program
The Wellcome Trust
Alberta Heritage Foundation
NOW, Aard- en Levenswetenschappen, From Molecule to Organism ALW (Dutch grant review) (2005-2006)
Austrian Science Fund (2005-2006)
NIH T01 and Challenge grant mail reviewer, 2009
NIH T01 grant mail reviewer 2010, 2013
Medical Research Council
Janiella Farms Research Campus Project Team Review Panel, June 2012
NIH NCSD study section member (7/2014-6/2018)
Natural Sciences and Engineering Research Council, Canada
NICHD Review of Intramural Program, 6/2021

Editor:
Journal of Cell Biology, 8/99- 12/08
Chromosome Research, 1/00- 2003
Epigenetics and Chromatin, 4/08-present
Nucleus, 2008-present
Current Opinion in Cell Biology, 2008-present
Current Biology, 2014-2020

NIH 4D Nucleome Steering Committee 10/2015- present
NIH 4D Nucleome Steering Committee Co-chair 2016-Fall, 2021
NIH 4D Nucleome NOFIC Steering Committee member 10/2015-Fall, 2021

Member of "Faculty of 1000"

Invited Talks:

1. 12th International Congress for Electron, Microscopy, Seattle, Washington, Aug. 1990
2. Congress for Electron Microscopy, 1991
3. Weiss Center for Research, Geisinger Clinic, 5/91
4. Northwestern University, 1/92
5. Northern Illinois University, 3/92
6. ASCB 1994 meeting, Minisymposium speaker
7. Workshop, Joint Histochemical Society - Microscopy Society of America Meeting, 1995
8. Discussion leader, Gordon Conference, Biological Structure and Gene Expression, 1995
9. Northwestern University, 3/96
10. Bowling Green State University, 4/96
11. Stoney Brook University, 4/96
12. Cambridge Symposia, Nuclear Structure-Gene Expression Interrelationships, 5/96
13. Scripps Research Institute, 6/96
14. NATO Advanced Study Institute, Genome Structure and Function, 6/96
15. Session Chair, Keystone Symposia, Functional Organization of the Nucleus, 2/97
16. Ringberg Castle, Germany, Electron Tomography Workshop, 3/97
17. University of Amsterdam, E.C. Slater Institute, 3/97
18. Gordon Conference, Biological Structure and Gene Expression, 3/97
19. International Society of Analytical Cytology, 3/98
20. Keystone Symposia, Epigenetic Regulation of Gene Expression, 4/98
21. University of Iowa, Genetics Program, 4/98
22. British Society of Cell Biology, 4/98 (declined)
23. Fred Hutchison Cancer Research Center, 5/98
24. Gordon Conference, Nucleic Acids, 6/98
25. Gordon Conference, Molecular Cytogenetics, 7/98 (declined)
26. CSHL Meeting, Discussion Leader, Dynamic Organization of Nuclear Function, 10/98
27. Princeton University, Molecular Biology Department, 11/98
28. National Institutes of Health, 11/98
29. ASCB 1998 meeting, Special Interest Subgroup, 12/98
30. University of Wisconsin, Madison, Pharmacology Department, 1/99
31. Syracuse University, Biochemistry and Molecular Biology Department, 4/99
32. 6th Congress, European Society for Analytical Cellular Pathology, Heidelberg, 4/99 (declined)
33. FASEB Summer Research Conference, Chromatin and Transcription, 7/99
34. Gordon Conference, Red Cell, 7/99 (declined)
35. EMBO Workshop, The Functional Organization of the Cell Nucleus, 9/99
36. Pennsylvania State University, Department of Biochemistry and Molecular Biology, 9/99
37. Iowa State University, Molecular, Cellular, and Developmental Biology program, 10/99

38. University of California, Irvine, Department of Biological Chemistry, 1/00
39. University of Virginia, Department of Biochemistry and Molecular Genetics, 1/00
40. Keystone Symposia, Chromatin Structure and Function, 2/00
41. Cold Spring Harbor Laboratory, 3/00
42. German Society of Human Genetics, 3/00 (declined)
43. Northwestern University, Department of Cell and Molecular Biology, 3/00
44. Gordon Conference, Chromatin Structure and Function, 7/00
45. DNA and Chromosomes, Corsica, 8/00
46. XIth International Congress of Histochemistry and Cytochemistry, York, England, 9/00 (declined)
47. UTSW, Departments of Developmental and Molecular Biology, 10/00
48. University of Chicago, Department of Cell Biology, 1/01
49. Southern Illinois University, Department of Biochemistry, 2/01
50. DNA Repair Workshop, Noordwijkerhout, the Netherlands, 2/01 declined
51. DIMACS/PMMB/MBBC Workshop on DNA Sequence and Topology, Rutgers, 4/01
52. Workshop, Regulation of Chromatin Functions, Madrid, 5/01
53. Massachusetts General Hospital, Cutaneous Biology Research Center, 6/01
54. Workshop on The Nuclear Envelope And Disease, National Cancer Institute, 6/01, declined
55. FASEB Conference, Nuclear Structure and Cancer, 7/01 declined
56. John Innes Symposium, Chromosome Dynamics and Expression, Norwich, 9/01
57. Understanding chromosome behaviour: prospects for constructing chromosome-based vectors for gene therapy, European Science Foundation Workshop, Munich, 9/01 (declined)
58. Genes and Chromosomes, Palm Beach, 10/01
59. Albert Einstein Medical College, Department of Cell Biology, 10/01
60. Genomics meets Nanoscience, Jackson Laboratory, Bar Harbor, ME, 10/01 (declined)
61. The Johns Hopkins University, Department of Cell Biology, 12/01
62. Leidse Genetische Colloquia, Leiden University Medical Center, Spring 2002 (declined)
63. DNA in Chromatin, International Workshop, Plenary Lecture, Arcachon, France, 3/02 (declined)
64. University of Virginia Medical School, Department of Biochemistry and Molecular Genetics, 3/7/02
65. Institute Curie, 6/3/02
66. Netherlands Cancer Institute, Amsterdam, 6/02 (declined)
67. Workshop: The dynamic nucleus, Imperial College, London, 6/02
68. Gordon Conference, Chromatin Structure and Function, Tilton, NH, 7/02
69. Session Chair, Nuclear Structure and Function, 15th International Congress of Electron 70. Microscopy, Durban, South Africa, 9/02 (declined)
70. Nanogenomics, Jackson Laboratory, 10/02, declined
71. University of Massachusetts, Amherst (declined)
72. UCSF, Department of Biochemistry and Biophysics, 1/03
73. Keystone Meeting, Dynamics of Cellular Organization, 2/03
74. AAAS Meeting, Symposium, "The 'New' Nucleus, Mothership of the Human Genome", 3/03
75. Third International Symposium on the Biology of the Eukaryotic Nucleus, organized by National Institute of Child Health and Human Development, 3/03
76. Nuclear Structure and Cancer, FASEB meeting, 7/03 (declined)
77. Nanogenomics, Jackson Laboratory, 10/03
78. Cold Spring Harbor Laboratory, Instructor for Live Cell Imaging and Cytochemistry course, 10/03

79. University of Rochester, 11/03
80. University of Illinois, Chicago, 2/04
81. Predictive Oncology and Intervention Strategies, Plenary Session on Cancer Cell Structure, Nice, France, 2/04 (declined)
82. The Johns Hopkins University, Department of Biochemistry, Invited speaker for graduate course, The Nucleus, spring 04, declined
83. Cell Division and Chromosome Symposia, Academia Sinica, Tapai, Taiwan, 7/04
84. 15th International Chromosome Conference, London, 9/04
85. Purdue University, Department of Biochemistry, 11/04
86. Osaka University, 10/04
87. Nano and Visual Biology of Chromosome Dynamics Symposium, Kyoto, 10/04
88. University of Florida, Gainsville, Department of Biochemistry, 4/05
89. FASEB Summer Course on Nuclear Structure and Cancer, Principal Speaker, 7/05 (declined)
90. University of Munich, Department of Molecular Biology, 9/05
91. UIUC, Department of Physics, Biophysics Seminar Series, 10/05
92. EMBO Conference on Nuclear Structure and Dynamics, Montpellier, France, 9/05
93. Northwestern Medical School, Department of Cell Biology, 10/05
94. Banbury Conference on "The Intracellular Molecular Environment", CSHL, 11/05
95. Cornell University, Department of Molecular Genetics and Biochemistry, 11/05
96. Iowa State University, Department of Biochemistry, Biophysics, and Molecular Biology, 3/06
97. UIUC, Institute of Genomics Biology, Advanced Proteomics Theme, 3/06
98. EMBO Workshop "Functional Organization of the Cell Nucleus", Prague, 5/06
99. Chromatin Structure and Function Gordon Conference, Ill Ciocco, Italy, 5/06
100. Yale University, MCDB Program, 11/06
101. Int. Symp. Functional Organization of the Nucleus, Awaji, Japan, 1/07
102. Colorado State University, Department of Biochemistry & Molecular Biology, 2/5/07
103. UCLA, Institute of Molecular Biology, 2/22/07
104. FASEB Meeting, Nuclear Structure and Cancer, Saxtons River, Vermont, 6/07
105. FEBS Congress, Vienna, Austria, 7/07
106. EMBO meeting on Nuclear Structure and Dynamics, Montpellier, France, 9/07
107. FASEB Meeting, Nuclear Structure and Cancer, Saxtons River, Vermont, 6/07
108. FEBS Congress, Vienna, Austria, 7/07 (cancelled due to family emergency)
109. EMBO meeting on Nuclear Structure and Dynamics, Montpelier, France, 9/07
110. University of Colorado, Denver, Department of Pharmacology, 2/11/08
111. University of Alberta, Edmonton, Department of Oncology, 2/15/08
112. Friedrich Meischer Institute for Biomedical Research, Basel, Switzerland, 3/27/08
113. University of Munich, Munich, Germany, 4/1/08
114. CNRS, Institute of Human Genetics, Institute of Molecular Genetics, Montpelier, France, 4/3/08-4/4/08
115. London Research Institute Symposium on Chromosome Biology, London, England, 5/08
116. Emory University, Biology Department, 11/08
117. Higher Order Genome Organization, The University of Edinburgh, UK 4/09
118. Netherlands Institute for Systems Biology Workshop on Epigenetic Gene Control and Engineered Cell Systems, University of Amsterdam, 4/09
119. Department of Biochemistry and Molecular Biology Annual Symposium, University of Virginia, 5/09

120. University of Chicago, Molecular and Cell Biology Training Grant Seminar, 5/09
121. 17th Jerusalem Fall School in Life Sciences, Nuclear Organization and Dynamics, Hebrew University, 9/09
122. Indiana University, Medical Science Program Seminar, 11/16/09
123. Nuclear Organization Workshop, Keynote Speaker, Curie Institute, Paris, 11/09
124. Janelia Imaging Transcription Conference, Janiela Farm Campus, HHMI, 3/10
125. 75th Symposium on Quantitative Biology, The Nucleus, CSHL, 6/10
126. The Jackson Laboratory, Bar Harbor, 11/4//10
127. Special Interest Subgroup, Synergistic Advances to Study Gene Expression and Next-Gen Imaging, ASCB Annual Meeting, 12/11/10
128. Keynote Speaker, Northwestern University 1st Annual Genetics and Genomics Cluster Symposium, 1/20/10
129. NIH Center of Excellence in Chromosome Biology and Laboratory of Receptor Biology Seminar, 2/23/11
130. University of California, Santa Cruz, Department of Molecular, Cell, and Developmental Biology, 3/7/11
131. University of North Carolina, Chapel Hill, Department of Biology, 3/29/11
132. Moscow State University, Belozersky Institute of Physico-Chemical Biology, 4/18/11
133. EMBO Workshop on Chromatin and Nuclear Structure, Prague, 4/10/11
134. Carnegie Institute, Department of Embryology, Baltimore, 5/9/11
135. Chromatin and Nuclear Organization Minisymposium, Northwestern University, 5/23/11
136. Chromatin and Epigenetic Regulation of Transcription, Penn State University, 6/22/11
137. Wenner-Gren Foundations International Symposium, "Actin and actin associated proteins from gene to polysomes", Stockholm, 9/7/11
138. Yale University, Department of Genetics, 3/6/12
139. Beijing University, Department of Cell Biology, 5/12 (cancelled due to illness)
140. University of Massachusetts Medical School, Worcester, Department of Cell Biology, 2/13
141. German Society of Cell Biology, Plenary Session, 3/13
142. H Symposium, The Dynamic Nucleus of the Cell: Chromatin, Chromosome and Disease Northwestern University, 6/13
143. FEBS 2013 Conference, Genome / Nucleus Symposium, St. Petersburg, Russia, 7/13
144. 19th International Chromosome Conference, Bologna, Italy, 9/13
145. Northwestern University School of Medicine, Department of Cell and Molecular Biology, 1/14
146. Florida University School of Medicine, Department of Anatomy and Cell Biology, 1/14
147. Microscopy and Microanalysis Meeting, Nuclear Architecture and Chromatin Structure Session, Hartford, 7/14
148. CSHL Nuclear Organization and Function Meeting, 8/14
149. Genome Organization and Cell Fate Meeting, University of Hyderabad (UH), India, 12/14
150. Nucleoskeletal Dynamics in Signaling and Gene Expression Special Interest Symposium, ASCB meeting, Philadelphia, 12/14
151. National Institute of Genetics, Japan, 4/2015 (plus two lectures)
152. Department of Biology, National Taiwan University, 4/2015
153. Nuclear Dynamics: Design (and) Principles Symposium, Stockholm, 8/15
154. 4D Nucleome Kickoff Meeting, NIH, 10/15
155. Protein Folding Dynamics Gordon Research Conference, “Folding the Chromosome” Session, Galveston, Texas, 1/16
156. Department of Biological Sciences, Florida State University, 4/16

157. National Institute of Genetics, Japan, 11/16
158. MIT Department of Chemistry, Physical Chemistry seminar series, 12/16
159. Netherlands Cancer Institute, 6/17
160. Abcam Epigenomics Symposium, 6/17
161. University of Illinois, Chicago, Department of Microbiology and Immunology, 9/17
162. Stockholm University, Graduate Course Lecture and also Departmental Seminar, Department of Molecular Bioscience, Wenner Gren Institute, 10/31/17
163. Washington University in St. Louis, Department of Biochemistry, 11/21/17
164. Northwestern University Medical School, Cancer Epigenetics and Nuclear Organization Minisymposium, 2/18
165. Duke University, Developmental and Stem Cell Biology Colloquium, 4/18
166. Midwest Chromatin Meeting, Purdue University, invited talk, 6/18
167. EMBO/EMBL Symposium, Principles of Chromosome Structure and Function, Heidelberg, 9/18
168. Penn State University, Department of Biochemistry and Molecular Biology, 10/18
169. 4DN Annual Meeting, San Diego, 12/18
170. CPLC, Department of Physics, UIUC, 1/19
171. Baylor Medical College, Imaging-based Single Cell Analytics: Applications for Cancer Biology and Therapeutics, 2/25/19
172. Keystone Meeting, 3D Genome: Gene Regulation and Disease, 3/19
173. Gordon Conference, Hong Kong, Genome Organization, 8/19
174. NIH Seminar, 11/19
175. 4DN/ASCB joint meeting, 12/19
176. EMBL Symposium, The 4D Nucleome, 3/20
177. University of Alberta, Department of Cell Biology, 11/20
178. 4D Nucleome Phase 2 Kick-off Meeting, 12/20
179. 4D Nucleome Consortium webinar in Real Time Chromatin Dynamics Interest Group, 9/21
180. The 8th International Symposium on 3D Genomics, Beijing 11/21 (virtual)
181. University of Iowa, Department Biology, 3/22
182. 14th International Conference on Genomes, Pathways, and Systems Medicine, Greece, 6/22
183. 4D Nucleome Scientific webinar, 7/22/22
184. FASEB Conference, The Nuclear Bodies Conference, Hubs of Genomic Activity, 7/22
185. 4D Nucleome Annual Meeting, 12/22
186. 4D Nucleome Phase Separation Working Group, 3/23
187. Cornell University, Baker Institute, Keynote speaker, graduate program seminar series, 5/23
188. Telluride Workshop on Chromatin Structure and Dynamics, 6/23

Featured Talks:

Nuclear Organization Workshop, Keynote Speaker, Curie Institute, Paris, 11/09
University of Chicago, Molecular and Cell Biology Training Grant Seminar, 5/09
Keynote Speaker, Northwestern University 1st Annual Genetics and Genomics Cluster Symposium, 1/20/10
Keynote Speaker, Abcam Epigenomics Symposium, Seattle, 6/17

Symposia:

Co-organizer, EM Tomography in Biology
Microscopy Society of America Meeting, 1995

Co-organizer, 3-D Structural Function of Cells and Organelles,
Microscopy Society of America Meeting, 1997

Cold Spring Harbor Laboratory Meeting, Dynamic Organization of Nuclear Function, Session Leader, Genome Organization and Transcription, 9/00

Co-chair, Minisymposium on Nuclear Structure and Function,
ASCB meeting, 2001

Session Chair, Dynamics of Nuclear Structure, Third International Symposium on the Biology of the Eukaryotic Nucleus, organized by National Institute of Child Health and Human Development, 3/03

Session Chair, Dynamics of Nuclear Structure and Function, at Nuclear Structure and Cancer, FASEB meeting, 7/03 (declined)

Session Chair, Gene Expression and Genome Function, at CSHL meeting, Dynamic Organization of Nuclear Function, 9/08

Session Chair, Chromatin and Chromosome Structure, 17th International Chromosome Congress, Boone, NC, 7/09

Co-Chair, Minisymposium on Chromatin Organization and Dynamics, American Society Cell Biology, San Diego,, CA, 12/2009

Chair, "Spatial Gene Regulation" Session, Janelia Farm meeting, Imaging transcription in living cells, 3/10

Symposium Chair, ASCB 2011 meeting, 12/11

Discussion Leader, CSHL Nuclear Organization and Function Meeting, 8/14

CSHL Meeting Genome Organization and Function, Co-organizer, 5/22

Society Memberships: AAAS, ASCB

Community: Coach, U9 Boys Classic, Little Illini Soccer Club (1997-1998)
Assistant Coach, U10 Boys Classic, Little Illini Soccer Club (1998), Co-chair University High School Soccer Booster Club (2003-2005)

Publications:

1. A. Chiabera, M. Hisenkamp, A.A. Pilla, J. Ryaby, D. Ponia, A. Belmont, F. Beltrame, M. Grattorola, C. Nicolini, Cytofluorimetry of electromagnetically controlled cell differentiation, J. Histochem. Cytochem. 27:375-381 (1979)

2. C. Nicolini, A. Belmont, S. Parodi, S. Lessin, S. Abraham, Mass action and acridine orange staining: static and flow cytometry, J. Histochem. Cytochem. 27:102-113 (1979)

3. C. Nicolini, A. Belmont, M. Grattarola, C. Moore, E. Milgram, Pharmaco-enzyme kinetic simulations of experimental interactions among multiple anti-neoplastic drugs, Biochem. Pharm. 28:2891-2908 (1979)

4. A. Belmont, F. Kendall, C. Nicolini, Coupling of nuclear morphometry to cell geometry and growth in human fibroblasts, Cell Biophysics 2:165-175 (1980)

5. F. Kendall, F. Beltrame, S. Zietz, A. Belmont, C. Nicolini, The quinternary chromatin-DNA structure: three dimensional reconstruction and functional significance, Cell Biophysics 4:19-38 (1980)

6. M. Grattarola, A. Belmont, C. Nicolini, Correlation between Barr body and overall chromatin decondensation in vitro, J. Cell Sci. 47:187-195 (1981)

7. A. Belmont, C. Nicolini, Polyelectrolyte theory and chromatin quaternary structure: role of ionic strength and H1 histone, J. Theor. Biol. 90:169-179 (1981)

8. T. Dolby, A. Belmont, T. Borun, C. Nicolini, DNA replication, chromatin structure, and histone phosphorylation altered by theophylline in synchronized Hela S-3 cells, J. Cell Biol. 89:78-85 (1981)

9. A. Belmont, C. Nicolini, Cell versus nuclear morphometry of serum stimulated fibroblasts: nuclear leads cell changes, J. Cell Sci. 58:201-209 (1982)

10. S. Zietz, A. Belmont, C. Nicolini, Differential scattering of circularly polarized light as a unique probe of polynucleosome superstructures- a simulation by multiple scattering of dipoles, Cell Biophysics 5: 163 (1983)

11. C. Nicolini, A. Belmont, S. Zietz, M. Maura, A. Pino, L. Rabbiano, G.Brambilla, Physico-chemical model for DNA alkaline elution: new experimental evidence and differential role of DNA length, chain flexibility, and superpacking, J. Theor. Biol. 100:344-357 (1983)

12. A. Belmont, F.M. Kendall, C. Nicolini, Relationship between nuclear morphometry and intranuclear DNA organization during the G1-S transition- evidence for discrete states of DNA condensation, J. Cell Sci. 65:123-138 (1984)

13. A. Belmont, S. Zietz, C. Nicolini, Differential light scattering of circularly polarized light by chromatin modeled as a helical array of dielectric ellipsoids within the Born approximation, Biopolymers 24:1301-1321 (1985)

14. A. Belmont, F. Bignone, P.O.P. Ts'o, The relative intranuclear positions of Barr bodies in XXX nontransformed human fibroblasts, Exp. Cell Res. 165:165-179 (1986)

15. A. Belmont, J. Sedat, D.A. Agard, A three dimensional approach to mitotic chromosome structure: evidence for a hierarchical organization, J. Cell Biol. 105:77-92 (1987)

16. A. Belmont, M. Braunfeld, J. Sedat, D.A. Agard, Large-scale chromatin structural domains in mitotic and interphase chromosomes in vivo and in vitro, Chromosoma 98:129-143 (1989)

17. M. Paddy, A. Belmont, H. Saumweber, D. Agard, J. Sedat, Nuclear envelope lamins form a discontinuous network in interphase nuclei which interact with only a fraction of the chromatin in the nuclear periphery, Cell 62:89-106 (1990)

18. A. S. Belmont, Y. Zhai, A. Thilenius, Lamin B distribution and association with peripheral chromatin revealed by optical sectioning and EM tomography, J. Cell Biol. 123:1671-1685 (1993)

19. A. S. Belmont, K. Bruce, G. Li, Three-dimensional visualization of G1 chromosomes: a folded, twisted, supercoiled chromonema model of interphase chromatid structure, J. Cell Biol. 127: 287-302 (1994)

20. A. Delaney, A. S. Belmont, Deblurring of high tilt projections for EM tomography, Ultramicroscopy 56: 319-335 (1994)

21. R. Brady, J. Pixton, G. Baxtor, P. Moran, C. S. Potter, B. Carragher, A. Belmont, Crumbs: a virtual environment tracking tool for biological imaging, in Proc. IEEE Symp., 1995 Biomedical Visualization, pp. 18-25, Editors, Murray Loew, Nahum Gershon, IEEE Comp. Soc. Press, Los Alamitos, CA (1995)

22. J. Pixton, A. S. Belmont, Newvision: a program for interactive navigation and analysis of multiple 3-D data sets using coordinated virtual cameras, J. Struct. Biol. 116: 77-85 (1996)

23. C. Robinett, A. Straight, G. Li, C. Willhelm, G. Sudlow, A. Murray, A. S. Belmont, In vivo localization of DNA sequences and visualization of large-scale chromatin organization using lac operator/repressor recognition, J. Cell Biol. 135: 1685-1700 (1996)

24. A.F. Straight, A.S. Belmont, C.C. Robinett, A.W. Murray, GFP tagging of budding yeast chromosomes reveals that protein-protein interactions can mediate sister chromatid cohesion, Curr. Biol. 6: 1599-1608 (1996)

25. J. Minshull, A. Straight, A. Rudner, A. Dernburg, A. Belmont, A.W. Murray, Protein phosphatase 2A regulates MPF activity and sister chromatid cohesion in budding yeast, Curr. Biol. 6: 1609-1620 (1996)

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29. A. S. Belmont, Nuclear ultrastructure: Transmission electron microscopy and image analysis, Methods Cell Biol. 53: 99-124 (1998)

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91. Tasan, I, Sustackova, G., Zhang, L, Kim, J., Sivaguru, M., HamediRad M.M, Wang, Y., Justin Genova, J., Ma, J., Belmont, A.S., and H. Zhao, CRISPR/Cas9-mediated Knock-in of an Optimized TetO Repeat for Live Cell Imaging of Endogenous Loci, Nucleic Acids Research, 46(17):e100 (2018) doi: 10.1093/nar/gky501, PMID:29912475, PMC6158506

92. Chen, Y., Zhang, Y., Wang, Y., Zhang, L., Brinkman, E.K., Adam, S.A., Goldman, R., van Steensel, B., Ma, J., Belmont, A.S., Mapping 3D genome organization relative to nuclear compartments using TSA-Seq as a cytological ruler, JCB 217:4025-4048 (2018), PMID: 30154186

93. Kim, J., Khanna, N., Han, K.Y., Ha, T., A. S. Belmont, Nuclear speckle fusion via long-range directional motion regulates the number and size of speckles in live cells, JCS (2019) 132(8). pii: jcs226563. doi: 10.1242/jcs.226563, PMID:30858197

94. Chen, Y. and A.S. Belmont, Genome Organization Around Nuclear Speckles, Current Opinion in Genes and Development (2019), 55:91-99. doi: 10.1016/j.gde.2019.06.008

95. Kim, J., N. Venkata, G. Hernandez, Khanna, N., A.S. Belmont, Gene expression amplification by nuclear speckles, JCB (2020) 219 (1): e201904046, doi: 10.1083/jcb.201904046, PMID: **31757787**

96. Zhao, B, Chaturvedi, P., Zimmerman, D.L., Belmont, A.S., Efficient and Reproducible Multigene Expression after Single-Step Transfection Using Improved BAC Transgenesis and Engineering Toolkit, ACS Synth Biol. (2020) doi: 10.1021/acssynbio.9b00457

97. Dopie, J., Sweredoski, M.J., Moradian, A., Belmont, A.S., Tyramide Signal Amplification Mass Spectrometry (TSA-MS-ratio) Identifies Nuclear Speckle Proteins, JCB (2020), 219: e201910207. doi: 10.1083/jcb.201910207

98. Belmont, A.S. and King, M.C., Going nuclear: Recent developments, cutting-edge tools, and new paradigms. Curr Opin Cell Biol. (2020), 64:iii-v. doi: 10.1016/j.ceb.2020.06.001.

99. Zhang, L., Zhang, Y., Chen, Y., Gholamalamdari, O., Wang, Y., Ma, J., Belmont, A.S, TSA-seq reveals a largely conserved genome organization relative to nuclear speckles with small position changes tightly correlated with gene expression changes, Genome Research (2021), 31: 251-264, doi/10.1101/gr.266239.120, PMID: 33355299

100. Wang, Y, Zhang, Y., Zhang, R., van Schaik, T., Zhang, L., Peric-Hupkes, D., Chen, Y., Gilbert, D.M., van Steensel, B., Belmont, A.S., Ma, J., SPIN reveals genome-wide landscape of nuclear compartmentalization, Genome Biol. (2021), 22: 36, doi.org/10.1186/s13059-020-02253-3

101. Alexander, K.A., Cote, A., Nguyen, S.C., Zhang, L., Gholamalamdari, O., Agudelo-Garcia, P., Lin-Shiao, E., Tanim, K.M.A., Lim, J., Biddle, N., Dunagin, M.C., Good, C.R., Mendoza, M.R., Little, S.C., Belmont, A., Joyce, E.F., Raj, A., Berger, S.L., p53 mediates target gene association with nuclear speckles for amplified RNA expression, Mol. Cell 81:1666-1681.e6 (2021) doi.org/10.1016/j.molcel.2021.03.006

102. Belmont, A.S., Nuclear Compartments: An incomplete primer to nuclear compartments, bodies, and genome organization relative to nuclear architecture, Cold Spring Harbor Perspectives in Biology (2021), a041268 (doi: 10.1101/cshperspect.a041268)

103. Zhang, L., Chen, Y., Belmont, A.S., Measuring proximity of chromosome loci to defined nuclear compartments with TSA-seq, Chapter 8 in "Spatial Genome Organization", Tom Sexton (Ed), Methods Molecular Biology, Vol. 2532: 145-186 (2022), Humana Press, New York, NY doi.org/10.1007/978-1-0716-2497-5_8,

104. Xiaopeng Zhu, Yang Zhang, Yuchuan Wang, Dechao Tian, Andrew S. Belmont, Jason R. Swedlow, Jian Ma, Nucleome Browser: An integrative and multimodal data navigation platform for 4D Nucleome, Nature Methods 19(8): 911-913 (2022) doi.org/10.1038/s41592-022-01559-3

105. Xiong, X., Tasan, I., Yang, C., Zhang, M., Hernadez-Gonzalez, G., Liu, S., Chaturvedi, P., Belmont, A.S., Imaging method using CRISPR/dCas9 and engineered gRNA scaffolds can perturb replication timing at the *HSPA1* locus, ACS Synth. Biol. 12, 5, 1424-1436 (2023) doi.org/10.1021/acssynbio.2c00433

Patents:

Patent (US 9,273,324 B2): Improved Recombinant Gene Expression (3/1/16)

William Michael Brieher, Ph.D.
Professor
Department of Cell and Developmental Biology
University of Illinois, Urbana-Champaign
601 S. Goodwin Avenue
Urbana, IL 61801
217-333-3272
wbrieher@illinois.edu

Curriculum Vitae 2022

Education

1987	B.A., Biochemistry and Molecular Cell Biology, Northwestern University, Evanston, IL
1991-1999.	Graduate Student. Department of Physiology, UCSF, San Francisco, CA. Advisor: Barry M. Gumbiner.
1993-2000.	Graduate Student. Cellular Biochemistry and Biophysics, Memorial Sloan Kettering Cancer Center, New York, NY. Advisor: Barry M. Gumbiner.
2000-2008.	Postdoctoral fellow. Department Cell Biology and Department of Systems Biology, Harvard Medical School, Boston, MA. Advisor: Tim Mitchison.

Awards and Honors

1992-1993 Regents' Scholar, UCSF
2001-2003 Helen Hay Whitney Fellow
2011 March of Dimes Basil O'Connor Award
2011 to 2014 Member of Faculty of 1000.
2014 Helen Corley Petit Scholar Award, University of Illinois
2010 – 2013, 2016-2019 List of Teachers Ranked as Excellent, University of Illinois
2019 LAS Dean's Award for Excellence in Undergraduate Education, University of Illinois

Professional Experience

Research Technician, Northwestern University School of Medicine, 1987 – 1991
Assistant Professor, University of Illinois, Urbana-Champaign , 2008 – 2014
Associate Professor, University of Illinois, Urbana-Champaign, 2014 – 2021
Professor

Departmental and University Service

Department of Cell and Developmental Biology
Equipment Committee 2008 – Present
Graduate Program Committee 2008 – 2009, 2021 - present
Graduate Curriculum Committee 2008 – 2009, 2018
Graduate Recruitment Committee 2009, 2014 – 2021
Advisory Committee to Department Head 2009-2010, 2015-2017
"Learning Outcomes Assessment" of our graduate program for the Office of the Provost 2018

School of Molecular and Cell Biology
MCB CEI Committee 2020 - present
Faculty Search Committees 2008, 2011, 2018, 2019.
Committee on Graduate Curriculum 2009 – 2010.
Proctor and Gamble Awards Committee 2010
MCB Awards Committee 2017 – 2018
Courses and Curriculum Committee 2016 – Present

College of Medicine.
MD/PhD Admissions Committee 2009

College of Engineering.
Grainger BioEngineering Breakthroughs Initiative 2013

Campus
Diversity Advocate for faculty searches. 2018, 2019
Institutional Biosafety Committee 2018 – Present

Teaching activities

2008-2010	MCB529, Advanced Cell Biology
2010	MCB520, Special Topics in Cell Biology
2011-2015	MCB 493, Advanced Cell Biology
2014-2015	MCB 252, Cells, Tissues, and Development
2016-2021	MCB 471, Cell Structure and Dynamics
2022	MCB 52, Molecular Cell Biology

Other Teaching Experience and Service
2006 Techniques in Experimental Biology for Theoreticians. Department of Systems Biology, Harvard Medical School

Supervision of Graduate Students
Current Graduate Students:
Madhura Duttagupta, PhD Candidate, Cell and Developmental Biology.
Andrew Riley
Ran Yang
Evan Hebner

Former Graduate Students:	Current Position.
Ambika Nadkharni. PhD	Postdoctoral Fellow, UC Berkeley
Kieran Normoyle. MD, PhD.	Resident, Harvard/Mass General, Boston, MA
Hui-Chia Yu-Kemp, PhD	Postdoctoral Fellow, U. North Carolina
James Peter Kemp, Jr. PhD.	Postdoctoral Fellow, U. North Carolina
Yuou Wang, PhD	Postdoctoral Fellow, Northwestern Univ.
John Li, PhD	Postdoctoral Fellow, Tsinghua Univ.

Graduate Student Thesis Committees
Department of Cell and Developmental Biology:
Tayyab Adil, Yu Chen, Tracy Chung, Sara Cook, Monica Chinea Diliz, Chong Dai, Frank Echtnekamp, Jiarong Gao, Omid Gholamalamdari, Yuan He, Raj Iyler, Anika Jain, Umair Khan, Nimish Khanna, Janhavi Kolhe, Qian Liu, Tejas Mahadevan, Aatiqa Nawaz, Miles Norsworthy, Audrey Peng, Temirlan Shilikbay, Chia-Yun Jessica Sun, Alvin Thomas, Yating Wang, Yuying Wang, Mong Lin Yang, Liguo Zhang

Department of Biochemistry:
Adrienne Barry, Yuan-Hung Chien, Xinyu Kong, Ismaeel Muhamed, Nitesh Shashikanth, Hamid Tabdilli

Department of Microbiology:
Michael Bochert, Ik Jung Kim, Henry Chen, Peter Korajczyk

Department of Molecular and Integrative Physiology:
Harvey Anderson, Jennifer Arnold, Bhoomika Mathur, David Papke, Anushna Sen

Department of Materials Science:
Bo Wang

Biophysics and Quantitative Biology:
Jiah Kim

Supervision of Undergraduate Independent Research

Current Undergraduates
Rithva Ramesh*, Maya Raviv, Amber Nagaraja

Former Undergraduates	Last Known Position
Jonathon Hsu	Graduate Student, University of Pennsylvania
Jinyu Sun	Northwestern University Dental School
Krista Angileri†	Graduate Student, University of Pittsburgh
John Hadjek	Graduate Student, Boston University
Stephanie Sam	Graduated 2012.
Gerald Wu	Medical School, Indiana University
Grace Clayton	Master's in Viticulture & Enology, UC Davis.
Aaron Chen*†	Medical School, University of Illinois, Chicago
David Schargordosky	Medical School, University of Illinois, Chicago
Senem Demir	Graduated 2016.
Si Yeon Kim	Gies School of Business, UIUC
Daniel Kim†	Medical scribe, Carle Hospital
Ran Yang	Graduate school, UIUC
Adam Cardone	Medical School, Loyola
Joseph Fahey†	Gap year, 2021

* Recipient of the Jenner Family Summer Undergraduate Research Fellowship
† Graduated with honors.

Reviewer for
Biochemical Journal, BMC Biology, Cell, Cell Reports, Current Biology, Cytoskeleton, European Journal of Cell Biology, FEBS Letters, Journal of Biological Chemistry, Journal of Cell Biology, Journal of Cell Science, Journal of Molecular Biology, Molecular Biology of the Cell, Nature

Communications, PLOS One, Proceedings of the National Academy of Science, Trends in Cell Biology

Editorial Boards
Reviewing Editor, Journal of Biological Chemistry (accepted a second term for 2019-2022).

Review Panels
2015 and 2016. Ad hoc reviewer NIH Intercellular Communication and Interactions Study Section.
2016. Ad hoc reviewer for Medical Research Council (MRC), Neurosciences and Mental Health Board (NMHB), United Kingdom.
2019. Agence Nationale de la Recherche, France.
2021. NIH Special Emphasis Panel.

Provided Tenure Letters for:
2016 Koç University, Istanbul, Turkey
2018 University of Illinois, Urbana-Champaign
2019 University of Indiana
2020 University Pittsburgh School of Medicine
2021 Koç University, Istanbul, Turkey

Meetings Organized
2015. Local organizer for International Workshop on Cell-Matrix Mechanobiology at the University of Illinois.
2015. American Society of Cell Biology symposium "Regulation and integrated functions of the actin cytoskeleton."
2015. American Society of Cell Biology and *Journal of Cell Biology* memorial symposium for Alan Hall, "A Tribute to Alan Hall: Rho GTPase signaling."
2009 – present. Chicago Cytoskeleton Steering Committee.

Invited Seminars and Research Talks
2008 "Rethinking the mechanism of actin depolymerization." Chicago Cytoskeleton Meeting, Northwestern University
2008 "Rethinking the mechanism of actin depolymerization." University of Vermont
2009 New faculty research talk. Cell and Molecular Biology Training Grant Symposium. University of Illinois, Urbana, IL.
2009 "Rethinking the mechanism of actin depolymerization." Illinois State University, Normal, IL.
2011 "Reinvestigating the mechanism of actin depolymerization." University of Illinois at Chicago. Chicago, IL.
2011 Biochemical dissection of actin assembly at adherens junctions. Chicago Cytoskeleton Meeting, Northwestern University, Chicago, IL.
2011 "Reconsitution of actin assembly at adherens junctions." Gordon Research Conference, Cell Contact and Adhesion, Vermont, USA.
2011 "Using microbes and biochemistry to understand the morphogenesis of the eukaryotic actin cytoskeleton." Texas State University, San Marcos, TX.
2012 "Biochemical dissection of actin assembly at adherens junctions." University of Minnesota.

2012 “Molecular mechanism of actin depolymerization.” German Society of Cell Biology, Regensburg, Germany.
2013 “Biochemical dissection of actin organization at adherens junctions.” Gordon Research Conference on Motile and Contractile Systems, New Hampshire, USA
2013 “Biochemical dissection of actin organization at adherens junctions.” Gordon Research Conference on Cell adhesion and Communication, Il Ciocco, Italy.
2013 “Compare and contrast Aip1 and CapZ in actin filament turnover dynamics.” Chicago Cytoskeleton Meeting, Northwestern University
2014 “Actin assembly in an epithelial cell.” Johns Hopkins School of Medicine.
2015 “Actin assembly at cadherin-mediated cell-cell contacts.” Gordon Research Conference on Cell Adhesion and Communication, New Hampshire, USA.
2015 “Mechanisms of actin disassembly.” American Society for Cell Biology
2016 “Organizing the actin cytoskeleton in an epithelial cell.” University of Pittsburgh
2016 “Actin organization in epithelia.” European Molecular Biology Organization Symposium “Actin in Action”. EMBL, Heidleberg, Germany.
2017 Vanderbilt University School of Medicine.
2017 Chicago Cytoskeleton Meeting, Northwestern University, “Coupling actin dynamics to PI3-Kinase activation.”
2018 “Harnessing actin polymerization to maintain epithelial sheets.” Gordon Research Conference on Signaling from Adhesion Receptors. Biddeford, Maine.
2019 “Actin protrusions push on adherens junctions to keep them shut”. EMBO workshop on "Actin-based mechanosensation and force generation in health and disease". Baeza, Spain.
2019 “Protruding actin microspikes repair failing junctions to maintain cell-cell adhesion.” ASCB EMBO Meeting. Washington, DC.
2022 “Energetics of Epithelial Sheets”. Simons Center for Quantitative Biology, Northwestern Unversity.

Peer Reviewed Research Publications

36. Timothy Morris, Eva Sue, Caleb Geniesse, William Brieher, and Vivian Tang. Synaptopodin stress fiber and contractomere at the epithelial junction. 2022 J. Cell Biol. 10.1083/jcb.202011162
35. Li, JXH, Tang, VW, Boateng, K, and **Brieher WM**. Cadherin puncta are interdigitated dynamic actin protrusions necessary for stable cadherin adhesion. 2021 Proc Natl Acad Sci USA. https://doi.org/10.1073/pnas.2023510118
34. Tang, VW, Nadkarni, AV, and **Brieher WM**. Catastrophic actin filament bursting by cofilin, Aip1, and coronin. J. Biol. Chem. 2020 PMCID: PMC7504925 DOI: 10.1074/jbc.RA120.015018
33. Li, JXH, Tang, VW, and **Brieher WM**. Actin protrusions push at apical junctions to maintain E-cadherin adhesion. Proc Natl Acad Sci USA. 2020 117:432-438 PMCID: PMC6955295
32. Wang A, Kolhe J, Gioacchini N, Baade I, **Brieher W**, Peterson C, and Freeman B. Mechanism of long-range chromosome motion triggered by gene activation. Dev. Cell. 2020 52:309-320.
31. Wang Y and **Brieher WM**. CD2AP links actin to PI3 Kinase activity to extend epithelial cell height and constrain cell area. J. Cell Biol. 2020 PMCID: PMC7039212
30. Kemp JP Jr and **Brieher WM**. The actin filament bundling protein α-actinin-4 actually suppresses actin stress fibers by permitting actin turnover. J. Biol. Chem. 2018 293:14520-14533. PMCID: PMC6139541

29. Yu-Kemp HC, Kemp, JP, and **Brieher WM**. CRMP-1 enhances EVL mediated actin elongation to build lamellipodia and the actin cortex. J. Cell Biol. 2017 216:2463-2479. PMCID: PMC5551698
28. Yu-Kemp HC and **Brieher WM.** Collapsin Response Mediator Protein-1 Regulates Arp2/3-dependent actin assembly. J. Biol. Chem. 2016 291:658-664. PMCID: PMC4705386
27. Nadkarni A and **Brieher WM.** Aip1 destabilizes cofilin saturated filaments by severing and accelerating monomer dissociation from ends. Current Biology. 2014 24:2749-2757. PMCID: PMC4256095
26. Tang VW and **Brieher WM.** Capping actin barbed ends by FSGS3/CD2AP stabilizes actin at adherens junctions to strengthen epithelial cohesion and barrier function. J. Cell Biol. 2013 203:815-833. PMCID: PMC3857477
25. Normoyle KP and **Brieher WM.** Cyclase-associated protein (CAP) acts directly on F-actin to accelerate cofilin-mediated actin severing across the range of physiological pH. J Biol Chem. 2012 287:35722-32. PMCID: PMC3471703
24. Sörensen PM, Iacob RE, Fritzsche M, Engen JR, **Brieher WM,** Charras G, Eggert US. The natural product cucurbitacin E inhibits depolymerization of actin filaments. ACS Chem. Biol. 2012 7:1502-8. PMCID: PMC3448819
23. Tang VW and **Brieher WM**. α-Actinin-4/FSGS1 is required for Arp2/3-dependent actin assembly at the adherens junction. J Cell Biol. 2012 196:115-30 PMCID: PMC3255975
22. Sun CY, van Koningsbruggen S, Long SW, Straasheijm K, Klooster R, Jones TI, Bellini M, Levesque L, **Brieher WM**, van der Maarel SM, Jones PL. Facioscapulohumeral muscular dystrophy region gene 1 is a dynamic RNA-associated and actin-bundling protein. J Mol Biol. 2011 411:397-416.
21. Kueh HY, **Brieher, WM**, and Mitchison, TJ. Quantitative analysis of actin turnover in Listeria comet tails: evidence for catastrophic filament turnover. Biophys. J. 2010; 99:2153-62.
20. Liu Q, Iida Jones T, Tang VW, **Brieher WM**, and Jones PL Facioscapulohumeral muscular dystrophy region gene-1 (FRG-1) is an actin bundling protein associated with muscle attachment sites. J Cell Sci. 2010. 123:1116-23.
19. Kueh HY, **Brieher WM**, Mitchison TJ. Dynamic stabilization of actin filaments. Proc Natl Acad Sci U S A. 2008; 105: 16,531-6.
18. Kueh HY, Charras G, Mitchison, TJ, and **Brieher, WM**. Actin disassembly by cofilin, coronin and Aip1 occurs in bursts and is inhibited by barbed end cappers. J. Cell Biol. 2008 182:341-353.
17. Bendix PM, Koenderink GH, Cuvelier D, Dogic Z, Koeleman BN, **Brieher WM**, Field CM, Mahadevan L, Weitz DA. A quantitative analysis of contractility in active cytoskeletal protein networks. Biophys J. 2008; 94:3126-36.
16. Galkin VE, Orlova A, **Brieher W**, Kueh HY, Mitchison TJ, Egelman EH. Coronin-1A stabilizes F-actin by bridging adjacent actin protomers and stapling opposite strands of the actin filament. J Mol Biol. 2008; 376:607-13.
15. Tam VC, Serruto D, Dziejman M, **Brieher W**, Mekalanos JJ. A type III secretion system in Vibrio cholerae translocates a formin/spire hybrid-like actin nucleator to promote intestinal colonization. Cell Host Microbe. 2007; 1:95-107.
14. Li J, **Brieher WM**, Scimone ML, Kang SJ, Zhu H, Yin H, von Andrian UH, Mitchison T, Yuan J. Caspase-11 regulates cell migration by promoting Aip1-Cofilin-mediated actin depolymerization. Nat Cell Biol. 2007; 9:276-86.

13. **Brieher WM**, H.Y. Kueh, B. A. Ballif, and T. J. Mitchison. Rapid, actin monomer insensitive depolymerization of Listeria actin comet tails by cofilin, coronin, and Aip1. J Cell Biol. 2006;175:315-324.
12. **Brieher WM**, Coughlin M, and Mitchison TJ. Fascin-mediated propulsion of *Listeria monocytogenes* independent of frequent nucleation by the Arp2/3 complex. J Cell Biol. 2004;165:233-242.
11. Flouret G, Majewski T, Balaspiri L, **Brieher W**, Mahan K, Chaloin O, Wilson L Jr., Slaninova J. Antagonists of oxytocin featuring replacement with modified β-mercaptopropionic acids at position 1. J Pept Sci. 2002;8:314-26.
10. Sivasankar S., **Brieher WM**, Lavrik N, Gumbiner B., Leckband D. Direct molecular force measurements of multiple adhesive interactions between cadherin ectodomains. Proc Natl Acad Sci. 1999;96:11820-4.
9. Zhong Y, **Brieher WM**., Gumbiner BM. Analysis of C-cadherin regulation during tissue morphogenesis with an activating antibody. J Cell Biol. 1999;144:351-9.
8. Yap AS, **Brieher WM**, Pruschy M, Gumbiner BM. Lateral clustering of the adhesive ectodomain: a fundamental determinant of cadheirn function. Curr Biol 1997 7:308-15.
7. **Brieher WM**., Yap AS., Gumbiner BM. Lateral dimerization is required for the homophilic binding activity of C-cadherin. J Cell Biol. 1996;135:487-96.
6. **Brieher WM** and Gumbiner BM. Regulation of C-cadherin function during activin induced morphogenesis of Xenopus animal caps. J Cell Biol. 1994;126:519-527.
5. McCrea PD., **Brieher WM**., Gumbiner BM. Induction of a secondary body axis in Xenopus by antibodies to β-catenin. J Cell Biol. 1993;123:477-84.
4. Flouret G., Majewski T., **Brieher W**., Wilson L Jr. Systematic substitution of an oxytocin antagonist with D-amino acids: unexpected high antagonistic potency of the D-Cys6-substituted analogue. J Med Chem. 1993;36:747-9.
3. Flouret G., **Brieher W**., Mahan K, and Wilson L Jr. Design of potent oxytocin antagonists featuring D- trytophan at position 2. J Med Chem. 1991;34:642-6.
2. Flouret G., **Brieher W**., Majewski T., Mahan K., and Wilson L Jr. Improvement in potency of an oxytocin antagonist after systematic substitutions with L-tryptophan. J Med Chem. 1991;34:2089-94.
1. Flouret G., **Brieher W**., Majewski T., Mahan K., and Wilson L Jr. Some pharmacological properties of cyclic and linear analogs obtained by substituting each residue of an oxytocin antagonist with D-tryptophan. Int J Pept Protein Res. 1991;38:169-75.

Invited Reviews

4. Charras, G and **Brieher, WM**. Regulation and integrated functions of the actin cytoskeleton. Mol Biol Cell. 2016 27:881. PMCID: PMC4791131
3. **Brieher, WM**. Mechanisms of actin disassembly. Mol. Biol. Cell. 2013 24:2299-2302.
2. **Brieher, WM** and Yap, AS. Cadherin junctions and their cytoskeleton(s). Current Opin Cell Biol. 2013 25:39-46.
1. Yap AS., **Brieher WM**., Gumbiner BM. Molecular and functional analysis of cadherin-based adherens junctions. Annu Rev Cell Dev Biol. 1997;13:119-46.

Book Chapter

Couglin ML., **Brieher WM**., Ohi R. Cell-free extract systems and the cytoskeleton: preparation of biochemical experiments for transmission electron microscopy. Methods Mol Biol. 2007;369:199-212.

Research Support

Completed:

0930282G American Heart Association Career Development Award 1/1/2009 -12/31/2012
William M. Brieher (Principal Investigator)
"Molecular Mechanisms Controlling the Assembly of Physiologically Relevant Actin Arrays."

MOD 5-FY11-127 March of Dimes Basil O'Connor Award 2/1/2011 – 1/31/2014
William M. Brieher (Principal Investigator)
"Biochemical Reconstitution and Functional Analysis of a Morphogenetic Engine: The Adherens Junction-Actin Interface".

NIH R01GM106106 7/01/2013- 6/30/2018
William M. Brieher (Principal Investigator)
"Actin assembly at cadherin dependent adherens junctions"

Energetics of epithelial sheets.
Simons Foundation. 7/01/2020 – 6/30/2021
Sascha Hilgenfeldt (PI, Mechanical Engineering) and William M. Brieher (Co-PI)
$40,000 direct. $48,000 total project costs.
The goal of this pilot project is to use experiment and theory to quantify the energy (stability) of epithelial sheets.

Current:

NIH R01GM106106 7/01/2019- 6/30/2023
William M. Brieher (Principal Investigator)
"Actin assembly at cadherin dependent adherens junctions"

STEPHANIE CEMAN
Professor
Department of Cell and Developmental Biology
University of Illinois-Urbana Champaign
601 S. Goodwin Ave, Urbana, IL 61801
Phone: (217)-244-6793; E-mail:sceman@illinois.edu

Education and Training

1983 -1987	B.S., Bacteriology, University WI-Madison
1987 -1994	Ph.D., Genetics, University WI-Madison, Mentor: R. DeMars
1994 -1997	Postdoctoral Fellow, Immunology, University of Chicago. Mentor: A. Sant
1997 -2002	Postdoctoral Fellow, Human Genetics, Emory University, Mentor: S. Warren

Professional Positions

2002-2003	Research Assistant Professor, Human Genetics, Emory University
2003-2009	Assistant Professor, Department of Cell and Developmental Biology, University of Illinois at Urbana-Champaign
2006-present	Affiliate member, Beckman Institute, University of Illinois at Urbana-Champaign
2007-present	Affiliate member, Institute for Genomic Biology, University of Illinois at Urbana-Champaign
2009-present	Associate Professor, Department of Cell and Developmental Biology, University of Illinois at Urbana-Champaign
2017-present	Associate Professor, Carle Illinois College of Medicine
2020-present	Professor, Department of Cell and Developmental Biology, University of Illinois at Urbana-Champaign

Honors and Awards

1992-1994	Cremer Scholar, Department of Medical Genetics
1994-1995	Pauline and John Roesing Fellowship Fund
1994	Webster Fellowship Fund
2007-2017	Listed on "Teacher Ranked as Excellent by Their Students" UIC-COM
2020-2022	Listed on "Teacher Ranked as Excellent by Their Students", LAS
2012	Medical Scholars Program Outstanding Advisor Award
2018	Luis V. Amador, M.D. Medallion Award from Kiwanis International

Affiliations

2002-present	American Association for the Advancement of Science, Society for Neuroscience, American Society for Human Genetics

Invited Seminars/Talks

1/20/2004	Neuroscience Program University of Illinois
6/20/2004	Gordon Conference, Cell Biology of the Neuron, Colby-Sawyer College
6/27/2004	9th Annual Fragile X Conference, Washington DC
3/08/2005	Triangle Synapse Club, Duke University
3/09/2005	National Institute of Environmental Health Sciences, NC

7/18/2005	Arden House Fragile X conference
10/1/2005	Illinois Association of Community College Biologists Fall Conference
10/19/2005	Cell and Developmental Biology Departmental Seminar UIUC
1/21/2006	MCB faculty retreat
4/09/2006	Banbury Meeting, Fragile X Biology
7/19/2006	10th International Fragile X Conference, Atlanta, GA
2/09/2007	Neuroscience Program Openhouse, keynote speaker UIUC
4/15/2007	1st Annual Conquer Fragile X Symposium, West Palm Beach Florida
3/09/2008	Banbury Meeting, Fragile X Biology
8/22/2008	"Post-transcriptional regulation of viral gene expression." Graves Mountain Lodge, Syria, VA, plenary speaker
9/21/2008	FRAXA Research Foundation Investigators Meeting, The New England Center Durham, NH
10/09/2008	20th Anniversary celebration of the Beckman Institute, UIUC
10/26/2009	University of Pennsylvania, Pharmacology
11/02/2009	Translational Biomedical Research Seminar, UIUC
3/25/2010	2010 meeting of the Chicago Chapter of the Society for Neuroscience
5/21/2010	Centennial Celebration of the Laboratory of Genetics, University of Wisconsin-Madison
9/25/2010	Hudson Alpha Research Institute, Huntsville, AL
3/19/2011	Spring Brain Conference, Tucson, AZ
9/30/2011	Advances in Sensory and Developmental Neurobiology seminar series, Beckman Institute, UIUC
10/17/2011	Keynote speaker in the seminar series Enhancing Teaching and Learning at Illinois: A workshop series for faculty and instructors: title: '**Team-Based Learning: Big Classes with Small Teams Yield More Learning'** Sponsored by the Provost's Office, UIUC
2/12/2012	"Recent advances in genetics and genomics" symposium sponsored by the Genetics Task Force of Illinois at Northwestern University
08/23/2012	UIC College of Nursing retreat. "**Team Based Learning",** invited speaker
05/20/2014	Faculty Summer Institute (I-Hotel): **"Implementing Team Based Learning in the classroom"**
10/23/2014	Using Team-based Learning in the College of Medicine College of Veterinary Medicine, UIUC,
11/16/2014	Society for Neuroscience, Nanosymposia on Fragile X syndrome, Washington, DC
12/5/2014	Purdue University
02/10/2016	UC-SD, Bioengineering Dept
02/12/2016	UC-SD, Joint Neurodegeneration Meeting
11/16/2016	Society for Neuroscience, Nanosymposium on Fragile X syndrome, San Diego
09/12/2017	Neuroscience Program, UIUC
01/06/2018	Keynote Speaker at Circle K Holiday Embrace event, Itasca, IL
03/17/2018	Keynote Speaker at the Annual Key Club convention, Springfield, IL
03/20/2018	Dept of Biopharmaceutical Sciences, University of Illinois-Rockford Health Sciences campus
02/04/2019	Midwest Fragile X Research Exchange, Madison, WI
11/21/2019	Sunrise Rotary Club, Champaign, IL.
03/12/2020	Circle K group, University of Illinois
05/2020	Webinar, RNA Society Meeting

10/16/2020	Dept of Physiology, SIU-Carbondale
11/15-16/2021	Invited speaker in "Biological functions of DEAD/H-box helicases in health and diseases workshop" Sponsored by NIAID, NCI and NHLBI NSF grant panel member
03/23/2023	Invited speaker, CU-Kiwanis group and the Eastern Illinois-Iowa Kiwanis leadership about the importance of basic research

Research Support

American Cancer Society Institutional Research Grant
Funding Period: 1988-1989

National Institutes of Health NRSA Fellowship
Funding Period: 1995-1998

Howard Hughes Medical Institute Research Associate
Funding Period: 1997-2001

National Institutes of Health RO1 (HD041591)
Funding Period: 2002-2007
Title: "Role of phosphorylation on Fmrp function"
Agency: National Institute of Child Health and Human Development
Direct costs: $ 104,437/year *(March 2002- 2006)*

Illinois-Eastern Iowa District of Kiwanis International Spastic Paralysis
The Kiwanis Neuroscience Research Foundation
Title: "The molecular basis of fragile X syndrome"
Funding Period: April 2005-2014
Direct costs: $20,000/year

FRAXA foundation.
Funding Period: 2006-2007
Title: "Fragile X gene and protein expression in zebra finch"
Direct costs: $18,500

Arnold Beckman award.
Funding Period: 2011-2012
Direct costs: $28,711

National Institutes of Health (1R01MH093661)
Funding Period: 2012-2017
Title: "Dynamic regulation of the Fragile X Mental Retardation Protein FMRP"
Agency: National Institute of Mental Health
Direct costs: $239,593/year
No-cost extension December 2018

Illinois-Eastern Iowa District of Kiwanis International Spastic Paralysis Research Foundation
Kiwanis Research Foundation
Funding Period: April 2014-April 2019
Title: "Role of FMRP-associated helicase MOV10 in brain"
Direct costs: $20,000/year

National Science Foundation grant number 1855474
Funding Period: 2019-2022. Currently on a no-cost extension
Title "Unraveling how RNA helicase Mov10 regulates Ago2 function"

Agency: National Science Foundation (MCB division)
Total cost $634,378

Kiwanis Research Foundation
Funding Period: 2019-2024
Title: "Creation and characterization of a brain-specific Mov10 knockout mouse"
Direct costs: $20,000/year

Extramural Services

Grant review panels –

2004	*Ad hoc* member, NIH grant review panel Synapses, Cytoskeleton and Trafficking,
2006	Grant Reviewer, National Fragile X Foundation
2006	Grant Reviewer, Fragile X (FRAXA) Research Foundation
2007	*Ad hoc* member, NIH F30-32-award grant review panel, Biophysical and Physiological Neuroscience
2008	*Ad hoc* member, NIH special emphasis review panel, Molecular, Mechanisms of Neuronal Development and Regeneration
2009	*Ad hoc* member, NIH Challenge grants ZRG1 GGG-F (58)
2010	*Ad hoc* member, Prinses Beatrix Fonds, grant review
2011	*Ad hoc* member, NIH grant review panel, Musculoskeletal, Oral and Skin Sciences,
2011	*Ad hoc* reviewer, Prinses Beatrix Fonds, grant review
2011, 2017	*Ad hoc* reviewer, UIUC Institutional Research Board
2012	*Ad hoc* member, NIH Special Emphasis Panel / Scientific Review Group 2012/05 ZRG1 MDCN-F (04)
2012	*Ad hoc* member, NIH grant review panel, Molecular NeuroGenetics
2013-2017	Member, NIH grant review panel, Molecular NeuroGenetics
2016, 2017	Co-Chair Molecular NeuroGenetics study section
2019	*Ad hoc* member, NIH special emphasis panel ZRG1 MDCN-V (02), July 25th
2020	*Ad hoc* reviewer, UIUC Institutional Research Board
2021	*Ad hoc* reviewer, NSF
2022	*Ad hoc* reviewer, NSF
2022	*Ad hoc* reviewer, Deutsche Forschungsgemeinschaft (German Research Foundation)

Ad hoc reviewer for other grant agencies –
Agence Nationale de la Recherche FR, Wellcome Trust Biomedical Research fellowship UK

Ad hoc reviewer for journals –
Human Molecular Genetics, Nucleic Acids Research, Journal of Cellular Biochemistry, PLOS Genetics, Clinical Genetics, Brain, Journal of Biological Chemistry, Journal of Molecular Biology, Genesis, the Journal of Genetics and Development, Development Growth and Differentiation, Journal of Proteomics and Bioinformatics, Journal of Neuroscience, RNA, Journal of Cell Science, Cell Reports, Current Biology, Molecular Biosystems, Biochem Biophysics Acta, Journal of Molecular Evolution, Scientific Reports, Journal of Cell Science, eLife, Cell Reports, BMC Biology, EMBO J, Developmental Cell, Cell

Editorial board —
2010-2013 Member, *Frontiers* editorial board

Publications

1. Burlingham WJ, Pan MH, Mason B, **Ceman S**, and Sollinger HW. 1988. Induction of antiidiotypic antibodies to donor HLA-A2 following blood transfusions in a highly sensitized HLA-A2+ recipient. *Transplantation.* 45:1066-1071.
2. **Ceman S**, Rudersdorf R, Long EO, and DeMars R. 1992. MHC class II deletion mutant expresses normal levels of transgene-encoded class II molecules that have abnormal conformation and impaired antigen presentation ability. *J Immunol*. 149(3):754-761.
3. Sette A, **Ceman S**, Kubo RT, Sakaguchi K, Appella E, Hunt DF, Davis TA, Michel H, Shabanowitz H, Rudersdorf R, Grey HM, and DeMars R. 1992. Invariant chain peptides in most HLA-DR molecules of an antigen-processing mutant. *Science.* 258:1801-1804.
4. Malnati MS, **Ceman S**, Weston M, DeMars R, and Long EO. 1993. Presentation of cytosolic antigen by HLA-DR1 requires a function encoded in the class II region of the MHC. *J Immunol.* 151(12):6751-6756.
5. **Ceman S**, Petersen JW, Pinet V, and DeMars R. 1994. A gene required for normal MHC class II expression and function is localized to ~45 kb of DNA in the class II region of the MHC. *J Immunol.* 152(6):2865-2873.
6. **Ceman S**, Rudersdorf R, Petersen JW, and DeMars R. 1995. DMA and DMB are the only genes in the class II region of the human MHC needed for class II-associated antigen processing. *J Immunol.* 154(6):2545-2556.
7. **Ceman S** and Sant AJ. 1995. The function of invariant chain in class II-restricted antigen presentation. *Semin Immunol.* 7(6):373-387.
8. Tan LJ, **Ceman S**, Chervonsky A, Rodriguez-Paris J, Steck TL, and Sant AJ. 1998. A lumenal sequence in the MHC class II β chain controls post-Golgi sorting of class II molecules into the endocytic pathway of antigen presenting cells. *Eur J Immunol*. 27(6):1479-1488.
9. **Ceman S**, Wu S, Jardetzky TS, and Sant AJ. 1998. Alteration of a single hydrogen bond between class II molecules and peptide results in rapid degradation of class II molecules after invariant chain removal. *J Exp Med.* 188(11):2139-2149.
   (Research Photo also on Journal cover)
10. Sant AJ, Beeson C, McFarland B, Cao J, **Ceman S**, Bryant PW, and Wu S. 1999. Individual hydrogen bonds play a critical role in MHC class II peptide interactions: implications for the dynamic aspects of class II trafficking and DM-mediated peptide exchange. *Immunol Rev.* 172:239-253.
11. **Ceman S**, Brown V, and Warren ST. 1999. Isolation of an FMRP-associated messenger ribonucleoprotein particle and identification of nucleolin and the fragile X-related proteins as components of the complex. *Mol Cell Biol*. 19:7925-7932.
12. **Ceman S**, Nelson R., and Warren, ST. 2000. Identification of mouse YB1/p50 as a component of the FMRP-associated mRNP particle. *Biochem Biophys Res Comm.* 279:904-908.
13. Brown V, Jin P, **Ceman S**, Darnell JC, O'Donnell WT, Tenenbaum SA, Jin S, Feng Y, Wilkinson KD, Keene JD, Darnell RB, and Warren ST. 2001. Microarray identification of FMRP-associated brain mRNAs and altered mRNA translational profiles in fragile X syndrome. *Cell*.107: 477-487.
14. Coffee B, Zhang F, **Ceman S**, Warren ST, and Reines D. 2002. Histone modifications depict an aberrantly heterochromatinized FMR1 gene in fragile X syndrome. *Am J Hum Gen.* 71: 923-32.
15. **Ceman S,** O'Donnell WT, Reed, M., Patton S, Pohl J, and Warren ST. 2003. Phosphorylation influences the translation state of Fmrp-associated polyribosomes. *Hum Mol Gen.* 12: 3295-3305.

16. Jin, P, Zarnescu, D, **Ceman, S**, Nakamoto, M, Mowrey, J, Jongens, TA Nelson, D, Moses, K, and Warren, ST. 2004. Biochemical and genetic interaction between the fragile X mental retardation protein and the microRNA pathway. *Nature Neurosci*. 74:113-117.
17. Stetler, A, Winograd, C, Sayegh, J, Cheever A, Patton, E, Zhang, X, Clarke, S, **Ceman, S.** 2006. Identification and characterization of the methyl arginines in the fragile X mental retardation protein Fmrp**.** *Hum Mol Gen*.15: 87-96.
18. Narayanan, U, Nalavadi, V, Nakamoto, M, Pallas, D, **Ceman, S**, Bassell, GJ, Warren, ST. 2007. FMRP phosphorylation reveals an immediate-early signaling pathway triggered by groupI mGluR and mediated by PP2A. *J Neurosci.* 27(52):14349-14357.
    (Research Photo also on Journal cover)
19. Narayanan, U, Nalavadi, V, Nakamoto, M, Thomas, G, **Ceman, S**, Bassell, GJ, Warren, ST. 2008. S6K1 phosphorylates and regulates FMRP with the neuronal protein synthesis-dependent mTOR signaling cascade. *J Biol Chem*. 283(27):18478-82.
20. Winograd, C, Clayton, D, **Ceman, S.** 2008. Expression of fragile X mental retardation protein within the vocal control system of developing and adult male zebra finches. *Neuroscience*. 157(1):132-142.
21. Kim, M, Bellini, M, **Ceman, S.** 2009. Fragile X mental retardation protein FMRP binds mRNAs in the nucleus. *Mol Cell Biol.* 29(1): 214-228.
22. Cheever, A and **Ceman, S**. 2009. Phosphorylation of FMRP inhibits association with Dicer. *RNA*. 15(3): 362-366.
23. Cheever, A and **Ceman, S.** 2009. Translation regulation of mRNAs by the fragile X family of proteins through the microRNA pathway. *RNA Biology*. 6 (2): 175-178.
24. Blackwell, E, Zhang, X, **Ceman, S.** 2010. Arginines of the RGG box regulate FMRP association with polyribosomes and mRNA. *Hum Mol Gen*. 19(7): 1314-1323.
25. Cheever, A, Blackwell, E, **Ceman, S.** 2010. Fragile X protein family member FXR1P is regulated by microRNAs. *RNA.*18 (8): 1530-1539.
26 **Ceman, S** and Saugstad, J. 2011. MicroRNAs: Meta-controllers of gene expression in synaptic activity emerge as genetic and diagnostic markers of human disease. *Pharmacology and Therapeutics.* 130(1):26-37.
27. Blackwell, E and **Ceman, S.** 2011. A new regulatory function of the region proximal to RGG box in Fragile X Mental Retardation Protein. *J. Cell Science*. 124: 3060-3065. PMID: 21868366.
28. Winograd, C and **Ceman, S**. 2012. Exploring the zebra finch as a novel animal model for the speech-language deficit in Fragile X syndrome. *Results Prob Cell Differ*. 54: 181-197. PMID: 22009353.
29. Winograd, C and **Ceman, S**. 2012. Fragile X family members have important and non-overlapping functions. *Biomolecular Concepts*. 2(5):343-52.
30. Blackwell, E and **Ceman, S**. 2012. Arginine methylation of RNA binding proteins regulates cell function and differentiation. *Molecular Reproduction and Development*. 79(3):163-175.
31. Kim, M and **Ceman, S**. 2012. Fragile X Mental Retardation Protein: Past, Present and Future. *Current Protein & Peptide Science.*13(4):358-71.
32. Kenny, PJ, Zhou, H, Kim, M, Skariah, G, Khetani, RS, Drnevich, J, Luz Arcila, M, Kosik, KS, **Ceman, S.** 2014. MOV10 and FMRP regulate AGO2 association with microRNA recognition elements. *Cell Reports.* 9(5): 1729-41 PMID: 25464849
33. Kenny, P. J. and **Ceman, S**. 2016. RNA secondary structure modulates FMRP's bi-functional role in the microRNA pathway. *International Journal of Molecular Sciences***.**17(6): pii: E985 PMID: 27338369
34. Skariah, G, Seimetz, J, Norsworthy, M, Lannom, MC, Kenny, PJ, Elrakhawy, M, Forsthoefel, C, Drnevich, J, Kalsotra, A, **Ceman, S.** (2017). Mov10 suppresses retroelements and regulates neuronal development and function in developing brain. *BMC Biology*. 15(1):54 PMID:28662698
- *Referenced in a F1000 Faculty review (Menon and Gupton, 2018)*

35. Skariah, G, Perry, KJ, Drnevich, J, Henry, J. and **Ceman, S.** 2018. Mov10 is essential for gastrulation and CNS development. *Dev Dyn*. 247(4): 660-671. PMID:29266590 (Research Photo also on Journal cover 04/2018)
36. DeThorne, L and **Ceman, S**. 2018. Genetic testing and autism: Tutorial for communication sciences and disorders. *J Communication Disorders*. 74:61-73 PMID: 29879582
37. Kenny, P.J., Kim, M., Skariah, G., Nielsen, J., Lannom, M.C., and **Ceman, S.** 2020. The FMRP-MOV10 complex: A translational regulatory switch modulated by G-Quadruplexes. *Nucleic Acids Research.* 48(2):862-878.PMID:31740951
38. Nawaz, A., Shilikbay, T., Skariah, G. and **Ceman, S.** 2021. Unwinding the roles of RNA helicase MOV10. *WIREs Wiley Interdisciplinary Reviews*. Jul 29:e1682. doi: 10.1002/wrna.1682
39. Lannom, M.C., Nielsen, J., Nawaz, A., Shilikbay, T. and **Ceman, S.** 2021. FMRP and MOV10 regulate *Dicer1* expression and dendrite development. *PLoS One.* 16(11):e0260005.
40. Aatiqa Nawaz[1], Phillip J. Kenny[1], Temirlan Shilikbay[1], Matt Reed[2], Olga Stuchlik[2], Jan Pohl[2], Stephanie Ceman[1] 2023. Serine 970 of RNA helicase MOV10 is phosphorylated and controls unfolding activity and fate of AGO2 target mRNAs. *J. Biological Chemistry,* Mar 3:104577. doi: 10.1016/j.jbc.2023.104577. Online ahead of print.PMID: 36871759

Book Chapters

1. DeMars R, **Ceman S**, Rudersdorf R, Petersen JW, Shimizu Y, and Greenwood R. 1994. Use of human B cell mutant .61 defines location of gene required for class II associated antigen-processing. *In: Regulation of Antigen Processing and Presentation.* R.E. Humphreys and S.K. Pierce, eds. Academic Press.
2. **Ceman S** and Warren ST. Trinucleotide expansion in the FMR1 gene and fragile X syndrome. *In: Proceedings of the American Psychopathological Association 1998 Annual Meeting.* J. Rapoport, ed. American Psychiatric Press, Inc. pg. 41-62
3. **Ceman S**, Zhang F, Johnson T, and Warren ST. 2001. Development and characterization of antibodies that immunoprecipitate the FMR1 protein. *In: Methods in Molecular Medicine-Neurogenetics: Methods and Protocols*. N. T. Potter, ed. Humana Press.
4. Patton, E, Stetler, A and **Ceman, S.** 2006. The role of phosphorylation in regulating FMRP function. *In: The Molecular Basis of Fragile X Syndrome*. YJ Sung and RS Denman. Eds. Research Signpost.
5. Winograd, C and **Ceman, S.** 2011. Exploring the zebra finch *Taeniopygia guttata* as a novel animal model for the speech-language deficit of fragile X syndrome. *In: Modeling the fragile X Syndrome*. RS Denman, ed. Springer Verlag.
6. Lannom, MC and **Ceman, S.** 2018. The role of FMRP and microRNAs in neuronal protein synthesis. *In: the Oxford Handbook on "Regulation of neuronal protein synthesis"*

Teaching

2004-2017 "Basic Medical Sciences" (BMS 603),
I taught this Medical Genetics course annually to ~135 first year medical students/year at the regional campus (Urbana) of the University of Illinois Chicago.
I taught my last class in the Fall of 2017 when the Urbana branch campus of UIC COM closed

2014-present "Medical Genetics" (MCB199 now MCB270)
I have been teaching this online medical genetics course for undergraduates since 2014 in the spring semester

Fall 2004

Instructor in Cellular and Molecular Basis of Disease MCB 400
Spring 2005
Participated in Neuroscience Journal Club
Instructor in Dialogs in Neuroscience, MCB529/PSYCH593pg/NEURO507/8
Spring 2005
Participated in Neuroscience Journal Club
Instructor in Dialogs in Neuroscience, MCB529/PSYCH593pg/NEURO507/8
Spring 2006
Instructor in Advanced Survey Course in Eukaryotic Cell Biology, MCB 529ABI
Instructor in Dialogs in Neuroscience, MCB529/PSYCH593pg/NEURO507/8
Spring 2007
Instructor in Developmental Biology, MCB 410
Instructor in Human Development, PSYCH 199
Spring 2008
Instructor in Human Development, PSYCH 199
Instructor in Introduction to Laboratory Research, MCB 195
Spring 2009
Instructor in Neuroscience Professional Development course
Summer 2009
Instructor in the Illinois Biology and Politics Summer Institute
Spring 2010
Instructor in The Genetics of Cognitive Neuroscience, NEURO 505
Spring 2014
MCB 199 Medical Genetics online
Fall 2015
Instructor in Freshman Grand Challenge course: Autism, GCL 199
Spring 2016-present
Instructor in the Neuroscience Core Course, NEURO 598
Spring 2016
MCB 270 Medical Genetics online
Spring 2017
Spring 2018
MCB 270 Medical Genetics online
Summer 2018
Foundational Elements (BSE 612) Course Director- Carle Illinois College of Medicine
Organized the delivery of all of the basic sciences to include Genetics, Biochemistry, Embryology, Anatomy, Microbiology, Pharmacology, Physiology, as well as engineering concepts. Also developed or identified weekly Team Based Learning exercises (TBLs) to summarize that week's content. I delivered all of the TBLs
Fall 2018
MCB 580 Research Ethics, Instructor and Course Director
Summer 2019
Foundational Elements (BSE 612) Course Director and Instructor- Carle Illinois College of Medicine
Spring 2019
MCB 270 Medical Genetics online
Summer 2020
Foundational Elements (BSE 612) Course Director and Instructor- Carle Illinois College of Medicine

Fall 2020
MCB 493: Genetic Disorders and Counseling
Summer 2021
Foundational Elements (BSE 612) Course Director and Instructor- Carle Illinois College of Medicine
Fall 2021
MCB 493: Genetic Disorders and Counseling
Spring 2022
NEUR 543- 1 hr
Summer 2022
Foundational Elements (BSE 612) Course Director and Instructor- Carle Illinois College of Medicine
Fall 2022
MCB 493: Genetic Disorders and Counseling

Faculty Development Certifications

04/09-10/2015	Crucial Conversations certification
2017-2018	Scientific Teaching Fellow in the Summer Institutes for Scientific Teaching

Service to University

College:

(LAS):

2004-2006	University Senate
2004-2006	Educational Policy Committee, COM-UC
2005-2006	Faculty Senate subcommittee on campus operations
2006, 2009	Neuroscience Program graduate admissions committee, **Chair** 2009
2011-2013	Neuroscience Program Seminar series, **Chair**
2011-2012	Institutional Biosafety Committee
2013-2014	Executive Committee, Neuroscience Program
2014-2017	Neuroscience Program Postdoc coordinator
2017-2018	LAS Policy and Development committee
2018-2019	Neuroscience Program seminar committee, **co-Chair**
2018-2020	LAS Gen Ed committee

(UIC-COM Urbana Champaign and Carle Illinois College of Medicine):

2003-2017	Basic Sciences Subcommittee, College of Medicine (COM)- Urbana Champaign (UC)
2003-2017	Interview panels for the Medical Scholars Program, COM-UC
2003-2017	Medical Student Advising Committee, CDB and COM-UC
2004-present	Committee on Committees, COM-UC, **Acting Chair 2010-2011 and 2014- 2015**
2006-2009	Student progress and promotion, COM-UC
2008	Emergency Operations, COM-UC
2012-2018	Executive Committee, COM-UC
Fall 2013	Search committee for Regional Dean of COM UC
2014-2017	Appointments, Reappointments, and Promotions committee, COM-UC
2014-2018	Convocation committee, COM-UC
2018-present	COM-UC Faculty Appeals and Grievance Committee
2016	Student affairs working group and Curriculum committee, Carle Illinois College of Medicine

2016-present Genetics Thread Director, Carle Illinois College of Medicine
Spring 2017 Search Committee member for Facilitators, Carle Illinois College of Medicine

School (MCB):

MCB Search Committees resulting in faculty hires:
Suprya Prasanth (2006), KV Prasanth (2006), Bill Brieher (2007), Kai Zhang (2014), Erik Procko (2014), Beth Stadtmueller (2018), Collin Keiffer (2018) and Nicholas Wu (2019)

2005-2014 MCB Distinction Committee
2014-present Mentoring committee for three Assistant Professors in Molecular and Integrative Physiology
2021-present Capricious grading/affirmative action officer

Department:

2003-2007 CDB Seminar Committee, **Chair (2005-2006)**
2005-2007 CDB Student/Postdoc Seminar Series, **Chair**
2005-2006 CDB Graduate program and fellowship committee
2006-2007 CDB Seminar Committee, co-Chair
2006-2008 CDB Equipment Committee
2012-present CDB Graduate Recruitment Committee (did not serve sabbatical year 2019 or 2021)
2013-2018 CDB Grant Mentoring Committee
2014, 2020 CDB Newsletter/website committee
2018-present CDB Graduate Program Committee
2022-present CDB Advisory Committee
2022-present CDB Tenure and Promotions subcommittee

Neuroscience Program:

2004-2005 Neuroscience Program Admissions committee
2004-2005 Neuroscience Program Admissions committee
2005-2007 Neuroscience Executive Committee
2009-2010 Neuroscience Program Admissions committee, chair
2010-2012 Neuroscience Program, Seminar series, chair
2013-2015 Executive committee of Neuroscience Program
2018-2019 Neuroscience Program, Seminar series, co-chair
2020-current Organized a program-wide grant mentoring committee for the faculty preparing applications
2021-current Diversity, equity and inclusion committee. We meet monthly, organize seminars and a program-wide retreat
2023 Neuroscience Program Awards committee

Service to Community

Involvement in K-12 or other community instructional activity

2004-2019: ECP program with Centennial high school "Education to Careers and Professions Program"
Sara Wallace Fall/Spring 2004-2005
Rami Rogers Fall 2011
Paige Ried Spring 2012
Amy Kirchhoff Fall/Spring 2012-2013
Megan Ray Spring 2018

Summer 2014	Nick Schapland, Uni High student
May 2022	Spoke at the Campus Middle School about my career path and love of books
Fall 2022	Worked with biology teacher, Katie Lehninger, at the Campus Middle School to participate in 3 hours of genetic inheritance, chromosomes and molecular biology techniques

Civic Organization

2012-present	Kiwanis Club, Game Challenger Baseball League for children with special needs, Youth Young Children Priority 1 reading to preschoolers at the Urbana Early Childhood School

Mentoring

Ph.D recipients:

2004-2009	Anne Cheever, defended November, 2009	
	07/2008	Plenary Speaker in the Young Investigator's session of the 11thInternational Fragile X Conference
	Spring 2009	Procter and Gamble Award Finalist
	Summer 2009	National Fragile X summer fellowship award
	2010-2012	Post-doctoral fellow at Case Western Reserve
	2012-2014	AAAS fellow
	Current Position:	Synthetic Biology Senior Consultant to DARPA with Booz Allen Hamilton, Washington DC
2005-2010	Claudia Winograd, MSP MD/PhD, defended July, 2010	
	2007-2008	Cell and Molecular Biology Training Grant recipient
	07/2008	Speaker, 11th International Fragile X meeting, St. Louis
	Summer 2009	Hazel I. Craig Fellowship from the College of Medicine Summer Research Fellowship
	Summer 2010	Hazel I. Craig Fellowship from the College of Medicine Summer Research Fellowship
	2010	Best Speaker award, MSP retreat, Urbana, IL
	2011	Best poster award, College of Medicine Research Day,
	Current Position:	Family practice resident at U-Maine, Portland
2007-2013	Miri Kim, MSP MD/PhD, defended, August, 2013	
	07/2008	11th International Fragile X meeting, St. Louis
	2009-2011	Cell and Molecular Biology Training Grant
	Current Position:	Resident in Neurosurgery, Loyola Maywood, IL
2010-2017	Geena Skariah, PhD, defended June, 2017	
	2010-2011	OLLI fellow
	Current Position: Postdoctoral fellow in Professor Peter Todd's lab U-Michigan	
2013-2019	Phillip Kenny, PhD, defended October, 2019	
	05/15/2019	Excellence in Undergraduate Teaching Award, MCB
	05/06/2020	Tunji Toogun Research Excellence Award, CDB
	Current Position: Takeda in Los Angeles	
2015-2021	Monica Chinea-Diliz Lannom, MBA/PhD, defended December 2021	
	2015-2017	National Institute of Mental Health (NIMH) Diversity Research Supplement
	Spring 2016	Graduate College Conference Travel Award
	Spring 2016	Graduate College Service Recognition Award
	2017- 2019	University of Illinois Urbana Champaign Excellent Teacher Award
	Fall 2018	Graduate College Conference Travel Award
	Summer 2018	Chester & Nadine Houston Graduate Fellowship
	Summer 2018	University of Chicago Data and Policy Scholarship

2018-2019	Yale University Center for Teaching and Learning Scientific Teaching Fellowship
2018-2019	Hispanic Scholarship Fund (HSF) Fellowship
2018-2020	Society for Neuroscience Scholar Associate
2019-2021	Society for Neuroscience Scholar Fellowship
2019	International Brain Research Organization Fellowship
2019-2021	Forte Foundation Fellowship
2019-2020	Society for Neuroscience Early Career Policy Ambassador

Current trainees:

2020	Temirlan Shilikbay (PhD student)
2020	Aatiqa Nawaz (PhD student)

Masters Students

2003-2005 April Stetler, "mRNA binding specificity of the fragile X mental retardation protein"
Current: Enrolled in PhD program at Texas A&M

2003-2006 Erin Slattery Patton, "The nuclear role of the fragile X mental retardation protein"
Current: Employed at Monsanto, St. Louis

Medical Student

Summer 2014 Craig Forstoeffel, immunohistochemistry on mouse brain slices
Hispanocare Scholarship recipient, fall 2014
Current: Orthopedic surgery resident UIC

Postdoctoral fellow

2006-2011 Dr. Ernest Blackwell, PhD UIC 2006. Dr. Blackwell is African American

2006-2010	Sensory and Neurodevelopmental Biology training grant
07/2008	11th International Fragile X meeting, St. Louis, poster
07/2010	12th International Fragile X meeting, Detroit, Michigan, session talk
Current position:	Biology Instructor at Clackamas Community College, Portland, Oregon since 2012

Undergraduate Researchers	***Last known position***
Sarah Wallace	
Sheryl DeLeon	
Kevin McNerney	Pediatrician at Yale New Haven Medical Center
Davin Cho	
Mohamed Elrakhawy	University of Pennsylvania College of Medicine
Esther Ju	Attorney in Champaign Urbana
Miles Norsworthy*	Graduate student in MCB, UIUC
Adriana Tienda#	
Armando Barajas#	Graduate student at Northwestern University
Joshua Nielsen	Graduate student at UNC Chapel Hill
Radhe Parikh	
Julija Sakutyte*	gap year
Malaak Yehya	graduate program in public health, UIUC

* Recipient of the MCB Summer Research Opportunities Program
# Under-Represented Minority

<u>PhD Student Dissertation Committees</u>

Neuroscience program
Daichi Liu
Peggy Qiu
Jennifer M. Walters
Rose Zhu
Cell & Developmental Biology
Xinying Zong
Molecular and Integrative Physiology

PhD Graduates Thesis Committees

Robbie Andres, PhD 2003, advisor Weyhenmeyer
Clint Canal, PhD 2005, advisor Gold
Amy Creekmore, PhD 2005, advisor Nardulli
Shuo-Chien Ling, PhD 2005, advisors Gelfand and Greenough
Yanxun Yu, PhD, 2006, advisor Gillette
Aaron Grossman, MD/PhD student (PhD 2006), advisor Greenough
Mir Hussain Nawaz, PhD 2007, advisor Martinis
Rie Ozawa PhD 2007, advisor Chiba
Michal Boniecki, PhD 2008, advisor Martinis
Soon Ho Kim, PhD 2009, advisor Greenough
Leah Matzat, PhD 2008, advisor Levesque
Laura Pace, MD/PhD student (PhD 2008)advisor Gillette
Larry Millet, PhD 2009, advisor Gillette
Mong-Lin Yang, PhD 2009, advisor George
Samit Shah, MD/PhD student (PhD 2009), advisor Feng
Diana Thomas, MD/PhD student (PhD 2009), advisor Roy
Diane Dezawaan, PhD 2009, advisor Freeman
Yijie Geng, PhD 2009, advisor Chen
Linda Hasadsri, MD/PhD student (PhD 2009, advisor George
Ying Yao, PhD 2009, advisor Hing
Jessica Sun, PhD 2009, advisor Jones
Sufang Huang, PhD 2009, advisor Gillette
Georgina Aldrich, MD/PhD student (PhD 2009), advisor Greenough
Kensey Amaya, PhD 2010, advisor Clayton
Shelly Jo Kraft, PhD 2010, advisor Ambrose
Claire Miller, MD/PhD student (PhD 2010), advisor Newmark
Abhi Rao, PhD 2010, advisor Nardulli
Der-I Kao, PhD 2010, advisor Greenough
Rudi Scharnweber, MD/PhD student (PhD 2011), advisor Wheeler
Ning Weng, PhD, 2012 advisor Greenough
Abe Qavi, MD/PhD, PhD 2012, advisor Bailey
Carolina Soto MD/PhD, PhD 2013, advisor Roy
Andrew Magis, PhD 2013, advisor Price
Agatha Luszpak, MD/PhD student (PhD 2013), advisor Sweedler
Martina Mustroph, MD/PhD student (PhD 2014), Neuroscience
Peggy Qui, PhD 2014, advisor Myong, Biophysics
Claire Scuzzio, PhD 2014, Neuroscience, advisor Gold/Korol
Annie Weisner, MD/PhD student (PhD 2015), advisor Stubbs
Nidhi Nidhi, PhD 2015, advisor Chen
Derek Catano Anolies, PhD 2015, advisor Stubbs
Irisbel Guzman Sanchez PhD 2015, advisor Gruebele
Anika Jain, PhD 2016, advisor Gillette
Petra Majdak, MD/PhD student (PhD 2016), advisor Rhodes
Alvin Thomas, MD/PhD student (PhD 2016), advisor Henry
Rachel Waldemer Streyer, MD/PhD student (PhD 2016), advisor Chen

Mariana Aparico Batancourt, PhD 2017, advisor DeThorne
Xinying Zong, PhD, 2017 advisor KV Prasanth
Amogh Belagodu, PhD 2017, advisor Galvez
Amruta Bhate, PhD 2017, advisor Kalsotra
Li-Hsin Chang, PhD 2017, advisor Stubbs
James Chu, PhD 2017, advisor Gillette
Iyer, Raj, PhD 2018, advisor Gillette
Stephanie Matt, PhD 2018, advisor R. Johnson
Sung-Soo Jang, PhD 2019, advisor Chung
Vishnu Krishnamurthy, PhD 2019, advisor Kai Zhang
Richard Sanders, MD/PhD 2019, History
Qinyu Sun, PhD 2020, advisor KV Prasanth
Yuou Wang, PhD 2020, advisor Brieher
Chi-Ying Chen, PhD 2020, advisor Stubbs
Qinyu Hau, PhD 2021, advisor KV Prasanth
Joe Seimetz, PhD 2021, advisor Kalsotra
Daphne Eagleman Lodes, PhD 2021, advisor Tsai
Brian Baculis, PhD 2022, advisor Chung

JIE CHEN
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Education and Training

1982 – 1986	B.S.	Peking University, China
1986 – 1989	M.S.	Peking University, China Mentor: Prof. Longxiang Zhang
1989 – 1993	Ph.D.	Rice University, Houston, TX Mentor: Prof. Kathleen S. Matthews
1994 – 1997	Postdoctoral Fellow, Harvard University, Cambridge, MA Mentor: Prof. Stuart L Schreiber	

Professional Positions

9/1997 – 8/2004	Assistant Professor, Department of Cell & Developmental Biology, University of Illinois at Urbana-Champaign (UIUC)
8/2004 – 8/2010	Associate Professor, Department of Cell & Developmental Biology, UIUC
8/2010 – present	Professor, Department of Cell & Developmental Biology, UIUC
1/2013 – present	Affiliate member, Institute for Genomic Biology, UIUC
1/2014 – 1/2020	Head, Department of Cell & Developmental Biology, UIUC
4/2017 – present	Member (0% appointment), Carle Illinois College of Medicine

Honors and Awards

Peking University Award for Outstanding Graduates in Science, 1986
Welch Foundation Predoctoral Fellowship, 1990 – 1993
Irvington Institute of Immunology Postdoctoral Fellowship, 1994 – 1997
NIH Shannon Award for New Investigators, 1998
American Cancer Society Research Scholar, 2003 – 2007
University Scholar, University of Illinois, 2007
Faculty Excellence Award, School of Molecular and Cellular Biology, UIUC, 2011
UIUC "Teachers Ranked as Excellent by Their Students", 2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2017, 2018, 2019, 2021, 2022
UIUC Campus Award for Excellence in Graduate Student Mentoring, 2021

Professional Memberships

Member, American Society of Biochemistry and Molecular Biology, since 1998
Member, American Society of Cell Biology, since 2000
Member, American Diabetes Association, since 2006
Member, American Physiological Society, since 2009

Extramural Services

Grant review panels —

10/2000	*Ad hoc* reviewer, NIH Biochemistry study section
6/2006	Member, NIH High Throughput Screening special emphasis panel

2/2007	*Ad hoc* reviewer, NIH CSD study section (now CSRS)
7/2007	Member, NIH GM SCORE program study section
10/2007	*Ad hoc* reviewer, NIH CSRS study section
2008 – 2012	Regular member, NIH CSRS study section [3 meetings each year]
5/2009	Member, NIH Challenge grants review panel
10/2012	Member, NIH special emphasis panel ZRG1MOSS
6/2013	*Ad hoc* member, NIH CMAD study section
7/2014	Member, NIH special emphasis panel MOSS C02
3/2015	Member, NIH special emphasis panel MOSS U82
6/2015	Member, NIH special emphasis panel MOSS U82
2/2016	Member, NIH special emphasis panel MOSS U82
3/2016	Member, NIH ZRG1-F10B fellowship review panel
11/2016	Member, NIH NIGMS established PI MIRA review panel
3/2017	Member, NIH NIGMS early-stage investigator MIRA review panel
11/2017	Co-chair, NIH NIGMS MIRA review panel
5/2018	Member, NIH NIDCR Special Emphasis Panel ZDE1 GZ 20
12/2018	Member, NIH NIGMS RM1 editorial panel
11/2019	Co-chair, NIH NIGMS RM1 editorial panel
12/2019	Reviewer, NIH Director's New Innovator Award
12/2020	Reviewer, NIH Director's New Innovator Award
07/2021	Co-chair, NIH NIGMS RM1 editorial panel
11/2021	Chair, NIH NIGMS RM1 editorial panel
10/2022	Member, NIH NIGMS RM1 editorial panel
06/2023	*Ad hoc* member, NIH SMEP study section
08/2023	Accepted nomination to serve as permanent member, NIH SMEP study section (for 08/2023 – 07/2027)

Ad hoc reviewer for other grant agencies –

National Science Foundation, Cancer Research UK, Welcome Trust UK, Medical Research Council (MRC) UK, Austrian Science Fund, Michigan DRTC grants, New Jersey Commission on Cancer Research, Louisiana Board of Regents, National Medical Research Council, Singapore, New York RCMI Pilot Project.

Editorial board —

2011 – 2016	*Journal of Biological Chemistry*
2022	Frontiers in Physiology (guest editor)

Reviewer for journals –

American J. of Physiology; Biochemical J.; Biochimica et Biophysica Acta; Cancer Research; Cell Reports; Cell Chemical Biology; Comm. Biol.; Diabetes; eLife; EMBO J; EMBO Rep; Endocrinology; Experimental Cell Research; European J. of Biochemistry; FASEB J.; FEBS J.; J. of Biological Chemistry; J. Cachexia, Sarcopenia and Muscle; J. Cell Biochemistry; J. of Cell Biology; J. of Cell Science; J. Cell Physiology; Molecular and Cellular Biology; Molecular Biology of the Cell; Molecular Cell; Nature; Nature Cell Biology; Nature Chemical Biology; Nature Communications; Oncogene; Oncotarget; PLoS Biology; PLoS One; Proc. Natl. Acad. Sci. USA; Science; Science Signaling; Trends in Biochemical Sci; Trends in Endocrinology and Metabolism.

External reviewer for faculty tenure and promotion –

Purdue University, Robert Wood Johnson Medical School, University of Minnesota, University of Michigan School of Medicine, University of Texas MD Anderson Cancer Center, Stony

Brook University, University of Texas Health Science Center at Houston, Yale University School of Medicine, Rutgers University, University of California-Berkeley, University of Pittsburgh School of Medicine, Gwangju Institute of Science and Technology (Korea).

External review committee –
Department of BioSciences, Rice University
Department of Biochemistry, Biophysics and Molecular Biology, Iowa State University

Service to University

Campus:
1. Research Board ad hoc reviewer (1999 – present)
2. HHMI International Student Research Fellowship campus review panel, 2013
3. College of Liberal Arts and Sciences Dean search committee, 2013 – 2014
4. Chancellor Transition Advisory Committee, 2016 – 2017
5. Carle Illinois College of Medicine Proto-Faculty Executive Committee, 2016 – 2017
6. ADA Pathway to Stop Diabetes Grant review committee, 2017
7. Carle Illinois COM Appointments, Promotions and Tenure Committee, 2017 – 2019
8. Olga G. Nalbandov Lectureship review committee, 2017, 2019, 2020
9. Research Integrity Officer search committee, 2020
10. Program Review Council, 2019 – 2022
11. Transgenic Mouse Facility review ad hoc committee, 2021
12. University Scholar Selection committee, 2020 – 2023
13. Facilitator of Promotion and Tenure DEI training, 2022 – present

College of Liberal Arts and Sciences:
1. Awards committee, 2002 – 2005
2. MCB director review *ad hoc* committee, 2011
3. STAR team, 2014 – 2018
4. Associate dean search committee, 2017
5. Dean's budget task force, 2019
6. Policy development committee, 2019 – 2021
7. Executive committee, 2020 – 2023
8. Specialized faculty promotion sub-committee, 2021
9. School of MCB director 5-year review, 2022

School of Molecular and Cellular Biology:
1. Cellular and Molecular Biology Training Grant executive committee, 1999 – 2002
2. Faculty advisor for CMBTG student symposium committee, 2000 – 2002
3. Faculty search committee, 2001, 2004, 2005, 2009, 2013
4. Seminar committee, 2002 (Chair)
5. Tenure and promotions committee, 2005 – 2008, 2012 – 2013 (Chair)
6. Graduate admissions committee, 2008 – 2012
7. Executive committee, 2008 – 2011, 2014 – 2019

Department of Cell and Developmental Biology:
1. Graduate admissions committee, 1998 – 2005, 2007, 2008 – 2012 (Chair)
2. Graduate program committee, 2002, 2003 (co-Chair), 2004, 2005, 2007 – 2012, 2020 – present (Chair)
3. Equipment committee, 1998, 1999, 2000, 2009
4. Seminar Committee, 2000, 2001 (Chair), 2002, 2008, 2009

5. Course and Curriculum committee, 2001
6. Advisory committee, 2004-2007, 2009 – 2011, 2020 – 2023
7. Faculty supervisor of CDB student-invited seminar committee (2002, 2015)
8. Tenure and promotions subcommittee, 2004 – present; co-Chair (2010 – 2012), Chair (2013)
9. Grant mentoring committee, 2010 – 2012, 2013 – 2015 (Chair), 2020 (Chair), 2021 – present
10. Department head, 2014 – 2020
11. Director of graduate studies, 2020 – 2023

Teaching

Listed on UIUC's "Teachers Ranked as Excellent by Their Students" for years 2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2011, 2017, 2018, 2019, 2021, 2022.
(did not have teaching evaluation in 2010, 2012, 2013, 2014, 2015, 2020)

Spring 1999, 2000, 2001, 2002, 2004, 2007, 2009, 2011, 2017, 2018, 2019, 2021
Instructor for "Molecular Basis of Eukaryotic Cell Signaling" (MCB 480)
Developed and solely responsible for this graduate/undergraduate lecture course (3 lecture hours per week for 15 weeks; in 2017-2019 reduced to 2 credit hours per week due to administrative duties). Undergraduate and graduate students come from the School of Molecular and Cellular Biology and its four departments, Chemical and Biomolecular Engineering, Physics, Bioengineering, Mechanical Engineering, Nutritional and Food Sciences, Animal Sciences, Kinesiology, and College of Veterinary Medicine.

Spring 2003
Co-instructor for "Skeletal muscle development and diseases" (CSB410CK) with Prof. Kaufman.
Spring 2005
Instructor for "Cancer and signal transduction" (MCB529JIE)
Spring 2008
Instructor for "Proteomic and genomic approaches to signal transduction" (MCB529JIE)
Spring 2010
Instructor for "MicroRNAs—mechanisms of action and functions" (MCB529JIE)
Fall 2012
Instructor for "Signal transduction in human diseases" (MCB529JIE)
Fall 2015
Instructor for "Cell structure, dynamics, and signaling" (MCB493ACB)

Mentoring

Advisor for 18 Ph.D recipients:

1998 – 2002	Montserrat Vilella-Bach, Ph.D awarded 6/2002. (Jointly with University of Barcelona; all research work was done in my lab.)
1998 – 2002	Rebecca Bachmann, Ph.D awarded 12/2002. Current position: Free-lance Science & Medical Writer and Developmental Editor. (for *Nature* journals etc).
2000 – 2004	Ebru Erbay, Ph.D awarded 4/2004. (AHA Predoctoral Fellowship recipient; recipient of 2004 Procter & Gamble Graduate Research Award) Current position: Associate Professor, Department of Medicine, Heart Institute & Department of Biomedical Sciences, Cedars Sinai Medical Center.
2000 – 2004	Jae Eun Kim, Ph.D awarded 9/2004. Current position: CEO, 1ST Biotherapeutics Inc., Seongnam, Korea.

2001 – 2005 In-Hyun Park, Ph.D awarded 4/2005. (AHA Predoctoral Fellowship recipient)
Current position: Associate Professor with tenure, Stem Cell Center, Yale University School of Medicine, New Haven, CT.

2002 – 2008 JeongHo Kim, Ph.D awarded 4/2008.
Current position: Associate Scientist, Xycrobe Therapeutics, San Diego, CA.

2003 – 2009 Yuting Sun, Ph.D awarded 3/2009.
Current position: Director of Biology, Nuvalent, Inc., Cambridge, MA.

2006 – 2012 Yejing Ge, Ph.D awarded 5/2012. (Recipient of 2012 Procter & Gamble Graduate Research Award.)
Current position: Assistant Professor, Department of Cancer Biology, University of Texas MD Anderson Cancer Center, Houston, TX.

2008 – 2014 Nidhi Khanna, Ph.D awarded 10/2014.
Current position: Scientist, Edi-Gene Inc., LabCentral, Cambridge, MA.

2008 – 2015 Min Zeng (co-mentored with Prof. Wilfred van der Donk), Ph.D awarded 2/2015.
Current position: Data Analyst, Facebook, San Francisco, CA.

2008 – 2015 Edwin Arauz, Ph.D awarded 5/2015.
Current position: Protein Engineer, Flagship Labs 68, Inc., Cambridge, MA.

2014 – 2015 Stephanie Tsang, Ph.D awarded 2015. (Advisor-of-note)
Current position: Data Analyst, Hospice System, Hawaii.

2014 – 2015 Yijie Geng, Ph.D awarded 2015. (Advisor-of-note)
Current position: Postdoctoral Fellow, University of Utah.

2010 – 2016 Rachel Waldemer-Streyer (Rachel Waldemer), Ph.D awarded 5/2016. MD from University of Illinois at Urbana-Champaign.
Current position: medical residency and fellowship, dermatology program, University of California-San Francisco.

2010 – 2016 Christina Plaisier Rosenberger, Ph.D awarded 6/2016.
Current position: Medical Writer, Technical Resources International, Inc., Bethesda, MD.

2013 – 2019 Kook Son, Ph.D awarded 5/2019. (Recipient of CDB Graduate Student Platform Presentation Award, 2018)
Current position: Postdoctoral Fellow, Genentech, Inc., San Francisco, CA.

2013 – 2020 Nilmani Singh, Ph.D awarded 12/2020. (Recipient of CDB Graduate Student Platform Presentation Award, 2017, 2018, 2020)
Current position: Automation Engineer, Bioenergy Research Center, University of Illinois at Urbana-Champaign.

2015 – 2021 Dongwook Kim, Ph.D awarded 12/2021.
Current position: Scientist, Biogen, Inc., Cambridge, MA.

Advisor for 5 M.S. recipients:

1998 – 2002 Paul Nuzzi, M.S. awarded 7/2002.
Current position: Sales Specialist, PerkinElmer, Boston, MA

2000 – 2001 Haider Shirazi, M.S. awarded 7/2001.
(M.D., Stanford Medical School)
Current position: Radiation Oncologist, Alpha Med Cancer Center, Tinley Park, IL

2003 – 2006 John Jascur, M.S. awarded 5/2008.
Current position: Researcher, Sangamo Therapeutics, San Francisco, CA.

2004 – 2008 Ai-Luen Wu, M.S. awarded 3/2008.

Current position: Compensation Specialist, Google, Denver, CO.
2014 – 2015 Joohwan Kim, M.S. awarded 2015. (Advisor-of-note)

Postdoctoral trainees:
1998 – 2008 Yimin Fang, Research Scientist.
Current position: Research Scientist, University of Illinois at Springfield.
2005 – 2008 Chongben Zhang, Postdoctoral Associate.
Current position: Research Associate, University of North Carolina-Chapel Hill
2006 – 2014 Mee-Sup Yoon, Postdoctoral Associate, Research Scientist, Research Assistant professor.
Current position: Assistant Professor, Gachon University, Korea.
2017 – 2022 Jae-Sung You, Postdoctoral Associate, awardee of Muscular Dystrophy Association development grant.
Current position: visiting research scientist, Bioengineering, UIUC.

Current trainees:
2016 – Chong Dai (PhD student, on leave)
2018 – Allison Boss-Kennedy (PhD student)
2018 – Jesus Moreno (PhD student)
2022 – Pallob Barai (PhD student) n

Other mentoring activities
1998 – 2022 Supervised 66 predoctoral rotation students in the lab
1998 – 2023 Served on ~150 PhD thesis committees and predoctoral student exam committees
1998 – 2023 Research advisor for 21 undergraduate students and 5 high school students
1999 – 2003 Academic advisor for ~100 undergraduate students

Research Grants Received

2022 – 2026 NIH 2R01GM089771 $1,240,644
Title: Phosphoinositide signaling in autophagy
Role: PI

2021 – 2022 NIH 2R56AR048914 $372,819
Title: Signaling mechanisms in muscle regeneration
Role: PI

2021 – 2023 Muscular Dystrophy Association, Developmental grant $140,000
Title: Targeting Leucyl-tRNA synthetase and autophagy in Duchenne muscular dystrophy (C0346)
Role: sponsor (PI: Jae-Sung You)

2016 – 2020 NIH 2R01GM089771 $1,259,228
Title: Phosphatidic acid regulation of mTOR signaling
Role: PI

2015 – 2020 NIH 2R01AR048914 $1,801,330
Title: mTOR signaling in myogenesis
Role: PI

2015 – 2018 Keck Foundation $185,000
Title: Aminoacyl-tRNA synthetases: evolutionary scaffolds to novel biology and physiology
Role: Co-PI. (PI: Susan Martinis, UIUC. Total: $1,400,000)

2013 – 2016	NIH 1R21AG042332 Title: Single-molecule dissection of mTOR complexes Role: PI (co-PI: Taekjip Ha)	$360,948
2013 – 2015	NIH 3R01GM089771-02W1 Title: Phospholipase D signaling Role: PI Collaborative research supplement.	$287,987
2011 – 2015	NIH 1R01GM089771 Title: Phospholipase D signaling Role: PI	$1,134,868
2009 – 2014	NIH 2R01AR48194 Title: mTOR signaling in myogenesis Role: PI	$1,678,175
2009 – 2011	NIH 3R01AR48194-06A1W1 Title: mTOR signaling in skeletal myogenesis Role: PI. ARRA supplement to support summer research by undergrad/high school students and science teachers.	$82,433
2007 – 2009	American Diabetes Association (7-06-RA-28) Title: The role of mTOR signaling in IL-6 induced cellular insulin resistance Role: PI.	$300,000
2003 – 2008	NIH 1R01AR48194 Title: mTOR signaling in skeletal myogenesis	$1,343,343
2003 – 2007	American Cancer Society (RSG-03-250-01-TBE) Title: Regulation of rapamycin-sensitive signaling by PLD pathways Role: PI.	$540,000
2003 – 2006	American Heart Association National Grant-in-Aid Grant # 0350073N Title: Regulation of rapamycin-sensitive signaling by PLD pathways Role: PI. (Early termination due to overlap with ACS award.)	$214,500
2003 – 2005	American Heart Association predoctoral fellowship (Trainee: I.H. Park)	$49,900
2002 – 2004	American Heart Association predoctoral fellowship (Trainee: E. Erbay)	$49,900
2004 – 2006	NIH 1R01GM58064 Title: FRAP and the rapamycin-sensitive signaling pathway Role: PI.	$158,400
1999 – 2004	NIH 1R01GM58064 Title: FRAP and the rapamycin-sensitive signaling pathway Role: PI.	$1,325,361
1999 – 2002	American Cancer Society Young Investigator Award Title: Regulatory mechanisms of FRAP and its signaling Role: PI. (Declined due to overlap with NIH award.)	$450,000
1999 – 2001	American Heart Association Midwest Grand-in-Aid Title: Investigation of scaffolding function of FRAP Role: PI.	$80,000
1998 – 2000	NIH Shannon Award, R55GM58064 Title: FRAP and the rapamycin-sensitive signaling pathway	$100,000

	Role: PI.	
1998 – 1999	American Cancer Society Illinois division grant Title: Mechanisms of FRAP Signaling, a mammalian pathway leading to translational control Role: PI.	$50,000

Invited Seminars/Talks (since Illinois faculty appointment)

1. Rice University, Department of Biochemistry and Cell Biology, 11/30/2001
2. Cornell University, Department of Molecular Medicine, 2/8/2002
3. Keystone meeting on *Protein phosphorylation and cell regulation*, Taos, New Mexico, 3/2002
4. Pfizer, Dept. of Cancer Biology, Ann Arbor, 4/2/2002
5. Duke University, inter-department "Signal Transduction" seminar series, 4/16/2003
6. FASEB Summer Conference on *Lysophospholipids and Related Bioactive Lipids in Biology and Diseases*, Snowmass Village, Colorado, 6–7/2003
7. ASCB Summer Meeting on *Signal Transduction Determining the Fate of Stem Cells*, Bozeman, Montana, 8/2003
8. University of Illinois at Chicago, Department of Physiology, Biophysics, and Cardiology, 12/2/2003
9. Northern Illinois University, Department of Biology, 2/26/2004
10. University of Chicago, Physiology, 2/27/2004
11. Indiana University Medical School (IUPUI), Department of Biochemistry & Mol. Biol., 3/8/2004
12. National Cancer Institute, Cancer Biology Division, 3/18/2004
13. University of Michigan Medical School, Department of Biological Chemistry, 4/28/2004
14. Juan March Foundation Workshop on *Proteins controlling cell growth and their role in tumor formation*, Madrid, Spain, 5/24 – 5/26/2004
15. FASEB Summer Conference on *Phospholipases,* Pine Mountain, Georgia, 7/17 – 7/22/2004 (Cancelled due to family emergency)
16. University of California at Irvine, 9/2004 (Declined)
17. Louisiana State University Health Sciences Center, 9/2004 (Declined)
18. National Institute of Health, National Cancer Institute, 11/2004 (Declined)
19. FASEB Summer Conference on *Lysophospholipid mediators in health and disease*, Snowmass, Colorado, 6/2005
20. University of Pittsburgh Medical School, Department of Pharmacology, 2/3/2006
21. University of Utrecht, Utrecht, Department of Physiology, The Netherlands, 3/13/2006
22. Harvard Medical School, Children's Hospital, 5/19/2006
23. Louisiana State University Health Sciences Center, 10/5/2006
24. University of Minnesota, Department of Biochemistry, Molecular Biology, and Biophysics, 3/26/2008
25. American Diabetes Association 68th Scientific Sessions, San Francisco, CA, 6/2008
26. RNAi Workshop, Sigma Aldrich, Chicago, IL, 9/24/2008
27. EHRLICH II, 2nd World Conference on Magic Bullets, Nurnberg, Germany 10/3 – 10/5/2008 (cancelled due to scheduling conflict)
28. RNAi Workshop, Sigma Aldrich, St. Louis, MO, 3/3/2009 (Declined)
29. Inaugural Dr. Willard J. and Priscilla F. Visek/CAS/MillerComm Lectureship Syposium University of Illinois at Urbana-Champaign, 3/9/2009
30. University of California Los Angeles, Department of Pharmacology, 4/15/2009 (Cancelled due to family emergency)

31. Harvard Public School of Health, Department of Genetics and Complex Diseases, 4/2010
32. FASEB Summer Research Conference "Phospholipid Metabolism: Disease, Signal Transduction, and Membrane Dynamics", Steamboat Springs, Colorado, 6/27 – 7/2/2010
33. University of Texas Health Center, Department of Integrative Biology and Pharmacology, House, TX, 11/15/2010
34. Purdue University, Department of Animal Sciences and Center for Cancer Research, West Lafayette, IN, 11/16/11
35. University of Florida College of Medicine, Department of Pathology, Gainesville, FL, 3/14/12
36. Stony Brook University, Department of Molecular Genetics, Stony Brook, NY, 9/17/12
37. Roswell Park Cancer Institute, Department of Molecular and Cellular Biology, NY, 10/25/12
38. FASEB summer research conference – Phospholipid Metabolism: Disease, Signal Transduction, and Membrane Dynamics, Niagara Falls, NY, 6/1-6/6/14
39. Southern Illinois University School of Medicine, Department of Biochemistry and Molecular Biology, Carbondale, IL, 9/19/14
40. 10th International Aminoacyl tRNA Synthetase Conference, Barcelona, Spain, 10/19-10/23/2015
41. FASEB summer research conference – Phospholipid Signaling in Cancer, Neurodegeneration and Cardiovascular Disease, Steamboat Springs, CO, 7/31-8/5/2016
42. Johns Hopkins University, Department of Biology, 9/21/2016
43. Seoul National University, Department of Molecular Medicine and Biopharmaceutical Sciences, Seoul, Korea, 10/12/2016
44. Gachon Univerity, Department of Molecular Medicine, Incheon, Korea, 10/13/2016
45. International Conference on Diabetes and Metabolism, Seoul, Korea, 10/13-10/15/2016
46. 12th International Aminoacyl tRNA Synthetase Conference, Hangzhou, China, 11/5-11/9/2019
47. FASEB summer research conference: dynamic lipid signaling in health and disease. Jupiter, Florida. 7/31-8/4/2022
48. 15th International Conference on Cachexia, Sarcopenia and Muscle Wasting, Lisbon, Portugal. 6/24-6/26/2022 (Declined)
49. 13th International Symposium on Aminoacyl-tRNA Synthetases (AARS2023), Grand Bend, Ontario, Canada, 6/4-6/9/2023

Talks presented by graduate students and postdoctoral associates:
1. FASEB Summer Conference on *Phospholipases,* Saxtons River, Vermont, 7/8/06 – 7/13/06 (Yuting Sun, graduate student)
2. Keystone Symposium on *Diabetes*, Keystone, Colorado, 1/14/07 – 1/19/07 (Jeong Ho Kim, graduate student)
3. American Society of Cell Biology (ASCB) Annual Meeting, 12/2008 (Yuting Sun, graduate student)
4. American Society of Cell Biology (ASCB) Annual Meeting, 12/2009 (Dr. Mee Sup Yoon, postdoc)
5. Cold Spring Harbor meeting on "RNA Biology", Suzhou, China, 11/1 – 11/5/2010 (Yejing Ge, graduate student)
6. American Society of Biochemistry and Molecular Biology Annual Meeting (Experimental Biology), 4/2014 (Christina Plaisier, graduate student)
7. 26th tRNA Conference, Jeju, Korea, 9/4 – 9/8/2016 (Kook Son, graduate student)

8. Annual meeting of American Society of Biochemistry and Molecular Biology (ASBMB), Chicago, IL, 4/22 – 4/26/2017 (Nilmani Singh, graduate student)
9. FASEB summer research conferences – Phospholipids, 7/29 – 8/3/2018 (Nilmani Singh, graduate student)
10. 12th International Aminoacyl tRNA Synthetase Conference, Hangzhou, China, 11/5-11/9/2019 (Chong Dai, graduate student)
11. Annual meeting of American Society of Biochemistry and Molecular Biology (ASBMB), San Diego, CA, 4/2020, rescheduled to take place virtually 7/2020 (Nilmani Singh, graduate student)
12. Annual meeting of American Society of Cell Biology, Philadelphia, PA, 12/2022 (Allison Boss-Kennedy, graduate student)

Publications

H-index: **48**
i10 index (articles with >10 citations): **78**
i100 index (articles with >100 citations): **37**

1. J. Chen and K. S. Matthews (1992) *T41 Mutation in* Lac *Repressor is Tyr282Asp.* **Gene** 111, 145-6
2. J. Chen and K. S. Matthews (1992) *Deletion of Lactose Repressor Carboxyl-Terminal Domain Affects Tetramer Formation.* **J. Biol. Chem.** 267, 13843-50
3. J. Chen, S. Alberti and K. S. Matthews (1994) *Wild-Type Operator Binding and Altered Cooperativity for Inducer Binding of* Lac *Repressor Dimer Mutant R3.* J. Biol. Chem. 269, 12482-7
4. J. Chen, R. Surendran, J. C. Lee and K. S. Matthews (1994) *Construction of a Dimeric Repressor: Dissection of Subunit Interfaces in* Lac *Repressor.* **Biochemistry** 33, 1234-41
5. J. Chen and K. S. Matthews (1994) *Subunit Dissociation Affects DNA Binding in a Dimeric Lac Repressor Produced by C-terminal Deletion.* **Biochemistry** 33, 8728-35
6. J. Chen, X.-F. Zheng, E. J. Brown and S. L. Schreiber (1995) *Identification of an 11-kDa FKBP12-Rapamycin-Associated Protein and Characterization of a Critical Serine Residue.* **Proc. Natl. Acad. Sci. USA** 92, 4947-51
7. E. J. Brown, P. A. Beal, C. T. Keith, J. Chen, T. Shin and S. L. Schreiber (1995) *Control of p70 S6 Kinase by Kinase Activity of FRAP in vivo*. **Nature** 377, 441-6
8. X.-F. Zheng, D. Fiorentino, J. Chen, G. R. Crabtree and S. L. Schreiber (1995) *TOR Kinase Domains Are Required for Two Distinct Functions, Only One of Which Is Inhibited by Rapamycin.* **Cell** 82, 121-30
9. J. Choi, J. Chen, S. Schreiber and J. Clardy (1996) *Structure of the FKBP12-Rapamycin Complex Interacting with the Binding Domain of FRAP.* **Science** 273, 239-42
10. D. T. Hung*, J. Chen* and S. L. Schreiber (1996) *(+)-Discodermolide Binds to Microtubules in Stoichiometric Ratio to Tubulin Dimers, Blocks Taxol Binding and Results in Mitotic Arrest.* **Chemistry & Biology** 3, 287-93 *co-first authors.
11. J. Chen, R. Peterson and S. L. Schreiber (1998) *α4 associates with protein phosphatases 2A, 4 and 6*, **Biochem. Biophys. Res. Comm**. 247, 827-32
12. M. Vilella-Bach, P. Nuzzi, Y. Fang and J. Chen (1999) *The FKBP12-Rapamycin-binding Domain Is Required for FKBP12-Rapamycin-associated Protein Kinase Activity and G1 Progression*, **J. Biol. Chem**. 274, 4266-72

13. J. E. Kim and J. Chen (2000) *Cytoplasmic-nuclear shuttling of FKBP12-rapamycin-associated protein is involved in rapamycin-sensitive signaling and translation initiation*, **Proc. Natl. Acad. Sci. USA** 97, 14340-5
14. M. Hartman, M. Vilella-Bach, J. Chen and G. Freund (2001) *FRAP-dependent serine phosphorylation of IRS-1 inhibits IRS-1 tyrosine phosphorylation*, **Biochem. Biophys. Res. Comm.** 280, 776-81
15. E. Erbay and J. Chen (2001) *The mammalian target of rapamycin regulates C2C12 myogenesis via a kinase-independent mechanism*, **J. Biol. Chem.** (accelerated publication) 276, 36079-82
16. Y. Fang, M. Viella-Bach, R. Bachmann, A. Flanigan and J. Chen (2001) *Phosphatidic acid-mediated mitogenic activation of mTOR signaling*, **Science** 294, 1942-5
17. I.-H. Park, R. Bachmann, H. Shirazi and J. Chen (2002) *Regulation of S6 kinase 2 by the mammalian target of rapamycin,* **J. Biol. Chem**. 277, 31423-9
18. J. Chen and Y. Fang (2002) *A novel pathway regulating the mammalian target of rapamycin signaling*, **Biochem. Pharm**. 64, 1071-7
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25. J. E. Kim and J. Chen (2004) *Regulation of PPARgamma activity by mTOR and amino acids in adipogenesis,* **Diabetes** 53, 2748-56
26. E. Erbay, J. E. Kim and J. Chen (2005) *Amino acid-sensing mTOR signaling*, a chapter in **Nutrients and Cell Signaling**, CRC Press, p353-380
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28. I.-H. Park and J. Chen (2005) *Mammalian Target of Rapamycin (mTOR) Signaling Is Required for a Late-stage Fusion Process during Skeletal Myotube Maturation*, **J. Biol. Chem.** 280, 32009-17
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31. J.-H. Kim, J. E. Kim, H.-Y. Liu, W. Cao and J. Chen (2008) *Regulation of IL-6 induced hepatic insulin resistance by mTOR through the STAT3-SOCS3 pathway*, **J. Biol. Chem**. 283, 708-15

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35. J.-H. Kim, R. Bachmann and J. Chen (2009) *IL-6 and insulin resistance*, **Vitamins and Hormones**, 80, 613-33
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56. M.-S. Yoon and J. Chen, (2013) *Distinct amino acid-sensing mTOR pathways regulate skeletal myogenesis*, **Mol. Biol. Cell**, 24, 3754-63. (PMC3843001)
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81. K.Y. Lai, S.R.G. Galan, Y. Zeng, C. He, J. Riedl, R. Raj, K.P. Chooi, N. Garg, L.H. Jones, G.J. Hutchings, S. Mohammed, S.K. Nair, J. Chen*, B.G. Davis*, and W.A. van der Donk*, (2021) *LanCLs add glutathione to dehydroamino acids generated at phosphorylated sites in the proteome.* **Cell**, 184, 2680. (*Co-corresponding authors)
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83. J.S. You and J. Chen, (2021) *Aging Does Not Exacerbate Muscle Loss During Denervation and Lends Unique Muscle-Specific Atrophy Resistance With Akt Activation*. **Frontiers in Physiology** 12, article 779547.
84. C. Dai, A Reyes-Ordonez, J.S. You, and J. Chen, (2021) *A non-translational role of threonyl-tRNA synthetase in regulating JNK signaling during skeletal myogenesis.* **FASEB J**. 35, e21948.
85. R. J. Waldemer-Streyer, D. Kim, and J. Chen, (2022) *Muscle cell-derived cytokines in skeletal muscle regeneration* (state-of-the-art review). **FEBS J.** 289, 6463.
86. J. Chen, (2023) *Arginyl-tRNA synthetase in inflammation*. **Nat. Cell Biol**. 25, 520.
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EDUCATION

High School:	Harrison High School, Farmington Hills, MI
Undergraduate:	University of Michigan, Ann Arbor, MI 1985-1989, B.S. Microbiology
Graduate:	Florida State University, Tallahassee, FL 1989-1990, M.S. Biology
	Northwestern University, Evanston, IL 1991-1996, Ph.D. Biochemistry and Biophysics

POSTDOCTORAL TRAINING

Fellow with Dr. Keith R. Yamamoto, University of California, San Francisco, CA 1996-2002

ACADEMIC APPOINTMENTS

Assistant Professor, Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign, IL 2002

Associate Professor, Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign, IL 2009

Professor, Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign, IL 2013

Affiliate, Institute for Genomic Biology
University of Illinois at Urbana-Champaign, IL 2004

Affiliate, Cancer Institute
University of Illinois at Urbana-Champaign, IL 2013

EDITORIAL BOARDS

Frontiers in Molecular Biosciences 2014-present
*Specialty Chief Editor in Genome Organization 2021-present

GRANT SUPPORT

Sponsor:	National Institutes of Health (R35 GM136660)
Period:	09/01/20-06/30/25
Title:	Regulation of the Native Protein Landscape by Molecular Chaperones
Principle Investigator:	Brian C. Freeman
Sponsor:	National Institutes of Health (R13 AG071015)
Period:	11/05/21-11/16/21
Title:	GRC on Stress Proteins in Growth, Development, and Disease
Principle Investigator:	Brian C. Freeman
Sponsor:	National Institutes of Health (R01 GM118307)
Period:	05/01/16-04/30/21
Score Rating:	3%
Title:	The Hsp90 molecular chaperone system
Principle Investigator:	Brian C. Freeman
Sponsor:	National Institutes of Health (R13 AG063484)
Period:	06/23/19-06/28/19
Title:	GRC on Stress Proteins in Growth, Development, and Disease
Principle Investigator:	Brian C. Freeman
Sponsor:	National Institutes of Health (R01 CA155333)
Period:	07/12/11-04/30/16
Score Rating:	3%
Title:	The Hsp90 molecular chaperone system
Principle Investigator:	Brian C. Freeman
Sponsor:	National Institutes of Health (R01 DK074270-05)
Period:	02/01/06-06/31/11
Score Rating:	9%
Title:	Dynamic signaling by intracellular receptors
Principle Investigator:	Brian C. Freeman

Sponsor:	National Institutes of Health (ARRA DK074270)
Period:	10/09-09/10
Title:	Dynamic signaling by intracellular receptors
Principle Investigator:	Brian C. Freeman

HONORS AND AWARDS

Fellow, American Association for the Advancement of Science 2021

Fellow, Cell Stress Society International 2020

TUM Ambassador. Technische Universität München, Germany 2015

Visiting Professorship. Bavarian State Ministry of Education, Culture, Science, and the Arts, Germany 2014

Friedrich Wilhelm Bessel Research Award. Alexander von Humboldt Foundation, Germany 2010

IAS Honorary Hans Fischer Senior Fellow. Technische Universität München, Germany 2010

Educator of the Year. Alumni Association, University of Illinois, Urbana-Champaign, IL 2009

American Heart Association fellowship. University of California, San Francisco, CA 2000-2002

Leukemia and Lymphoma Society fellowship. University of California, San Francisco, CA 1997-2000

Leukemia Research Foundation fellowship. University of California, San Francisco, CA 1996-1997

Gramm travel fellowship. Northwestern University, Evanston, IL 1996

National Institutes of Health Molecular and Cellular Biology of Disease predoctoral training fellowship. Northwestern University, Evanston, IL 1993-1995

College of Arts and Sciences Distinguished Teaching Award. Northwestern University, Evanston, IL 1992-1993

Presidential fellowship. Northwestern University, Evanston, IL 1991-1993

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Association for the Advancement of Science 2015-present

Cell Stress Society International 2015-present

TEACHING ACTIVITIES

University of Illinois, Urbana-Champaign

Advanced Molecular Genetics 2003-present

Technische Universität München

Cell Biology II 2010-2017

COMMITTEE AND ADMINISTRATIVE SERVICES

University of Illinois, Urbana-Champaign

LAS College Faculty Appeals Committee 2013-2015 (Chair 2014-2015); 2021-2023
MCB School Communications Committee Chair 2014-2023
CDB Department Grant Mentoring Committee 2015-2023
CDB Department Graduate Recruitment Committee 2004-2007, 2020-2023
CDB Department Communications Committee 2002-2023 (Chair 2010-2023)
LAS College Nominations Committee 2020-2022
MCB School Strategic Advisory Committee Chair 2017-2021
CDB Department Preliminary Exam Committee 2013-2020
LAS College Academic Standards Committee 2017-2019
CDB Department Graduate Program & Fellowship Committee 2009-2019
LAS College Faculty Awards Committee 2014-2016
CDB Department Co-chair Promotions and Tenure Committee 2012-2016
CDB Department Undergraduate Distinction Committee 2014-2015
CDB Department Advisory Committee to the Head 2008-2014
LAS College CDB Department Head Review Committee 2012-2013
MCB School Communications and Awards Committee 2011-2013
MCB School CMB Training Grant Selection Committee 2002-2005, 2011-2012 (Chair 2003-2004, 2011-2012)
CDB Department Graduate Student Council Advisor Committee 2007-2012 (Chair 2008-2012)
CDB Department Seminar Committee 2006-2016 (Chair 2008-2010)
CDB Department Faculty Search Committee 2004-2005, 2005-2006, 2006-2007, 2007-2008
University of Illinois, Urbana-Champaign Senate 2004-2006
MCB School Graduate Student Recruitment Committee 2004-2007
CDB Department Courses and Curriculum Committee 2003-2004
Biochemistry Department Faculty Search Committee 2003-2004
CDB Department Undergraduate Advising Committee 2003-2004

MCB School Minority Student Recruitment Committee 2003-2004
CDB Department Equipment Committee 2002-2007 (Chair 2003-2004)
LAS College Chancellor's White Paper Committee 2002-2004

Technische Universität München

Faculty Search Advisor 2015, 2019

National and International

Chair, Gordon Research Conference Stress Proteins in Growth, Development, and Disease 2023 (postponed from 2021)
Co-Chair, GRC Stress Proteins in Growth, Development, and Disease 2019
Chair, Midwest Stress Response and Molecular Chaperone Conference 2006, 2010, 2016
Thesis Defense Opponent, Åbo Akademi, Turku, Finland 2016
NIH Membrane Biology and Protein Processing Study Section, Panel Member 2015-2021
NIH Site Visit for the NCI Urologic Oncology Branch and Genitourinary Malignancies Branch, Panel Member 2015
NIH Membrane Biology and Protein Processing Study Section, *ad hoc* Member 2014
Institut National de la Santé Et de la Recherché Médicale (INSERM), France 2013
NIH ZRG1 F04-W Fellowships, Panel Member 2012
NIH Site Visit for the NCI Urologic Oncology Branch and the Laboratory of Population Genetics, Panel Member 2010
NIH ZRG1 GGG-F Special Emphasis, Panel Member 2009

GRADUATE STUDENTS

University of Illinois, Urbana-Champaign

Oetunji A. Toogun, Ph.D. 2004-2009
Diane DeZwaan McCabe, Ph.D. 2006-2010
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Imke Baade, M.S. 2011
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POSTDOCTORAL FELLOWS

University of Illinois, Urbana-Champaign
Elena Zelin, Ph.D. 2007-2014
Melinda Lynch Day, Ph.D. 2013-2015
Anqi Chen, Ph.D. 2015-2018

INVITED PRESENTATIONS (recent)

2010:

Speaker, CSHL Molecular Chaperones and the Heat Shock Response Conference, Cold Spring Harbor, NY

Speaker, CSHL Nuclear Receptors and Disease Conference, Cold Spring Harbor, NY

Speaker, The Hsp90 Chaperone Machine: 5th International Conference, Les Diablerets, Switzerland

University of South Florida, Department of Cell Biology, Microbiology, and Molecular Biology, Tampa, FL

Yale University, Department of Biochemistry and Biophysics, New Haven, CT

National Institutes of Health, National Cancer Institute, Center for Cancer Research, Bethesda, MD

2011:

Speaker, Gordon Research Conference, Stress Proteins in Growth, Development, and Disease, Il Ciocco, Italy

Speaker, CSHL Telomeres and Telomerase Conference, Cold Spring Harbor, NY

Max Planck Institute of Biochemistry, Department of Cellular Biochemistry, Martinsried, Germany

Technische Universität München, Department of Biophysics, Garching, Germany

2012:

Keynote Lecture, Stress Signals and Responses Symposium, Turku, Finland

Speaker, The Hsp90 Chaperone Machine: 6th International Conference, Les Diablerets, Switzerland

Speaker, Technische Universität München, Sonder Forschungs Bereich, Molecular Machines in Protein Folding, Garching, Germany

Georgia Health Sciences University, GHSU Cancer Center, Augusta, GA

Université Paris Diderot, Paris, France

Åbo Akademi University, Turku, Finland

2013:

Speaker, Gordon Research Conference on Stress Proteins in Growth, Development & Disease, West Dover, VT

Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany

2014:

Speaker, Heat Shock Factors in Stress Responses, Development and Epigenetics Paris, France

Speaker, The Hsp90 Chaperone Machine: 7th International Conference, Seeon, Germany

University of Düsseldorf, Düsseldorf, Germany

Northwestern University, Evanston, IL

Duke University, Durham, NC

2015:

Speaker, EMBO Conference on The Biology of Molecular Chaperones: From Molecules, Organelles, and Cells to Misfolding Diseases, Heraklion, Greece

Speaker, Gordon Research Conference on Stress Proteins in Growth, Development, and Disease, Il Ciocco, Italy

2016:

Keynote Lecture, Diebold Symposium, Kalamazoo, MI

Keynote Lecture, Midwest Stress Response and Molecular Chaperone Conference, Evanston, IL

Speaker, The Hsp90 Chaperone Machine: 8th International Conference Seeon, Germany

Speaker, Cell Stress and Chaperone Society Conference, Old Town Alexandria, VA

University of Kansas School of Medicine, Kansas City, KS

Technische Universität München, Department of Chemistry, Garching, Germany

University of Illinois, Urbana-Champaign, ASBMB Undergraduate invited seminar, Urbana, IL

2017:

Speaker, Gordon Research Conference on Stress Proteins in Growth, Development, and Disease, Sunday River, ME

Speaker, Cell Stress and Chaperone Society Symposium, Turku, Finland

Utrecht University, Utrecht, Netherlands

Åbo Akademi, Turku, Finland

SUNY Upstate Medical University, Syracuse, NY

University of Texas, Houston, TX

2018:

Speaker, CSHL Protein Homeostasis in Health and Disease Conference, Cold Spring Harbor, NY

Speaker, The Hsp90 Chaperone Machine: 9th International Conference, Leysin, Switzerland

Louisiana State University, Shreveport, LA

2019:

Co-Chair, Gordon Research Conference on Stress Proteins in Growth, Development, and Disease, Il Ciocco, Italy

Northwestern University Medical School, Chicago, IL

Children's Hospital of Philadelphia and the University of Pennsylvania, Philadelphia, PA

2020:

Speaker, Virtual Cell Stress & Chaperone International Congress

Speaker, The Hsp90 Chaperone Machine: Webinar

2022:

University of Idaho, Moscow, ID

University of Wisconsin, Madison, WI

University of North Carolina, Charlotte, NC

Speaker, 1st International Nuclear Actin Symposium, Szeged, Hungary

Speaker, Virtual Cell Stress & Chaperone International Congress

Speaker, The Hsp90 Chaperone Machine: 10th International Conference, Leysin, Switzerland

2023:

St. Jude Children's Research Hospital, Memphis TN

University of North Carolina, Charlotte, NC

Chair, Gordon Research Conference on Stress Proteins in Growth, Development, and Disease, Il Ciocco, Italy

Speaker, EMBO Workshop on Protein Quality Control – From Molecular Mechanism to Therapeutic Intervention, Dubrovnik, Croatia

Speaker, Technische Universität München, Sonder Forschungs Bereich, Molecular Machines in Protein Folding, Garching, Germany

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2. Freeman, B.C. and J.C. States (1991) An STS in the human cytoskeletal a-actin gene. **Nucl. Acids Res.**, 19, 5086.
3. Freeman, B.C. and J.C. States (1991) An STS in the human adenosine deaminase gene (located 20q12-q13.11). **Nucl. Acids Res.**, 19, 5084.
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19. Freeman, B.C. and K.R. Yamamoto (2002) Disassembly of transcriptional regulatory complexes by molecular chaperones. **Science**, 296, 2232-2235.

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+invited review

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+invited review

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+invited review

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+invited review as part of a special issue “Heat Shock Protein 90 (Hsp90)”

35. Zelin, E., Y. Zhang, O.A. Toogun, S. Zhong and B.C. Freeman (2012) The p23 molecular chaperone and GCN5 acetylase jointly modulate protein-DNA dynamics and open chromatin status. **Mol. Cell**, 48, 459-470.

36. Echtenkamp, F.J. and B.C. Freeman (2014) Molecular Chaperone-Mediated Nuclear Protein Dynamics. **Curr. Prot. Pept. Sci.**, 15, 216-224.
+invited review as part of a special issue “The Biology of Molecular Chaperones”

37. Echtenkamp, F.J. and B.C. Freeman (2014) Emergence and characterization of the p23 molecular chaperone. **Interactomics & Systems Biology**, ed. W. Houry, Springer Press, Baton Rouge, LA, pp. 207-232.

38. Zelin, E. and B.C. Freeman (2015) Lysine deacetylases regulate the heat shock response including the age-associated impairment of HSF1. **J. Mol. Biol.**, 427, 1644-1654.

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40. Gvozdenov, Z., J. Kolhe, and B.C. Freeman (2019) The Nuclear and DNA-Associated Molecular Chaperone Network. **Cold Spring Harb. Perspect. Biol.**, 11, pii: a034009.

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+invited review as part of a special issue “Cell Architecture”

44. Peng, A.Y.T. and B.C. Freeman (2022) Inhibiting U1 telescripting: a means to an end for transcription. **Mol. Cell**, 82, 1405-1407.

45. Mankovich, A.G. and B.C. Freeman (2022) Regulation of Protein Transport by the Cytosolic Hsp90s. **Biomolecules**, 12, 1077.

46. Kolhe, J.A., N.L. Babu and B.C. Freeman (in revision) The Hsp90 molecular chaperone governs client proteins by targeting intrinsically disordered regions. **Mol. Cell**.

47. Gvozdenov, Z., A.Y.T. Peng, A.G. Mankovich and B.C. Freeman (in preparation) Loss of the TRiC chaperonin triggers widespread production of divergent RNA transcripts.

48. Peng, A.Y.T. and B.C. Freeman (in preparation) Nuclear presence of type I myosins is essential for life and maintaining heterochromatin organization.

49. Mankovich, A. and B.C. Freeman (in preparation) Hsp90 mediates a conserved mechanism for inserting tail-anchored proteins into a membrane.

Martha U. Gillette

Curriculum Vitae

- Center for Advanced Study Professor
- Alumni Professor of Cell & Developmental Biology
- Director of the University of Illinois Neuroscience Program
- Professor and Past Head of Cell & Developmental Biology, Colleges of Liberal Arts & Sciences and of Medicine
- Professor of Molecular & Integrative Physiology
- Professor of Bioengineering
- Co-leader, NeuroTechnology of Memory and Cognition Working Group, Beckman Institute for Advanced Science & Technology
- Faculty Member, Carle Illinois College of Medicine
- Faculty Member, 1) Multi-Cellular Engineered Living Systems (M-CELS), Hyunjoon Kong, Theme Leader; 2) Genomics of Brain and Behavioral Plasticity Theme, Gene Robinson, Theme Leader, Institute for Genomic Biology
- Past Leader, Restorative Neuroscience Translational Research Thrust Initiative, Division of Biomedical Sciences
- Affiliate, Holonyak Micro & Nanotechnology Laboratory (MNTL)
- Affiliate, Center for Nanoscale Science & Technology (CNST)

Short Biography

Martha U. Gillette is professor of Cell & Developmental Biology, Physiology, Bioengineering, and Neuroscience, director of the U of I Neuroscience Program, and on the faculty of the Beckman Institute for Advanced Science and Technology and the Carle Illinois College of Medicine. She is affiliated with the Institute for Genomic Biology, the Holonyak Micro & NanoTechnology Labs, and the Center for Nanoscale Science & Technology. She is appointed in the Colleges of Liberal Arts & Sciences, Medicine, and Engineering. Professor Gillette received her A.B. from Grinnell College, M.S. from the University of Hawaii in zoology, Ph.D. in developmental biology from the University of Toronto, and postdoctoral training in neuroscience at the University of California, Santa Cruz. Her research seeks to understand at multiple levels the actions of molecules in nerve cells, signal processing in brain, and their consequences for what animals do. Her discoveries have important health applications: malfunctioning of the master circadian timing system results in brain and organ dysfunction, which manifest as clinical disorders of sleep, metabolism, and mental health. She is engaged in cross-disciplinary research bridging campus excellence in cellular neuroscience, nano-scale analytical chemistry, and materials engineering. In the neuroengineering domain, these studies examine emergent properties of developing neurons. She has been a Beckman Scholar, Center for Advanced Study Fellow, University Scholar, and is Center for Advanced Study Professor and Cell & Developmental Biology Alumni Professor of the University of Illinois. She has mentored > 50 graduate and post-doctoral trainees, the majority of whom are women, and received the Outstanding Advisor Award for medical scholar training. She has served in numerous advisory capacities to the NIH and NSF, and in executive positions in professional societies. She is a fellow of the American Association for the Advancement of Science and was awarded the Women in Neuroscience Lifetime Achievement Award of the Society for Neuroscience.

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TABLE OF CONTENTS

CAREER SUMMARY

EDUCATION

1976-1978	University of California, Santa Cruz, Postdoctoral Research, Neurophysiology
1969-1976	University of Toronto, Canada, Ph.D., Zoology (Major: Developmental Biology / Minors: Immunology, Pharmacology)
1967-1969	University of Hawaii, Honolulu, M.S., Zoology
1963-1967	Grinnell College, Iowa, A.B., Biology
1949-1963	Hooper Public Schools, Hooper, Nebraska

PROFESSIONAL EXPERIENCE

2020–present	Faculty Member, Multi-Cellular Living Systems (M-CELS) Theme, Institute for Genomic Biology, HyunJoon Kong, Theme Leader
2018-present	Faculty Member, Research Advisory Board, Carle Illinois College of Medicine
2017-present	Director, NSF Training Grant: *NRT-UtB: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery*, HyunJoon Kong, co-PI
2015-present	Director, Neuroscience Program, UIUC
2015-present	Co-Leader w/ Jonathan Sweedler, Neurotechnology of Memory and Cognition Research Group, Beckman Institute for Advanced Science & Technology, UIUC
2009-present	Professor, Department of Bioengineering, UIUC
2009-present	Center for Advanced Study Professor, University of Illinois at Urbana-Champaign (UIUC)
2009-present	Affiliate, Micro and Nanotechnology Labs, and Center for Nano-Scale Technology
2009-2012	Leader, Restorative Neuroscience Translational Research Initiative
2004–present	Cell & Developmental Biology Alumni Professor, UIUC (3rd epoch)
2004–present	Faculty Member, Genomics of Brain and Behavioral Plasticity Theme, Institute for Genomic Biology, Gene Robinson, Theme Leader
1998–2008	Head, Department of Cell and Structural/Developmental Biology, UIUC
1993–present	Professor, Department of Cell and Developmental Biology (formerly Cell and Structural Biology) and the Colleges of Medicine and Liberal Arts & Sciences, UIUC
1993–present	Professor, Department of Molecular & Integrative Physiology (formerly Physiology and Biophysics) and The Neuroscience Program, UIUC
1993–1997	Affiliate, National Science Foundation Center for Learning and Memory, Beckman Institute, UIUC
1990–1993	Associate Professor, Department of Cell and Structural Biology and the College of Medicine, UIUC
1988–2015	Affiliate, NeuroTechnology/Neural Patterns Analysis Group, Beckman Institute for Advanced Science and Technology, UIUC
1988–1993	Associate Professor, Department of Physiology and Biophysics, UIUC
1986–1988	Visiting Associate Professor, Department of Physiology and Biophysics, UIUC
1980–1986	Visiting Assistant Research Professor of Physiology and Biophysics, and Faculty Member of Neural and Behavioral Biology Program, UIUC
1978–1980	Visiting Assistant Professor of Physiology and Biophysics, and of Biology, UIUC
1978	Instructor of Neurophysiology and Behavior, Division of Life Sciences, University of California, Santa Cruz
1976–1978	Postdoctoral Associate in the laboratory of W.J. Davis, University of California, Santa Cruz. Research Topic: Cyclic AMP modulation of neuronal bursting
1969–1973	Predoctoral Fellow and Research Assistant, Funded by The National Research Council of Canada, University of Toronto. Research Topic: Cell surface control of developmentally regulated enzymes
1969–1973	Teaching Assistant in Genetics, Scarborough College of the University of Toronto
1969	NSF Research Trainee in Molluscan Biology, Hawaii Institute of Marine Biology
1967–1969	Teaching Assistant in Zoology, University of Hawaii

1966	Research Training in Marine Biology, Kerckhoff Marine Labs, California Institute of Technology
1965	Undergraduate Research Training, Rocky Mountain Biological Laboratories
1963	Honors Research in Biology, Grinnell College

PROFESSIONAL MEMBERSHIPS

American Academy of Sleep Medicine (past)
American Association for the Advancement of Science (Fellow)
American Physiological Society (past)
Foundation for Biomedical Research
International Society for Neuroethology (past)
National Coalition for Science and Technology
Sleep Research Society (past)
Society for Neuroscience
Society for Research on Biological Rhythms
The Melatonin Club
Women in Neuroscience
Women in Sleep and Rhythms Research

SUPPORTING INFORMATION

A. Recognition and Outstanding Achievements

1. **Patents and Trademarks**
   - **Trademark Acquisition:** This activity evolved from one of the Chancellor's Cross-Campus Initiatives, *PharmaEngineering™: Neural Repair in the Nano Domain* (Martha Gillette & Jonathan Sweedler, Facilitators). We coordinated with University Counsel to submit a trademark application to the United States Patent and Trademark Office to register PharmaEngineering™ - in April 2005 we were notified that the Trademark Examiner approved publication of our application. After the application had been published to allow the public (including other trademark owners) to object if they so desired, our application for trademark was approved in Fall, 2005 by the U.S. Trademark Office and this trademark was registered on behalf of the University of Illinois.

2. **Honors and Fellowships**
   - **Beckman Visionary**, 2022
   - **Beckman Institute Vision and Spirit Award**, 2021
   - **NIH National Heart, Lung, Blood Institute Advisory Council,** 2018 - 2023
   - **NSF Alan T. Waterman Awards Committee**, Director of the National Science Foundation. 2016 - 2019
   - **Faculty Champion**, **College of Liberal Arts & Sciences and Vice Chancellor for Research,** 2014- - 2017
   - **Center for Advanced Study Advisory Board**, 2014 - 2017
   - **Executive Committee, Abbott-Illinois Center for Nutrition, Learning & Memory**, 2014 - 2017
   - **Center for Advanced Study Professorship**, UIUC, 2009 - present
   - **Cell & Developmental Biology Alumni Professor**, UIUC, 2004-2009, 2010-2015, 2015-2020. 2020-2025
   - **President, Society for Research on Biological Rhythms**, including Executive Committee. By-Laws and Incorporation Committees, 2006–2008; Chair of SRBR Nominations Committee 2009 - 2010
   - **Alumni Discretionary Award**, for exceptional service to the College of LAS, UIUC, 2006
   - Nominated, FASEB Excellence in Science Lecture and Award, 2006
   - Awarded **Women in Neuroscience Mika Salpeter Lifetime Achievement Award**, 2004

- **Congratulated by the 93rd Illinois General Assembly** on receiving the Women in Neuroscience Mika Salpeter Lifetime Achievement Award, House Resolution 1295, Adopted January 10, 2005
- Awarded **National Academies Keck Futures Initiative Conference**, Computational **Chronobiology, with Terrence Sejnowski, Salk Institute of Biological Sciences, 2004**
- **President-Elect, Society for the Study of Biological Rhythms**, 2004–2006
- Awarded Faculty Status in the Institute for Genomic Biology (IGB), Genomics of Neural and Behavioral Plasticity Research Theme, UIUC, 2004=present,
- Elected **Chair, Gordon Research Conference on Chronobiology**, 2003–2005
- **Outstanding Medical Scholars Program Advisor Award**, 2002
- **Elected Vice-Chair, Gordon Research Conference on Chronobiology**, 2001–2003
- **Vice-President, The National Sleep Foundation**, Washington, DC, 2000–2005
- **University Scholar**, UIUC, 1997–2000
- Nominee for Outstanding Grad. Student Mentor, The Graduate College, UIUC, 1999
- Visiting Scholar, Friday Harbor Labs, University of Washington, 1997, 2013, 2014
- **Fellow of the Center for Advanced Study**, UIUC, 1996–1999
- **Fellow of the American Assoc. for the Advancement of Science (AAAS)**, 1995–present
- **Beckman Scholar**, UIUC, 1990–1991
- **Visiting Scholar**, The Physiology Laboratory, Cambridge University, England, 1985 (summer)
- **Visiting Scientis**t, Friday Harbor Laboratories, University of Washington, 1982, 1986, 1997, 2013 (summers)
- **National Research Council of Canada Predoctoral Fellow** in the Laboratory of Dr. Michael F. Filosa, University of Toronto, 1970–1973
- **National Science Foundation (USA) Graduate Research Trainee**, Univ. of Hawaii, 1968
- **Phi Kappa Phi, Scholastic Honorary**, University of Hawaii, 1968
- **Grinnell Honor Scholar**, Grinnell College, 1963

B. Major Professional Service

1. **Director, NSF NRT Understanding the Brain: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery. Supported by generous contributions from the NSF and the University of Illinois** (Colleges of Liberal Arts & Sciences, Engineering, Graduate Studies, and 9 departments across our campus). Trained 36 diverse trainees. 2017-2023.
2. **Associate Director, Emergent Behavior of Integrated Cellular Systems (EBICS) Science & Technology Center. NSF.** January 2019-2022. Member, Research and Strategic Planning Committees and Faculty Leader of Heterotypic Cell Clusters/ Neuron-Muscle Working Group.
3. **NIH National Heart, Lung, & Blood Institute (NHLBI) Advisory Council.** Member November 1, 2018 – October 31, 2023
4. **NSF Alan T. Waterman Award Committee** of the Director of the NSF**.** Member October 28, 2016 – May 31, 2019
5. **NSF Partnerships in International Research & Education (PIRE). University of Puerto Rico.** Attending External Science Advisory Board member. March 2019.
6. **Grant Reviewer, Biotechnogy and Biological Sciences Research Council (BBSRC) and Israel Science Foundation (ISF).** 2018-present.
7. **Trainee Day Speaker**, Society for Research on Biological Rhythms, Trainee Professional Development Day: *Strategies for Stable Collaboration* and *Back to the Future Sessions*, 2018
8. **Review Editor, Sleep and Circadian Rhythms,** part of the journal **Frontiers in Neuroscience.** April 4, 2018-present.
9. **NIH/Center for Scientific Review, Bioengineering of Neuroscience, Vision, and Low Vision Technology (BNVT),** Emerging Technologies and Training in Neurosciences (ETTN), Integrated Review Group**.** Ad Hoc study section member meeting. February 9-10, 2016.
10. **Carle-Illinois College of Medicine**, Faculty, Steering Committee Subtask Group, April 2015 – 2020.

11. **Founding Associate Editor, Neurobiology of Sleep and Circadian Rhythms**. Mark Opp, Editor-in-Chief, Elsevier, August 2015-present.
12. Invitation to serve as **Lead Guest Editor** on **Special Issue of Neural Plasticity**. Declined due to multiple conflicts, December 2015.
13. **NIH/Center for Scientific Review, BRAIN Initiative.** Study section member meeting. 2014. Declined due to conflict of interest.
14. **Abbott-Illinois Center for Nutrition, Learning & Memory (CNLM) Executive Committee,** 2014-2017.
15. **Trainee Day Speaker**, Society for Research on Biological Rhythms, Trainee Professional Development Day, *How to Give a Scientific Talk.* 2014.
16. **NSF Biology Directorate, Integrative and Organismal Sciences, Pre-proposal Review Committee: Learning & Memory and Biological Rhythms**. Review Panel Member, April 14-16, 2014; declined for Oct., 2014.
17. **NIH / Center for Scientific Review, ZRG1 F05 (20) L (2012/5), Fellowships: Cell Biology, Development, and Bioengineering.** Study section member meeting. Declined in 2012, 2013, 2014.
18. **The Wellcome Trust Interview Panel, UK**, Declined for April, 2014
19. **CSR/NIH – Invitation to review Neuroscience R15 applications.** Declined April 2012.
20. Invitation to join editorial board of new peer-reviewed open-access journal of **Hindawi Publishing Corporation, titled *Conference Papers in Cell Biology*.** April 3, 2012. Declined.
21. **NIH/Center for Scientific Review, ZRG1 F05 (20) L (2012/5), Fellowships: Cell Biology & Development.** Study section member. March 2012.
22. **French National Research Agency.** Invitation from agency's Evaluation Committee of the 2012 Blanc SVSE 5 (Physics, Life chemistry and biotechnological innovations) to examine research proposals for MISMATCH (MicroSignaling MechAnoTransduction Chemotropism) to help rank potential projects. March 1, 2012. Declined.
23. **NIH/NHLBI Program Project Grant**: "Defining the Link between Metabolism, Circadian Clocks, and Human Health." Invitation to participate in review of this grant. January 27, 2012, Baltimore, MD. Declined.
24. **U.S.-Israel Binational Science Foundation**. Invitation to review BSF proposals. 2011, 2014, 2016. Declined
25. **Editor, Chronobiology: Biological Timing in Health and Disease.** Vol. 119 in ***Progress in Molecular Biology and Translational Science.*** Chief Editor Michael Conn for Academic Press (an imprint of Elsevier). Published: August 2013.
26. **External Grant Reviewer**, Research Council of the United Kingdom, BBSRC-FAPESP, December 2011 (declined due to conflict of interest).
27. **Invitation (9/2/2011) to be Editor-in-Chief of *Journal of Developmental Biology,*** based in Basel, Switzerland. Declined.
28. **NSF/Division of Integrated Organismal Sciences** - Ad hoc GRANT reviews.
29. **NIH/Center for Scientific Review, Biological Rhythms and Sleep Working Group.** Discussions and development of a position paper on behalf of René Etcheberrigaray, M.D., Director, Division of Neuroscience, Development and Aging (DNDA), Center for Scientific Review of the National Institutes of Health. I represent the Society for Research on Biological Rhythms as past president, 2010 February-present.
30. **Continuing Medical Education (CME Credit), Clinical Research Lunch and Learn Seminar,** Carle Clinic • *How does your body tell time? What is the consequence for health and disease?* Lecture to ~ 30 physicians and physician-scientists, including residents and MD/PhD students. Feb. 12, 2010.
31. **Workshop Co-organizer and Co-PI (along with Rashid Bashir, Lizanne DeStefano, Jimmy Hsia, Lawrence Schook),** Bridging the Gaps: Grand Challenges and Promising Practices in Interdisciplinary Research and Education in Biology, Engineering, and Health Science. UIUC Interdisciplinary Innovation Summit (NSF), February 2011.
32. **Co-Coordinator of Research**, NSF-Science & Technology Center on *Emergent Behavior of Integrated Cellular Systems (EBICS)*, STC finalist, Roger Kamm, PI, Synthetic Biology Research, Educational and Outreach Consortium of MIT, Georgia Tech and UIUC, November 2009.
33. **External Evaluator**, Dept. of Anatomy & Cell Biology, Schulich School of Medicine and Dentistry, The University of Western Ontario, Canada, November 2009.

34. **Chairperson, Trans-NIH STEP Forum** (Staff Training in Extramural Programs) in *"We've Got Rhythms, Circadian Rhythms"* National Institute of Medicine, March 2009.
35. **President**, ***Society for Research on Biological Rhythms.*** The premier international society in this field. 2006-2008.
36. **Panel Discussant/Lecturer, Biology and Sociality,** Conference on Biology and Politics, University of Illinois Institute for Genomic Biology (Sponsored by NSF), March 2008 and June 2009.
37. **Invited Chair, Aaron Lerner Memorial Symposium Honoring the Discovery of Melatonin**, Society for Research on Biological Rhythms Biennial Conference, Sandestin, Florida, May 2008.
38. **Chair, Presidential Symposium**, Society for Research on Biological Rhythms Biennial Conference, Sandestin, Florida, May 2008.
39. **Trainee Day Speaker**, Society for Research on Biological Rhythms, Trainee Professional Development Day, 2008.
40. Working Group Member, *Circadian-Coupled Cellular Function and Disease in Heart, Lung and Blood Issues: Scientific Impetus and Opportunities for Studying Circadian Timing in Peripheral Tissues*, **National Heart, Lung & Blood Institute (NHLBI), Trans-NIH Sleep Research Coordinating Committee, and the Sleep Disorders Research Advisory Board**, 2007.
41. Workshop Member, *Brain Science at the Interface of Biological, Physical and Mathematical Sciences, Computer Science, and Engineering: Analysis of New Opportunities*, Office of the Director, **The National Science Foundation**, 2007.
42. **Sleep Research Society Training Session for Young Scientists**, *Basics of Circadian Rhythms*, SLEEP2007, Minneapolis, MN, 2007.
43. **New York Academy of Science. Conference on Sleep Regulation & Dysregulation: From Molecules to Flies to Man.** Invited Speaker, *Impact of Sleep Loss on Endocrine and Metabolic Function*, June 2007.
44. **Sleep Consultant Network**, *Circadian Rhythms, Sleep and Melatonin: Roles of the SCN*, Continuing Medical Education (CME), Takeda Pharmaceutical North America, Lincolnshire, IL, 2005-2009.
45. Chair, **Gordon Research Conference on Chronobiology**, Salve Regina Univ., Newport, RI, 2005.
46. Co-Organizer with Terrence J. Sejnowski, Salk Institute, *Computational Chronobiology Conference,* **The National Academies Keck Futures Initiative**, NAS Beckman Center, University of California, Irvine, CA, January 2005.
47. Advisory Board, ***Journal of Biological Rhythms*****,** 2004–2010.
48. Program Committee, **Society for Neuroscience**, November 2004–2007, Theme Chair: *Homeostatic and Neuroendocrine Systems*, November 2005–2007. This committee shapes the annual meeting program for this ~30,000-member international society.
49. Board Liaison, Educational Programs Committee, **Sleep Research Society**, 2004–2007.
50. Executive Board Member, **Sleep Research Society**, Westchester, IL, 2004–2007.
51. Institutional Representative (UIUC), Regional Planning Committee, NIH Roadmap, **Regional Translational Research Centers** (RTRCs), 2004–2006.
52. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, Washington, DC 2005.
53. Executive Board Member, **National Sleep Foundation**, Washington, DC: Research Policy Committee, Education Committee, Governmental Affairs Committee, 2001-2006, Vice-President, 2002-2004
54. Member, Research Foundation Steering Committee, **Sleep Research Society**, 2004.
55. Member, Conte Center Review Panel, Division of Extramural Activities (ERB), National Institute of Mental Health, March 2004 (declined).
56. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, San Diego, CA, 2004.
57. Member, Expert Evaluation Committee, Canada Foundation for Innovation, Innovation Fund Grant Competition, 2003 (declined).
58. Ad Hoc reviewer, Board of Scientific Counselor Review Meeting/Site Visit, National Institute of Mental Health, 2003 (declined).
59. External Grant Reviewer, Behavioural Sciences A (BSA) Panel, Canadian Institutes of Health Research (CIHR), 2003 (declined).

60. *Ad Hoc* reviewer, Board of Scientific Counselor Review Meeting/Site Visit, National Institute of Mental Health, 2003 (declined).
61. Advisory Board, **Takeda Pharmaceutical North America**, Lincolnshire, IL, Current Issues in Sleep Medicine, 2003-2009.
62. Vice-Chair, **Gordon Research Conference on Chronobiology**, Il Ciocco, Barga, Italy, 2003.
63. Presidential Task Force on Trainee-Related Programs, **Sleep Research Society**, 2003.
64. Field Editor in the area of Circadian Rhythms and Sleep, ***Encyclopedic Reference of Neuroscience,*** Springer-Verlag, Publishers, 2003–2009.
65. Nominee, Member of the Board of Scientific Counselors (BSC) for the National Space Biomedical Research Institute (NSBRI) (declined), 2003.
66. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, New Orleans, LA 2003.
67. Associate Editor, **SLEEP**, 2003-2008.
68. **Pickwick Postdoctoral Fellowship Review Committee** of the National Sleep Foundation, 2001-2006.
69. Program Committee, *Circadian Rhythms and Sleep; Views to the Future*, **SRS/SRBR/NIMH**-sponsored one-day conference in association with the biannual meeting of the Society for Research on Biological Rhythm, Amelia Island, FL, 2002.
70. Co-organizer, with Mary Carskadon, **Women in Sleep and Rhythms Research (WISRR)** Session, sponsored by Personal Products Company, Johnson & Johnson, Society for Research on Biological Rhythms Meeting, Amelia Island, FL, 2002.
71. Organizer and Originator, **Neuroscience of Sleep and Circadian Biology Datablitz**, Neuroscience Annual Meeting, Orlando, FL, November 2002.
72. Editorial Board, ***Experimental Neurology****, Section on Neuroendocrine and Homeostatic Mechanisms*, Editorial Board, 2002-2010.
73. Advisory Board, **Society for Research on Biological Rhythms**, 2001–present.
74. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, San Diego, CA, 2001.
75. Organizer, **Association of Professional Sleep Societies Symposium**, Advances in Understanding Cholinergic Regulation of Sleep and Circadian Rhythms, APSS Annual Meeting, Chicago, IL, 2001.
76. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, New Orleans, LA, 2000.
77. Program Committee, **Society for Research on Biological Rhythms**, Amelia Island, FL, 2000.
78. **Pickwick Postdoctoral Fellowship Review Committee**, ad hoc member, the National Sleep Foundation, 2000.
79. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, Miami, 1999.
80. **Sleep Research Society Training Session for Young Scientists** in Grantsmanship and Ethics, 1999.
81. **Sleep Training Grant Reviewer**, Division of Research Grants, National Institutes of Health, 1999.
82. **Site Visitor** in Evaluation of the NSF Science and Technology Center in Biological Timing, University sites: Virginia, Northwestern, Brandeis, Rockefeller, Charlottesville, VA, 1999 (declined).
83. Study Section Invitations: NIH/NIMH Behavioral Neurosciences (June 1999, declined), NIMH Special Study Section on Phenotypic Characterization of the Mouse Nervous System and Behavior (August 1999, declined).
84. **Organizer, NIH/NSF Workshop**, *What is Sleep? What is it Good For?*, with Fred Turek (Northwestern), Emanuel Mignot (Stanford), Steve Kay (Scripps Inst.) Dulles Center for Innovative Technology, Dulles, VA, 1998.
85. Organizer and Host, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, Los Angeles, 1998.
86. Committee member, **Future of Sleep Research Initiative**, American Sleep Disorders Assoc., 1998.
87. Organizer and Originator, **Neuroscience of Sleep & Circadian Biology Social/Datablitz**, Society for Neuroscience Meeting, New Orleans, 1997.
88. **Site Visit Evaluator** of the NSF Science and Technology Center in Biological Timing, University sites: Virginia, Northwestern, Brandeis, Rockefeller, Charlottesville, VA, 1996.

89. Sleep Grant Evaluation Committee Chair, **Sleep Disorders Research Advisory Board**, NHLBI, NIH, 1997.
90. **Sleep Disorders Research Advisory Board** Member, National Heart, Lung and Blood Institute, NIH, 1995–1999.
91. **Treasurer and Executive Committee Member**, Society for Research on Biological Rhythms, 1994–1996.
92. **Reviewer's Reserve**, Neurology C-Study Section, Cellular and Molecular Neurobiology, Division of Research Grants, NIH, 1994–1998.
93. Special Study Section Member and Principal Section Reviewer, NIH Intramural Program in National Institute of Child Health and Human Development (NICHD): Laboratory of Developmental Neurobiology, Phillip G. Nelson, Chief, 1994.
94. **External Advisory Committee**, NIH Program Project: *Sleep, Melatonin and the Aging Circadian Clock*. R.L. Sack, P.I., Oregon Health Sciences University, Portland, OR, 1994–98.
95. Program Committee Member, **Winter Conference for Brain Research**, Steamboat Springs, CO, 1991.
96. Member, **Neurology C - Cellular and Molecular Neurobiology Study Section**, Division of Research Grants, National Institutes of Health, 1990–1994.
97. *Ad Hoc* Study Section Member, **National Institute on Aging**, 1992–1993 (declined).
98. *Ad Hoc* Study Section Member, June and October Sessions, **Neurology C-Cellular and Molecular Neurobiology**, Division of Research Grants, National Institutes of Health.
99. *Ad Hoc* Reviewer, Chronobiology Research Initiative, Air Force Office of Scientific Research, 1989–present.
100. *Ad Hoc* Reviewer, **Intramural Research Program, Veterans Administration**, 1988–present.
101. *Ad Hoc* Reviewer, **Division of Neuroendocrinology**, National Science Foundation, 1988–present.
102. Special Study Section Member, **Division of Research Grants**, National Institutes of Health, 1987.
103. *Ad Hoc* Reviewer, **Division of Behavioral Neuroscience**, National Science Foundation, 1987–present.
104. *Ad Hoc* Reviewer, **Division of Molecular and Cellular Neurobiology,** National Science Foundation, 1986–present.
105. Panel/Workshop Organizer, **Winter Conference for Brain Research**, 1986, 1989, 1990, 2004.

C. Seminars / Session Chairs

1. **Chan-Zuckerberg Biohub Chicago,** Invited Speaker. *Instrumented Tissues for Spatial Measuring of Inflammation at the Neuromuscular Junction*, May 26, 2023
2. **Sleep Disorders Research Advisory Board,** *(NHLBI) = Dynamic Circadian Regulation of the Blood-Brain Interface in a Human Brain-mimicking Microfluidic Chip, A*pril 7, 2023
3. **NIH Trans-Agency Blood-Brain Interface Program Workshop.** Invited Speaker. Dynamic Circadian Regulation of the Blood-Brain Interface in a Human Brain-mimicking Microfluidic Chip. Nov. 9, 2022
4. **Allosourse at the IGB,** Invited Speaker. *The Clocks that Time us: Dynamics of the Brain*. IGB, University of Illinois, October 22, 2022
5. **Chan-Zuckerberg Biohub Chicago,** Invited Speaker. *Instrumented Tissues to Elucidate Design Rules for Human Biology*, October 13th, 2022
6. **NIH Trans-Agency Blood-Brain Interface Program,** Invited Speaker. Dynamic Circadian Regulation of the Blood-Brain Interface in a Human Brain-mimicking Microfluidic Chip. Sept. 21, 2021
7. **MCELS Workshop,** Invited Speaker. *Neuromuscular Engineered Living Systems.* IGB, University of Illinois, May 12, 2021
8. **Distinguished Lecture Initiative on Neuroscience**, Invited Speaker**.** *The Clocks that Time Us: Dynamics of the Brain*. University of Massachusetts, Amerest, MA October 7, 2020.
9. **University of Iowa Neuroscience Program,** Invited Speaker. *Metabolic Oscillators in the Brain: Where, When, Why?* Iowa City, Iowa, March 12, 2019.
10. **Beckman Institute Director's Seminar,** Invited Speaker. *The Clocks That Time Us: Dynamics in Brain Metabolism and Sleep.* University of Illinois, March 11, 2019.

11. **NSF "Measuring the Brain Workshop,"** Session Chair, *The Grand Challenges in Understanding the Brain: Integrating Chemistry, Models, Technologies, and Scale*. Arlington VA, October 11-13, 2016
12. **University of Illinois Center for Nanoscale Science and Technology (CNST) 13th Annual Nanotechnology Workshop,** Speaker and Session Chair, IGERT-CMMB Research Highlights, May 7-8, 2015
13. **Illinois Summer Neuroscience Institute**, Invited Speaker, May, 2015
14. **NIMH Director Tom Insel,** Invited Speaker on BRAIN Initiative at Illinois, April, 2015-rescheduled for 2016
15. **Board of Trustees Fitzgerald**, Invited Speaker on Neuroengineering, March, 2015
16. **NSF Science & Technology Center Site Visit**, Invited Speaker: *"Emergence of Function,"* Thrust 2 of Emergent Behavior of Integrated Cellular Systems (EBICS), MIT, Boston, MA, December, 2014.
17. **Animal/Nutritional Sciences: ANSC/NUTR 590** seminar, University of Illinois at Urbana-Champaign. October 7, 2014.
18. **Midwestern Rhythms Seminars**, Speaker and Session Chair, Kent State University, Kent, OH September, 2014
19. **Korea Institute of Science & Technology (KIST)-UIUC Human Biomemetics Workshop,** Speaker: "Designer Micro-Environments for Cell & Tissue Research: *New Methods & Technologies for Understanding the Brain",* MNTL, UIUC, July 2014
20. **Illinois Undergraduate Neuroscience Conference**, Beckman Institute, *Adventures in Circadian Timekeeping: A Clockwork in the Brain.* Invited by one of my students in Integrative Neuroscience; only local speaker among 3 key speakers. May 9, 2014.
21. **Invited symposium speaker**: Neuroscience of Sleep symposium at American Association for Geriatric Psychiatry, March 14, 2014, Orlando, FL. Declined.
22. **Office of Technology Management Share the Vision Conference**, *Designer Microfluidic Environments for Cell & Tissue Research*, Illinois Conference Center, Champaign, IL October, 2013
23. **Brain Research through Advancing Innovative Neurotechnologies Seminar Series (BRAIN Initiative)**, *A Cross-Level View of Measuring & Deciphering Brain Function from Neurons to Populations and the Enabling Technologies Involved*, Neuroscience Program, **University of Illinois**, Urbana, IL October, 2013
24. **Midwestern Rhythms Seminars**, Speaker and Session Chair, **Michigan State University**, East Lansing, MI September2013
25. **Sleep Grand Rounds** presentation, **Brigham and Women's Hospital, Division of Sleep Medicine**. **Harvard Medical School**, Boston, MA. September 2013
26. **Invited speaker:** Symposium on Neurohypothalamic Peptide Discovery and Function, ***World Congress of Neurohypothalamic Hormones***, Bristol, UK, July 15-19, 2013
27. Department of Biology, **Washington University St. Louis**, MO April 2013
28. Symposium on *Sleep and Circadian Biology* at the ***Chicago Chapter of the Society for Neuroscience Meeting***. With Fred Turek (NWU) and Dan Margoliash (U of Chicago) March 7, 2013.
29. **Symposium on Behavioural and Neuroendocrine Mechanisms Regulating Hydromineral Homeostasis**, Invited symposium speaker: *"Neuropeptides in the Hypothalamic Circadian Timing System: from Discovery to Function*". Funded by Biotechnology and Biological Sciences Research Council of the UK. Bristol U.K. July 23-24., 2012:
30. **EBICS Annual Retreat**, June 24-27, 2012, University of Illinois, Urbana, IL.
31. **Society for Research on Biological Rhythms (SRBR) Annual Meeting**: (1) ***Chair and Speaker, Post-translational Clocks session,*** Sandestin, FL, May 2012.
32. **Society for Research on Biological Rhythms (SRBR) Annual Meeting**: ***Workshop on SCN Architecture***, Sandestin, FL, May 2012.
33. **Society for Research on Biological Rhythms (SRBR) Annual Meeting**: (***Meet the Professor*** session. Society for Research on Biological Rhythms Annual Meeting, Sandestin, FL, May 2012.
34. **Center for Medical and Pharmaceutical Nanotechnology**, organizing committee, Irfan Ahmed, Convener, Micro- and Nano-Engineering Lab/ ECE.
35. **NSF and NIH/NCI-funded BioNanotechnology Summer Institute at the MNTL**, Lectures on Enabing Technologies for High-Resolution Studies of Neurons. July 25-August 5, 2011.

36. Participated in **Faculty Laboratory Management Panel**, as part of overall postdoctoral mentoring plan for the Center, at EBICS Annual Retreat, Atlanta, GA, June, 2011.
37. **EBICS Investigator Seminar**, fall 2011. Invited for fall, declined until further into EBICS research path.
38. **Winter Conference for Brain Research** (WCBR) Symposium • Circadian influences on molecules, signaling and memory formation, Breckenridge, CO, January 2010.
39. **Illinois Program in Politics and Social Behavior, NSF Summer School in Social Behavior and Politics**. Lecture and discussant to 30 biological and social scientists from around US, UIUC • Biorhythms and Social Behavior, Urbana, IL, July 2009.
40. **Gordon Research Conference on Chronobiology**, Session Chair: "Hot Topics – Mammalian Clocks", Salve Regina University, Newport, RI, July 2009.
41. **Global Enterprise for MicroMechanics and Molecular Medicine (GEM4),** NSF-funded Summer School on Cellular and Molecular Mechanics. Lecture to audience of ~60 students and faculty, 90% of whom were engineers. UIUC-MIT Consortium, Enabling Technologies: Microfluidic systems in neurobiology, Urbana, IL, June 2009.
42. **Trans-NIH STEP, Chair and organizer.** (Staff Training in Extramural Programs) Forum: a) *Introduction: Morning Lark or Night Owl?* and b) *The Clocks that Time Us*, Lister Auditorium, The National Institute of Medicine, March 2009.
43. **University of Western Ontario, Students' Select Seminar Speaker,** Department of Anatomy & Cell Biology, Schulich School of Medicine & Dentistry, London, Ontario, March 2009.
44. Presidential Symposium, *Is it Time for New Views on Circadian Clocks?* **Society for Research on Biological Rhythms** Biennial Conference, Sandestin, Florida, May 2008.
45. *Aaron Lerner Memorial Symposium Honoring the Discovery of Melatonin*, Chair, **Society for Research on Biological Rhythms** Biennial Conference, Sandestin, Florida, May 2008 **.**
46. **Trainee Professional Development Day**, *Choosing Where to Post Doc(S): How This Affects Your Search for a Faculty Position,* with Erik Herzog, Washington University, Society for Research on Biological Rhythms, May 2008.
47. Panel Discussant, Biology and Sociality, **Conference on Biology and Politics**, University of Illinois Institute for Genomic Biology (Sponsored by NSF), March 2008.
48. **Morehouse College School of Medicine**, Institute for Neuroscience, Historic Black College/ University, Atlanta, GA, March 2008.
49. **Indiana University**, Center for Animal Behavior, Bloomington, IN, February 2008.
50. **Medical College of Wisconsin,** Dept. of Anatomy & Cell Biology, Milwaukee, WI, November 2007.
51. **Mayo Clinic College of Medicine**, Rochester, MN, Molecular Neuroscience Graduate Program, September 2007.
52. **NIH Working Group on Circadian-coupled Function**, Invited Speaker: *Heirarchy of Circadian Clocks: Organization and Flexibility,* Washington, DC, September 2007.
53. **New York Academy of Sciences**. Conference on *Sleep Regulation & Dysregulation: From Molecules to Flies to Man. Invited Speaker, Impact of Sleep Loss of Endocrine and Metabolic Function,* June 2007.
54. **Chronobiology Gordon Research Conference**, Speaker, Photic Entrainment of the SCN: *How light signals engage the molecular clockwork.* Centre Paul Langevin, Aussois, France, May 2007.
55. **Associated Professional Sleep Societies** 19th Annual Meeting, Trainee Day Speaker, *Developing Independence: Tools for a successful faculty position*, Minneapolis, MN, June 2007 .
56. **University of Michigan**, Division of Biological Psychology, Ann Arbor, MI April 2007.
57. **Hampton University**, An Historic Black Institution, Guest of the Dean, School of Pharmacy, *PharmaEngineering™: At the Frontier in Repairing the Brain*, April 2006.
58. **MARS Nutrition Advisory Board**, *"Convergent Findings: Circadian Rhythms, Sleep, Memory and Glucose"*, Co-presenter with Paul Gold (Psychology) UIUC, April 2006.
59. **University of Maine**, Special University Colloquium Speaker, *Changing time: Signals that engage the clockwork in the brain*, October 2005.
60. **Associated Professional Sleep Societies** 19th Annual Meeting, **Trainee Day** Speaker, *Developing Independence: Tools for a successful faculty position*, Denver, CO, June 2005.

61. **X Congress of the European Pineal Biological and Rhythms Society**, A Multidisciplinary Biological Rhythms Conference, Frankfurt, GE, 2005.
62. Symposium Chair, **Assoc. Professional Sleep Societies** meeting, Philadelphia, PA, June 2004.
63. **Northwestern University Feinberg School of Medicine**, Department of Molecular Pharmacology and Biological Chemistry, Seminar, *How Signal Transduction Pathways Engage the Circadian Molecular Clockwork*, Chicago, IL, November 2003.
64. Department of Neuroscience, **Oregon Health Sciences University**, Portland, OR, April 2003.
65. Symposium Chair, **Association of Professional Sleep Societies** meeting, Chicago, IL, June 2003 .
66. Department of Neuroscience, **The Chicago Medical School**, Chicago, IL, 2002.
67. Department of Pharmacology, College of Medicine, **University of Illinois-Chicago**, 2001.
68. Distinguished External Evaluator: George Quintero, Dept. of Physiology, **University of Kentucky** Graduate School, Lexington, KY (postponed, then declined), 2001.
69. **Chronobiology Gordon Conference**, Session Chair, Salve Regina College, Providence, RI, 2001.
70. Department of Neuroscience, **University of Alabama**, Birmingham, AL, 2001.
71. Department of Biology, **Bowling Green State University**, OH, 2001.
72. Department of Pharmacology, **Emory University School of Medicine**, Atlanta, GA, 2000.
73. Center for Behavioral Neuroscience, **Concordia University**, Montreal, Quebec, Canada, 2000.
74. **International Symposium on Muscarinic Receptors**, Houston, TX, 2000.
75. **Pineal Cell Biology Gordon Conference**, Oxford, England, 2000.
76. **Society for Research on Biological Rhythms**, Session Chair, Amelia Island, FL, 2000.
77. Department of Neuroscience, **University of Washington**, Seattle, WA, 2000.
78. Department of Psychology, **Concordia University**, Montreal, Canada (declined), 2000.
79. Symposium Chair, *Basic Neurobiologic Mechanisms Regulating Sleep***, Society for Neuroscience Annual Meeting**, Miami, FL, 1999.
80. Department of Neuroscience, **The Salk Institute**, La Jolla, CA, 1999.
81. **NIH/NSF Workshop** Session Chair, *Use of Functional Imaging for Understanding What Sleep Is and What it is Good For*, Herndon, VA, 1998.
82. Department of Neuroscience, University of Pennsylvania, Philadelphia, PA, 1998.
83. **Max-Planck-Institut für Verhaltensphysiologie**, Andechs, Germany, 1998.
84. Tierärztliche Hochschule Hannover, **Institut für Tierökologie und Zellbiologie**, Hannover, Germany, 1998.
85. Section on Neuroendocrinology, **Laboratory of Developmental Neuroscience, National Institute of Child Health and Human Development**, NIH, Bethesda, MD, 1998.
86. **Center for Advanced Study Public Lecture**, *The Neurobiology of Time: A Clockworks in the Brain*, University of Illinois at Urbana-Champaign, IL, 1998.
87. Neuroscience Program, **University of Illinois at Urbana-Champaign**, IL, 1998.
88. **NSF/Latin American Conference on Chronobiology**, Session Chair, *Comparative Aspects of Rhythmicity*, Tlaxcala, MX, 1997.
89. **Friday Harbor Labs/Microsoft Workshop on Neural Processing,** *Gating Mechanisms in a Complex Oscillator*, University of Washington, Friday Harbor, WA, 1997.
90. Department of Biology, Circadian Rhythms & Sleep Group, **Stanford University**, Palo Alto, CA, 1997.
91. Department of Anatomy & Neuroscience, **Texas A&M University**, College Station, TX, 1996.
92. Sesquicentennial Institute: *Critical Thinking & the Liberal Arts*, **Grinnell College**, Grinnell, IA, Symposium in celebration of the Sesquicentennial of the College, Neurobiology: From Mind to Molecules, with A. Arnold (UCLA) and P. Patterson (Cal Tech), 1996.
93. Department of Molecular Pharmacology and Biological Chemistry, **Northwestern University School of Medicine**, Chicago, IL (declined), 1996.
94. Depts. of Physiology and Neurobiology, **University of Kentucky**, Lexington, KY (declined), 1996.
95. Department of Cell Biology, **University of Georgia**, Athens, GA, 1996.
96. Neuroscience Program, **The Medical College of Pennsylvania**, Philadelphia, PA, 1996.
97. **Netherlands Institute for Brain Research**, 19th International Summer School of Brain Research, Session Chair, *SCN Mechanisms*, Amsterdam, The Netherlands, 1995 .
98. Department of Biology, **Dartmouth College**, Hanover, NH, 1995.

99. *Chronobiology and the Brain*, Department of Neurology, **The Neuropsychiatric Institute, University of Illinois Medical** Center, Chicago, IL, 1995.
100. Department of Physiology & Biophysics, **University of Illinois College of Medicine**, Chicago, IL, 1995.
101. Section on Neuroendocrinology, Laboratory of Developmental Neuroscience, **National Institute of Child Health and Human Development**, NIH, Bethesda, MD, 1995.
102. Department of Physiology, **The Ohio State University,** Columbus, OH, 1995.
103. Department of Psychiatry, Mood Disorders Section, **Oregon Health Sciences University,** Portland, OR, 1994.
104. **Society for Research on Biological Rhythms**, Session Chair: *Signal Transduction in Circadian Clock Regulation*, Amelia Island, FL, 1994.
105. **Cold Spring Harbor Banbury Center Conference**, *Melatonin: Mechanisms and Actions*, Co-organizer, Cold Spring Harbor, NY, 1994.
106. **Gordon Research Conference on Chronobiology**, *SCN Neurophysiology*, Session Chair, Plymouth, NH, 1993.
107. Departments of Neuroscience and Neural and Behavioral Biology, **SUNY, Stony Brook**, NY, 1993.
108. Serotonin/Melatonin Drug Development Group, **Glaxo Pharmaceuticals**, Ware, Hertfordshire, UK, 1992.
109. Department of Biology, **Wesleyan University** (declined), 1992.
110. Frankfurt Symposium on the SCN, Zoologisches Institut, Johann Wolfgang Goethe Universität, Frankfurt am Main, Germany, 1992.
111. Neuroscience Program, **Michigan State University**, 1991.
112. **Winter Conference for Brain Research**, Vail, CO, *The Neurobiology of Time: New Insights on Cellular Substrates of the Brain's Circadian Clock*, Session Organizer and Chair, 1991.
113. Department of Cell and Structural Biology, **University of Illinois at Urbana-Champaign**, IL, 1990.
114. Symposium on Biological Rhythms, Department of Zoology, *Differential Resetting of SCN by Cyclic Nucleotides,* **University of Toronto**, Canada, 1988.
115. **Society for Research on Biological Rhythms,** Session Chair, *The Use of Brain Slices in Studies of Circadian Function, SCN Neurophysiology*, Wild Dunes, SC, 1988.
116. Department of Physiology and Biophysics, **University of Illinois at Urbana-Champaign**, IL, 1986.
117. Department of Biological Sciences, **University of South Carolina**, Columbia, SC, 1985.
118. Neuroscience Program, *Resetting the Clock in the Hypothalamic Slice: Single Units and Phosphoproteins*, **Michigan State University**, Lansing, MI, 1985.
119. The Neural and Behavioral Biology Program, **University of Illinois at Urbana-Champaign**, IL, 1984.
120. Departments of Physiology and Pharmacology, **The Mayo Clinic**, Rochester, MN, 1983.
121. **Friday Harbor Laboratories, University of Washington, Friday Harbor, WA, 1982.**
122. Department of Physiology and Anatomy, University of California, Berkeley, CA, 1975.

D. Invited Lectures at Scientific Meetings, Workshops, or Special Occasions.

1. **6th World Congress and Expo on Nanotechnology and Materials Science.** Invited speaker. Osaka, Japan, October 14-16, 2019. (Declined).
2. **8th Annual World Congress of Molecular & Cell Biology—2018 (CMCB-2018)** "*Exploring Life, Inspiring Innovation, Creating Future*." Invited speaker for Theme 305: New Lab-on-a-Chip, Microfluidics and Microarrays presenting about Development of Microfluidic Devices for the Manipulation of Neuronal Synapses. Fukuoka, Japan, October 14-16, 2018. (Declined)
3. **Engineering Cellular Systems.** Invited speaker: "*Fantastic Neurons & Miniature Brains: Enabling Technologies*," EBICS Summer School, University of Illinois, Urbana, IL, Aug 5, 2018.
4. **REU Research Seminar**. Invited speaker: "*Research@Illinois*," Summer 2018 REU Program (Bioimaging REU, EBICS REU, POETS REU)
5. **SRBR Trainee Development Day.** Invited speaker: "*Strategies for Stable Collaboration*," Society for Research on Biological Rhythms, Innisbrook, FL, May 20-25, 2018.

6. **NSF EBICS Site Visit**. Invited speaker: "*Neuron-Muscle and Neuronal Circuits Working Groups*," MIT, Boston, MA Jan 10-12, 2018.
7. **New MCB Graduate Student Seminar**, Invited Speaker: "*Fantastic Neurons and Miniature Brains*." Urbana, IL August 18, 2017.
8. **NSF EBICS STC Annual Retreat.** Invited speaker: "*Neuron-Muscle and Neuronal Circuits Working Groups*," Calloway Gardens, GA July 29, 2017.
9. Invited speaker. "Exploring Novel Concepts in Nanotechnology Research to a Properous Knowledge for Better Living," **Nano 2018: International Conference and Exhibition on Nanoparticle & Nanotechnology,** San Diego, Feb 7-9, 2018. Declined.
10. Invited speaker. Oral Presentation, **5th International Congress on Analytical Proteomics (V ICAP 2017)** Costa de Caparica, Lisbon Portugal, July 2017. Declined.
11. Invited Speaker. F 1-2: *Neuroendocrinology and Pituitary*. **6th World Congress of Endobolism-2017** Prague, Czech Republic. July 12-14, 2017. Declined.
12. **Illinois REU in EBICS, Summer Neuroscience Institute**, Invited Speaker, *"Looking at Brain Cells through Technology-Colored Glasses: New Questions & Novel Insights."* June 13, 2017.
13. Invited Speaker. **Frontier Forum Conference on Nanoscience**. Dubrovnik, Croatia. May 2017. Declined.
14. Invited Speaker. **International Conference on Nanotechnology and Nanomaterials 2017**. Dubai, UAE. April 2017. Declined.
15. **Art of Science. Opening presentation.** "*The Secret Lives of Neuronal Filopodia*" [co][lab], Urbana, IL. April 13, 2017.
16. **NIH BRAIN Initiative Investigators' Meeting**, Research Highlight Talks I, Track 1: Cells and Circuits: "*Label-free observation of neural connectivity*."Bethesda, MD. Dec 11-14, 2016.
17. **EBICS Reverse Site Visit. Neuron-Muscle Working Group Progress Report.** NSF Headquarters, Arlington, DC. December 8, 2016.
18. **Student-selected Keynote speaker. NINDS Conte Center Neurotechnology Training Grant Symposium, Univ. of Chicago,** *"Looking at Brain Cells through Technology-Colored Glasses: New Questions & Novel Insights."* September 9, 2016.
19. Invited speaker: **Emerging Multidisciplinary Approaches to Mental Health and Disease**, University of Chicago. September 9, 2016.
20. Invited speaker. SRBR Trainee Development Day on "*SCN Afferent and Efferent Regulation,"* **Society for Research on Biological Rhythms**, Innisbrook, FL May 20-25, 2016.
21. Invited speaker/participant: **Illinois EBICS-Korea Institute of Science & Technology (KIST) Global Research Symposium Human-Mimetic Biosystems and Devices Workshop**. Speaker: "*Engineering Cells of the Brain,*" Seoul, Korea, May 11-12, 2016.
22. Invited speaker. **EMN Meeting on Microfluidics and Nanofluidics-2016**, Dubai, UAE (Apr 5-8, 2016). Declined.
23. Invited speaker. **2nd International Conference on Current Trends in Mass Spectrometry**, Chicago, IL, July 20-22, 2016. Declined.
24. Invited speaker, lead presentation for session on "*Device-based Approaches for Axonal Growth and Guidance*," **Biomedical Engineering Society Annual Meeting**. Tampa, FL (October 7-10, 2015).
25. Invited speaker, oral presentation, **4th International Congress on Analytical Proteomics (IV ICAP 2015)** Costa de Caparica, Lisbon Portugal (September 7-9, 2015).
26. Speaker and Session Chair, **University of Illinois Center for Nanoscale Science and Technology (CNST) 13th Annual Nanotechnology Workshop**, IGERT-CMMB Research Highlights, May 7-8, 2015.
27. Invited symposium presentation on *"Examining the Orientation of Neurite Growth on a Novel 3D Microtube Platform."* **4th Global Congress on NanoEngineering for Medicine and Biology (NEMB) 2015** Minneapolis, MN (Apr 2015). Declined due to schedule conflicts.
28. **Winter Conference for Brain Research Workshop***: "The Many Faces of the proSAAS Family of Peptides."* L.D. Fricker (Albert Einstein College of Medicine), I. Lindberg (Maryland), L. Devi (Mt. Sinai School of Medicine) and M.U. Gillette (UIUC). Big Sky, MT (Jan. 2015). Declined due to teaching conflict.
29. Invited symposium speaker: **Circuits**. "*Do Glia Shape SCN Circuits?"* **Society for Research on Biological Rhythms.** Big Sky, MT (June 2014).

30. Invited speaker: **Networks**. *"Circadian Gating of Neuronal Functionality: A Basis for Iterative Metaplasticity",* **Society for Research on Biological Rhythms**. Big Sky, MT (June 2014).
31. Invited Lecturer, Trainee Day: "*How to Give a Successful Professional Talk",* **Society for Research on Biological Rhythms.** Big Sky, MT (June 2014).
32. Invited panel discussant. **1st Workshop on Self-Rolled-Up 3D Technology**. The first workshop ever convened on: *Strain-induced Self-rolled-up 3D Architectures – A New Paradigm for Extreme Miniaturization and Integration of Photonic, Electronic, and Mechanical Components*. Xiuling Li, Organizer, Electrical & Computer Engineering and Micro-Nano Technology Labs, Urbana, IL (May 21, 2014).
33. **Chicago Neuroscience Meeting**, Symposium Speaker, Northwestern University Feinberg Medical School Continuing Education, Chicago, IL (March 2013).
34. Keynote speaker: **Neuroscience Open House**, University of Illinois, Urbana, IL (February 2013).
35. Keynote speaker: **Society for Neuroscience**, **Honorary Keynote Speaker** at **Sleep and Circadian Biology DataBlitz** Program, New Orleans, LA (October 2012).
36. Invited speaker: **University of Illinois' Summer Neuroscience Institute**, Urbana, IL (May 2012). Declined due to travel conflict.
37. **Center for Advanced Study 21st Annual Lecturer**, "*Adventures in Biological Timekeeping, The Clockwork of the Brain"*, Spurlock Museum, University of Illinois, Urbana, IL (October 20, 2011).
38. Invited to speak about "*The Neurobiology of Time; Engineering Neuronal Development and Repair"* at **BIT Congress' 3rd World DNA and Genome Day** (WDD-2012) under Track 2: System Biology in Xi'an, China (April 25-28, 2012). Declined.
39. **Society for Neuroscience Annual Meeting, Symposium.** *"Measuring Activity-dependent Peptide Release via Mass Spectrometry*," Washington, DC (November 15, 2011).
40. **Winter Conference for Brain Research, Symposium***: "Circadian Influences on Molecules, Signaling Pathways and Memory Formation*," J. Yin (U.Wisconsin), organizer, K. Obrietan (OSU), M. Gillette (UIUC), D. Storm (U. Washington), Breckenridge, CO (January 2010).
41. **Society for Neuroscience, Symposium**: "*Unraveling the Neuropeptidome: New Approaches and Novel Insights"*, J.V. Sweedler, organizer, L.D. Fricker (Albert Einstein College of Medicine), V.Y. Hook (UCSD), and M.U. Gillette (UIUC): *"Peptidomics of Circadian Timing Signals in the Brain"* Washington, DC (November 2008).
42. **New York Academy of Science**, "*Sleep Regulation & Dysregulation: From Molecules to Flies to Man*," New York, NY (June 2007).
43. **Associated Professional Sleep Societies 21st Annual Meeting**, Workshop Presenter, "*Circadian Fundamentals*," 12th Annual Trainee Symposia Series, Minneapolis, MN (June 2007).
44. **Gordon Research Conference**, Speaker, "*Photic Entrainment of the SCN: Signals that Engage the Clockwork,"* Centre Paul Langevin, Aussois, France (May 2007).
45. **Winter Conference for Brain Research**, Speaker, "*What's New in Biological Clocks*," Snowmass, CO (January 2007).
46. **Latin American Congress of Physiological Society**, Session: *Neural Mechanisms of Timing.* Speaker: *"In vitro Recordings of a Circadian Cock: Entrainment and Molecular Mechanisms,*" Buenos Aires, Argentina (November 2006).
47. **Cátedra Santiago Grisolía International Symposium on Nitric Oxide/cGMP Signaling in the Brain**, Speaker: *"Signaling in the Mammalian Circadian Clock: The NO/cGMP Pathway"*, Valencia, Spain (October 2006).
48. **1st Ramelteon Global Round Table**. Key Opinion Leader, Special Speaker: *"Expanding our Current Understanding of the Role of the SCN in Sleep-wake Regulation: A Potential New 'Bi-direction' Model"*, Takeda Pharmaceuticals, Osaka/Tokyo, Japan (October 2006). Declined.
49. **Winter Conference for Learning and Memory**, Invited Speaker, "*State Changes: Cellular Mechanisms of ACh Actions in the SCN Clock*, Park City, UT (January 2006).
50. **Computational Chronobiology Workshop**, *"Signals that Engage the Clockwork",* National Academies Keck Futures Initiative, NAS Beckman Center, University of California, Irvine, CA (January 2005).

51. **Winter Conference for Brain Research**, Panel Organizer, "*Emerging Insights into Molecular Substrates of Alternate Brain States: Of Clocks and Sleep and Genes*," Breckenridge, CO (January 2005).
52. **Associated Professional Sleep Societies 18th Annual Meeting**, Symposium Organizer, "*Communication of Sleep States to the Circadian System: Emerging Evidence and Insights*," Philadelphia, (June 2004).
53. Keynote Speaker, **10th Annual Southern Illinois University Molecular and Cellular Biology Symposium**, SIU College of Medicine, Springfield, IL (March 2004) Declined.
54. **Winter Conf. for Brain Research**, Panel Organizer, "*New Roles for Ca^{2+} Signaling in Circadian Clock Regulation: Membrane, Cellular and Circuit Levels of Actions*," Copper Mountain, CO (January 2004).
55. **Mini-Symposium on Circadian Rhythms**, "*How Light Signaling Pathways Engage the Molecular Clockworks",* Humboldt University, Berlin, Germany (October 2003).
56. **Associated Professional Sleep Societies 17th Annual Meeting**, Symposium Organizer, "*Sleep Disorders of the Circadian System: Mechanisms and Insights*," Chicago, IL (June 2003).
57. **LAS Honors Convocation**, Convocation Address, University of Illinois at Urbana-Champaign (May 2003). Declined.
58. **Gordon Research Conference on Chronobiology**, "*How Signal Transduction Pathways Engage the Molecular Clockworks,"* Il Ciocco, Barga, Italy (May 2003).
59. **Neurological Sciences Institute**, Oregon Health and Sciences University, "*The Neurobiology of Time: State-Dependent Signals to the Molecular Clockwork*," Portland, OR (April 2003).
60. **Keystone Symposium, Computational Biology of Time**, "*Circadian Pacemaker in the Suprachiasmatic Nucleus*," Banff, Canada (February 2003).
61. **International Conference on the Frontiers of Biomedical Sciences: Behavior and Genomics**, "*The Neurobiology of Time: Circadian Rhythms & Sleep,"* Beijing, China (October 2002).
62. **Association of Professional Sleep Scientists, Annual Meeting**, Invited Lecturer, "*Molecular Regulation of the Circadian Clock*," Seattle, WA (June 2002).
63. **International Chronobiology Society Meeting**, Invited Symposium Speaker in Chemical Synchronizers: Pharmaceutical Agents and Environmental Chemicals. Presentation entitled "*Point, Counterpoint: State-Dependent Sensitivity to Glutamate in Circadian Clock Regulation*," Anatolya, Turkey (October 2001; elected not to attend due to events of Sept. 11th, 2001).
64. **Association of Professional Sleep Scientists, 16th Annual Meeting**, Symposium Organizer,
65. **British Neuroscience Association Annual National Meeting**, Keynote Address, *Neural Timekeeping,* Harrogate, Yorkshire, England (April 2001).
66. **Gordon Research Conference, Pineal Cell Biology**, "*Circadian Entrainment"*, Oxford, England (August 2000).
67. **9th International Symposium on Muscarinic Receptors**, "*Muscarinic Regulation of the Brain's Circadian Clock"*, Houston, TX (November 2000).
68. **American Psychological Association Annual Meeting**, "*Mechanisms of Circadian Clock Resetting*," Miami, FL (June 2000). Declined.
69. **American College of Neuropsychopharmacology**, *Sleep and Circadian Rhythms*, Acapulco, Mexico (December 1999).
70. **Society for Neuroscience Symposium**: *Cholinergic Mechanisms: Temporal Regulation of the Suprachiasmatic Nucleus*, Miami, FL (October 1999) .
71. **American Physiological Society Satellite Symposium**: *Determinants of Vigilance: Interactions Between the Sleep and Circadian Systems*, Ft. Lauderdale, FL (October 1999).
72. **International Brain Research Organization (IBRO) Congress**, "*Mechanisms of Circadian Rhythms*," Symposium speaker, Jerusalem, Israel (July 1999).
73. **Human Frontiers in Science 10th Anniversary Conference on Sleep**, *Cellular Regulators of Circadian Timing*, Strasbourg, France (June 1999).
74. **Dutch Neuroscience-Endocrinology Meeting**, Plenary Speaker, Amsterdam, The Netherlands (June 1999, declined).
75. **Winter Conference on Neural Plasticity**, *Mechanisms of Circadian Clock Resetting*, St. Lucia, West Indies (February 1999).

76. **NIH/NSF Workshop**, *What is Sleep? What is it Good For?*, Organizer and Session Chair of Functional Imaging of Sleep: *Where the Action Is and What the Action Means*, Dulles Center for Innovative Technology, VA (December 1998) .
77. **Hanseatic Endocrine Conference**, *Melatonin after Four Decades: An Assessment of its Potential*, Hamburg, Germany (August 1998).
78. **Intelligent Systems: Biological and computational perspectives**, University of Washington and Microsoft Research Summer Institute, Seattle, WA (August 1998).
79. **Recent Progress in Hormone Research**, *Suprachiasmatic Nucleus: The Brain's Circadian Clock*, The Endocrine Society, Stevenson, WA (August 1998).
80. **FASEB Conference**, *Regulators of Vertebrate Entrainment*, L. Morin and F. Turek, Organizers, CO (July 1998).
81. **Göttingen Neurobiology Meeting**, Plenary Speaker, *The Neuroethology of Time*, Göttingen, Germany (March 1998).
82. **Society for Neuroscience Meeting**, *SCN: The Master Circadian Clock*, Chicago, (Nov. 1997).
83. **IV Latin American Chronobiology Conference**, *Mechanisms of SCN Clock Regulation*, Tlaxcala, Mexico (August 1997).
84. **Gordon Research Conference in Chronobiology**, *A Clock Control Point in Late Night: Regulation by PKG*, (August 1997).
85. **25-Year Retrospective on the SCN**, *Milestones: In vitro* Electrophysiology, C. A. Czeisler and S.M. Reppert, Org., Continuing Education Center, Harvard Medical School, Boston, MA (August, 1997).
86. **International Society of Neuroethology**, Invited Plenary Speaker, *Neural Control of Circadian Rhythms*, Cambridge, England (September 1995).
87. **NICHD/NIH Workshop**, Molecular Aspects of Pineal Signal Transduction, *Melatonin and SCN Function*, Airlie, VA (September 1995, declined).
88. **World Conference on Chronobiology and Chronotherapeutics**, *Circadian Oscillators: Feedback and Signal Transduction*, Ferrara, Italy (September 1995, declined).
89. **Netherlands Institute for Brain Research, 19th International Summer School of Brain Research**, Lecturer and Session Chair, *Second Messengers and Light: Phase Shifting Stimuli of the Biological Clock*, Amsterdam, The Netherlands (August 1995).
90. **4th International Brain Research Organization Congress**, Satellite symposium on *Biological Clock in the Suprachiasmatic Nucleus*, Kyoto, Japan (July 1995, declined).
91. **New England Consortium for Undergraduate Science Education**, Keynote Speaker, *Photoperiodism, Rhythms and Clocks*, Dartmouth University, Hanover, NH (April 1995).
92. **3rd International Union of Pharmacologists Satellite Meeting on Serotonin**, *Regulation of Circadian Rhythms by Melatonin,* Chicago, IL (August 1994).
93. **Cold Spring Harbor Banbury Center Conference**, *Melatonin: Mechanisms and Actions*, Co-organizer and Speaker, Cold Spring Harbor, NY (April 1994).
94. **Gordon Research Conference on Pineal Cell Biology**, *Mechanisms of Melatonin Regulation of the SCN of the Rat*, Oxnard, CA (January 1994).
95. **Ciba Symposium #183**, *Circadian Clocks and their Adjustment*, J. Waterhouse & P. Redfern, Org., Ciba House, London, England (September 1993).
96. **World Federation of Sleep Research Societies Meeting**, *Circadian Pattern of Suprachiasmatic Neuronal Activity*, Maui, HI (March 1993).
97. **AFOSR Chronobiology Program Review**, *Organization and Regulation of the Rat Circadian Clock*, San Antonio, TX (October 1992).
98. **EMBO Workshop on Molecular Chronobiology**, *Temporal Domains and Kinase Regulation of the Circadian Clock of Rat,* Leicester, England (September 1992).
99. **5th International Conference on Chronopharmacology and Chronotherapeutics**, *Chronobiology and Neurotransmitter Control of the Rat SCN*, Amelia Island, FL (July 1992).
100. **INSERM Conference Philippe Laudat**, *Neurobiology of Circadian and Seasonal Rhythms: Animal and Clinical Studies*, Universite Louis Pasteur, Strasbourg, France (November 1991).
101. **Gordon Conference on Chronobiology**, *Time Domains Underlying the Mammalian Circadian Clock*, Irsee, Germany (October 1991).

102. **Winter Conference for Brain Research**, *Current Status of Circadian Rhythm Regulation in Mammals*, and *Melatonin: New Light on an Old Subject*, Vail, CO (January 1991).
103. **NIH Symposium on the Suprachiasmatic Nucleus: The Mind's Clock**, NICHHD, *Intrinsic SCN Rhythms: Electrophysiology*, National Institutes of Health, Bethesda, MD (October 1989).
104. **Society for Research on Biological Rhythms**, Session Chair & Speaker, *The Use of Brain Slices in Studies of Circadian Function*, SCN Neurophysiology, Wild Dunes, SC (May 1988).
105. **Gordon Research Conference on Chronobiology**, *Resetting the Clock in the Hypothalamic Slice: Single Units and Phosphoproteins*, Plymouth, NH (1985).

E. Public Service: Interviews/Features/Public Information

1. Special guest scientist on NPR podcast, "Brains On!", episode "*Tick, Tock, Circadian Clock*" (Host: Molly Bloom). **Minnesota Public Radio**. Aired December 2017, in celebration of Winter Solstice.
2. Opening presentation for **2017 Art of Science Exhibit**, sponsored by Carl R. Woese Institute for Genomic Biology, UIUC. "*The Secret Lives of Neuronal Filopodia*" [co][lab], Urbana, IL. April 13, 2017.
3. **Beckman Research Highlights** Article on Gillette and Popescu Research: *Time Lapse Cell Imaging Reveals Dynamice Activity.* October 2016.
4. Featured in **Beckman Annual Report**: Biological Intelligence Highlight "*Turn on Neurons*." 2015-16 Annual Report.
5. **Illinois News Bureau** feature on 2016 publication in Scientific Reports (Ma, L., et al. Sci Rep Vol 12 (6) doi: 10.1038/srep32702), October 26, 2016. https://news.illinois.edu/blog/view/6367/422485
6. Interview with MCB Communications Writer for **MCB Magazine** focus on interdisciplinary research, September, 2014.
7. Interview with Beckman Institute Communications Officer for **Beckman Magazine** profile on publication with G. Popescu: *Human cells self-organize*. Feb., 2014.
8. **Pre-kindergarten Class at Montessori School of Champaign-Urbana,** 1st Grade Class at Leal Elementary School, *The Thinking Cap in Your Head, and Q&A about The Brain,* December 18, 2013
9. **1st Grade Class at Leal Elementary School**, *The Thinking Cap in Your Head, and Q&A about The Brain,* December 5, 2013
10. **Rotary Club of Champaign-Urbana** Illini After Five, February 23, 2012.
11. Radio Interviews, **PBS WILL-Focus 580**: Hour-long live call-in program on *The Clockwork of the Brain* (PBS in Urbana, IL), October 19, 2011.
12. **Family Medicine Seminar** to medical students, residents and clinicians at **Carle Clinic**, *Circadian Timing Systems in Brain and Body: It's about Time,* February 2009.
13. Interviewee, October 2009 ***Science News***, "Daily electrical silencing in the mammalian circadian clock", about Hugh Piggins' *Science* paper reporting a novel class of neurons that express *Period 1* and survive and function at depolarized states.
14. **University of Illinois Office of Public Engagement**, hour-long, taped interview on *The Clocks that Time Us*, Richmond Studios, WILL-TV, September 30, 2009.
15. **Osher Lifelong Learning Institute (OLLI)** at the UIUC presentation on "Brain Rhythms," March 3, 2008.
16. Interviewee, **UIUC News Bureau** press release: Millet et al., *Lab on a Chip* report on low-density post-natal neuronal cultures in microfluidic devices, August 28, 2007.
17. Interviewee, May, 21, 2007 ***Nature* online news article**, "Viagra cures hamster jetlag: Little blue pill might help people shift their body clock forwards," about Diego Golombek's PNAS paper reporting the use of Sildenafil to re-entrain circadian rhythms in hamsters.
18. **WCIA, Channel 3 News Interview**, UI study finds protein controls shift to day mode, Dec. 19, 2004.
19. Informational luncheon with US Congressman Mark Kirk, Oct. 22, 2004.
20. **Champaign-Urbana News Gazette**, cover article on *Body's Alarm Clock Off? Culprit may be faulty enzyme,* by Staff Writer Greg Kline, Sunday, August 29, 2004.
21. **UIUC LAS Alumni** (Chicago area), *Understanding the Clock in the Brain: It's about Time,* Hauser residence, Evanston, IL, April 15, 2004.
22. **Vice President** and member of the Nominations and Research Committees, **National Sleep Foundation**, Washington, DC, 2001- present.

23. **Carle Awake & Aware Apnea Support Group**, *Why Do You Sleep at Night?* Carle Foundation Hospital and Carle Clinic Association, Urbana, IL, March 11, 2003.
24. **Bench-to-Bedside, Continuing Medical Education (CME) Lecture** and Moderator: *Why Do We Sleep at Night? Issues Pertaining to the Laboratory, the Clinic and the Law*, Medical Scholars Program, UIUC-College of Medicine, October 22, 2001.
25. Public Lecture: *A Clockworks in the Brain: It's About Time.* **Life-long Learning Institute, Parkland Community College**, October 16, 2001.
26. **WCIA-TV Channel 3 interview**: *Spring Fever: Seasonal Changes in Mood*, aired on the 6 o'clock news, Saturday, April 28, 2001.
27. **Champaign-Urbana News Gazette**, cover article on *Time Change Can't Fool the Body Clock*, by Staff Writer Greg Kline, Sunday, October 29, 2000.
28. **National Public Radio interview for "Grey Matters"** series, *What is Sleep? What is it Good For?* (with Thomas Roth, Director, Henry Ford Hospital, Craig Heller, Chair, Biology, Stanford, Clifford Saper, Harvard Medical School), aired several times since June 2000.
29. **Press Release, National Academy of Sciences,** November 1999.
30. **Press Release/Conference, Society for Neuroscience Annual Meeting,** October 1999.
31. **Public Lecture, Center for Advanced Study**, University of Illinois at Urbana-Champaign, Feb. 1998.
32. **Radio Interview/News Release, University News Bureau***,* January 1997.
33. **Radio Interviews, PBS WILL-Focus 580**: Hour-long live call-in program on *The Neurobiology of Time* (PBS in Urbana, IL), April 1996.
34. Interviews/Commentary for **News Services, Associated Press***,* January 1996.
35. **News Release, Associated Press***,* January 1995.
36. **Radio Interviews, WPGU (Champaign, IL) and WSOY (Decatur, IL),** January 1995.
37. **Quarks & Quarks, Canadian Broadcasting Co./NPR**, January 1995.
38. **Radio Interview/News Release, University of Illinois News Bureau***,* December 1994.
39. **News & Trends, *Psychology Today,*** November–December 1994.
40. **Honors Symposium for Illinois High School Seniors**, From Genes to Brains, 1992–94.

F. Continuing Education

1. **Continuing Medical Education, Sleep Consultant Network, Takeda Pharmaceuticals North America**, Lincolnshire, IL. Lectures to physicians with advanced post-graduate training in sleep disorders. "*Circadian Rhythms, Insomnia and Melatonin,*" Miami, FL, February 2008, Dallas, TX, March 2008, Huntington Beach, CA, June 2008.
2. *Impact of Sleep Loss on Endocrine and Metabolic Function,* M.U. Gillette, Speaker, Public Lecture, *Sleep Regulation & Dysregulation: From Molecules, Mice to Man,* Organizers: Rae Silver (Columbia), Justin Blau (NYU), New York Academy of Sciences, NY, NY, 2007.
3. *Circadian Rhythms: The Basics,* M.U. Gillette, Speaker, Trainee Development Course: *"The Basics of Sleep"*, Organizer: SRS Trainee Day Committee, Sabra Abbott (UIUC), Chair, **SLEEP 2007, 21th Annual Meeting**, Minneapolis, MN, 2007.
4. Continuing Medical Education, Sleep Consultant Network, Takeda Pharmaceuticals North America, Lincolnshire, IL. Lectures to physicians with advanced post-graduate training in sleep disorders. "*Circadian Rhythms, Sleep and Melatonin: Roles of the SCN*", Bonita Springs, FL, February 2006, Washington, DC, March 2006, San Diego, CA, February 2007, Ft. Lauderdale, FL, March 2007.
5. *Post-transcriptional Control of the Circadian Network,* Organizer: J. Takahashi (Northwestern), Participants: D. Virshup (Utah), C. Green (Virginia), M.U. Gillette (UIUC), **Winter Conference for Brain Research**, Snowmass, CO, 2007.
6. *Establishing A Career In Sleep Research And Developing Leadership Skills,* M.U. Gillette, Speaker, Faculty Development Course: *"Developing Independence And Preparing For A Faculty Position"* , Organizer: J.A. Mullington, (Harvard), **SLEEP 2006, 20th Annual Meeting**, Salt Lake City, UT, 2006 (declined).
7. *Basics of Sleep: Circadian Rhythms ,* M.U. Gillette, Speaker, Trainee Development Course, *"The Basics of Sleep"* , Organizer: Mary Carskadon, (Brown), **SLEEP 2006, 20th Annual Meeting,** Salt Lake City, UT, 2006 (declined).

8. *Establishing A Career In Sleep Research And Developing Leadership Skills,* M.U. Gillette, Speaker, Faculty Development Course: *"Developing Independence And Preparing For A Faculty Position."* Organizer: J.A. Mullington, (Harvard), **Asso. Prof. Sleep Societies 19th Annual Meeting**, Denver, CO, 2005.
9. *Emerging Insights into Molecular Substrates of Alternate Brain States: Of Clocks and Sleep and Genes,* Organizer: M.U. Gillette (UIUC), Participants: J. Takahashi (Northwestern), R. Alada (Northwestern), C. Cerilli (Wisconsin) and P. Shaw (Washington Univ., St. Louis), **Winter Conference for Brain** Research, Breckenridge, CO, 2005.
10. *Communication of Sleep States to the Circadian System: Emerging Evidence and Insights,* Organizer: M.U. Gillette (UIUC), Participants: K. Semba (Dalhousie, Canada), J. Meijer, (Leiden, The Netherlands), S. Abbott (UIUC), and S.-J. Dijk (U. Surry, UK), **Asso. Prof. Sleep Societies 18th Annual Meeting**, Philadelphia, 2004.
11. *New Roles for Ca^{2+} Signaling in Circadian Clock Regulation: Membrane, Cellular and Circuit Levels of Actions,* Organizer: M.U. Gillette (UIUC), Participants: C. Allen (OHSU), C. Colwell (UCLA), M. Gillette (UIUC) and R. Silver (Columbia), **Winter Conference for Brain Research**, Copper Mountain, CO, 2004.
12. *Circadian Neuroscience,* Year-in-Review, Continuing Medical Education (CME), Organizer: D. White (Brigham & Women's), **Asso. Prof. Sleep Societies 17th Annual Meeting**, Chicago, IL, 2003.
13. *Sleep Disorders of the Circadian System: Mechanisms and Insights,* Organizer: M.U. Gillette (UIUC), Participants: A. Lapovsky (Northwestern), L. Patcek (UCSF), G. Lindqvist (Karolinska Institute, Stockholm; U. Virginia) and J. Ding (U. Minnesota), **Asso. Prof. Sleep Societies 17th Annual Meeting**, Chicago, IL, 2003.
14. *Why Do We Sleep at Night? Issues pertaining to the laboratory, the clinic and the law,* **Bench-to-Bedside, Continuing Medical Education (CME) Lecture** and Moderator Medical Scholars Program, UIUC-College of Medicine, Urbana, IL, 2001.
15. *Advances in Understanding Cholinergic Regulation of Sleep and Circadian Rhythms,* Organizer: M.U. Gillette (UIUC), Participants: K. Semba (Dalhousie Univ.), H. Bagdoyan (U Michigan), R. Benca (University of Wisconsin), **Assoc. Prof. Sleep Societies 15th Annual Meeting**, Chicago, IL, 2001.
16. *Sleep and Circadian Rhythms,* Organizers: A.A. Borbely and J.C. Gillin, Participants: A.A. Borbely (U Zurich, CH), J.C. Gillin (UCSD, VA), M.U. Gillette (UIUC), G. Tononi (Neuroscience Institute, San Diego), American College of Neuropsychopharmacology, Acapulco, MX, 1999.
17. *Basic Neurobiological Mechanism Regulating Sleep,* Organizer: M.U. Gillette (UIUC), Participants: C.A. Czeisler (Brigham & Woman's Hospital/Harvard Med), M.U. Gillette, (UIUC), Robert McCarley (Brockton VA Hospital/Harvard Med.), A. Pack (Univ. of Pennsylvania School of Medicine), **Society for Neuroscience Annual Meeting**, Miami, FL, 1999.
18. *Functional Imaging of Sleep,* Organizer: M.U. Gillette (UIUC), Participants: B. Jones (Montreal Neurological Institute), A. Braun/T. Balkin (NIH/AF), E. Nofzinger (UPitt), W. Denk (Bell/Lucent Technologies), NIH/NSF Workshop, *What is Sleep? What is it Good For?* Dulles, VA, 1998.
19. *Neurobiology: From Molecules to Mind,* Organizer: A. Arnold (UCLA), Participants: P. Patterson (Cal Tech), M.U. Gillette (UIUC), **Intersession Course, Sesquicentennial Celebration of Grinnell College**, Grinnell, IA, 1996.
20. *Current Status of Circadian Rhythm Regulation in Mammals,* Organizer: L. Morin (Stony Brook), Participants: M.U. Gillette (UIUC), D. Earnest (Rochester), M. Lehman (Cincinnati), **Winter Conference for Brain Research**, Vail, CO, 1991.
21. *Melatonin: New Light on an Old Subject,* Organizer: M. Dubocovich (Northwestern), Participants: M.U. Gillette (UIUC), J. Saavedra (NIMH), P. Iuvone (Emery), **Winter Conference for Brain Research**, Vail, CO, 1991.
22. *The Neurobiology of Time: New Insights on Cellular Substrates of the Brain's Circadian Clock,* Organizer: M.U. Gillette (UIUC), Participants: M. Rea (USAF-SAM), A. van den Pol (Yale), F. E. Dudek (UCLA), **Winter Conference for Brain Research**, Snowmass, CO, 1990.

23. *SCN Electrophysiology In Vitro: Rhythmic Activity and Endogenous Clock Properties,* NICHD **Conference on Suprachiasmatic Nucleus: The Mind's Clock**, Bethesda, MD, 1989.
24. *Cyclic Nucleotides Differentially Reset the Phase of the Hypothalamic Circadian Pacemaker In Vitro,* **Winter Conference for Brain Research,** Snowbird, UT, 1989.
25. *The Use of In Vitro Brain Slices in Studies of Circadian Function,* Organizer: M.U. Gillette (UIUC), Participants: S. Shibata (Kyoto), D. Earnest (Rochester), S.-Y.Liou (Georgia State), 1st Meeting of the **Society for Research for Biological Rhythms**, Charleston, SC, 1988.
26. *Neural Control of Vasopressin Release within the Brain,* Organizer: M.U. Gillette (UIUC), Participants: L.G. Davis (DuPont), F. Baldino, Jr. (DuPont), G I. Hatton (Michigan State), S.M. Reppert (Mass. General), **Winter Conference for Brain Research**, Keystone, CO, 1986.

G. Journal Editor

1. ***Frontiers in Neuroscience***, Associate Editor (Sleep & Circadian Rhythms), 2023-present.
2. ***Cells*** (2073-4409) MDPI, Editorial Board, Cellular Aging, 2022-present
3. ***Frontiers in Physiology***, Editorial Review Board, 2021-present.
4. ***Frontiers in Chronobiology.*** Associate Editor, 2013-present.
5. ***Neurobiology of Sleep and Circadian Rhythms*** (Elsevier), Founding Associate Editor, 2015-present.
6. ***Progress in Molecular Biology and Translational Science:*** v. 119 **Chronobiology: Biological Timing in Health & Disease.** M.U. Gillette, Editor. J. Michael Conn, Series Editor, Academic Press, an imprint of Elsevier, 2013.
7. ***American Journal of Physiology: Regulatory, Integrative and Comparative Physiology,*** Editorial Review Board, 2007-present.
8. ***SLEEP,*** Associate Editor, 2003-2008.
9. ***Encyclopedic Reference of Neuroscience,*** Field Editor: Circadian Rhythms and Sleep, Springer-Verlag, Publishers, 2003-2009. Organized, invited and edited all contributions (50 essays written or co-written by 46 authors, and 234 glossary term contributed by 36 writers) in the field of circadian rhythms and sleep, 2006-2008.
10. ***Experimental Neurology*** *(*Academic Press), Editorial Board, *Section on Neuroendocrine and Homeostatic Mechanisms*, 2002-present.
11. ***Journal of Biological Rhythms*** (Sage). Advisory Board, 2004–2010.
12. **Ad Hoc Reviewer**: *Journal of Neuroscience, Nature Cell Biology, Neuroscience, Journal of Neurochemistry, American Journal of Physiology, Brain Research, European Journal of Neuroscience, Journal of Biological Rhythms, Lab on a Chip, ACS Chemical Neuroscience, Neuron, Nature, Science.*

H. Consulting/Nominating Activities

1. **Advisory Board Member, CYRCADIAN HEALTH, Inc., Reno, NV, Rob Royea, CEO –** Device and algorhithm development for ultra-early detection of breast cancer, January 2017 – present.
2. **NSF Alan T. Waterman Award Committee.** Member October 28, 2016 – May 31, 2019
3. **NIH High-End Instrumentation (HEI) Grant, Application for Beckman Institute 2-Photon Microscope**, Advisory Committee. PI Dan Llano. May 2016 – 2017.
4. **NSF IOS Study Section.** Pre-proposal panel, April, 2014. Served. Full proposal panel. Oct. 2014, declined.
5. **NIH review FO5-D(21) fellowship panel**: A review of applications assigned to **Cell Biology, Developmental Biology, and Bioengineering**. January 2013
6. **NIH review FO5-D(21) fellowship panel**: A review of applications assigned to **Cell Biology, Developmental Biology, and Bioengineering**. January 2013. Declined.
7. July, 2013, Jan., 2015. Declined due to unavailability.
8. **Georgia Institute of Technology**, **Program Review Committee for Biology Dept.**, Evan Harrell, Asso. Dean, College of Science – declined due to COI, 2013
9. **NSF/Division of Integrated Organismal Sciences Ad hoc GRANT reviews**
10. **NIH CSR: Cell Biology and Development (F05) meeting.** Panel member/ reviewer for March 26-29, 2012

11. **NIH CSR: Cell Biology and Development (F05) meeting.** Invitation to review fellowship applications for Nov. 15-16, 2012. Declined.
12. **NIH CSR: Cell Biology and Development (F05) meeting.** Invitation to review fellowship applications for Mar. 7-8, 2013. Declined.
13. **NIH ETTN-12 Small Business Study Section**. Invitation to review applications for February 2013. Declined.
14. Invited to serve on **College of Reviewers for Canada Research Chairs Program** (a tri-granting council program of Canada Government). November 2012. Declined.
15. **The Wellcome Trust Interview Panel UK** for November 2012. October 2012. Declined.
16. **American Association for the Advancement of Science, Washington, DC –** Nomination Letters for AAAS Fellows, Ohio State University, 2011, University of Kentucky, 2013, Michigan State, 2022.
17. **Takeda Pharmaceutical North America**, Lincolnshire, IL: Advisory Panel, Current Issues in Sleep Medicine, 2003-2008.
18. **Shaw Science**, Atlanta, GA. Development of new sleep-related educational materials on behalf of Takeda Pharmaceuticals. Presented at the American Thoracic Society and American Neurological Association annual meetings, 2005-2006.

I. Promotion & Tenure Evaluations

1. Division of Sleep and Circadian Neuroscience, Brigham & Women's Hospital, Harvard Medical School.
2. Department of Neuroscience, University of Pennsylvania (2).
3. Department of Neuroscience, Pennsylvania State University.
4. Department of Psychiatry, Univ. of Wisconsin-Madison.
5. Department of Biology, Washington University-St. Louis (3).
6. Department of Neuroscience and Physiology, Northwestern University (3).
7. Department of Neuroscience, University of Michigan

RESEARCH SUPPORT

Current External Support

Chan-Zuckerberg Biohub Chicago, LLC Bashir, **Gillette,** Kong, Saif, Sweedler, Vlasov 8/01/2023– 7/31/2024
Microdevices for analysis of intercellular communication and inflammation at the brain-muscle interface
Major goals of this project are to develop and apply instrumentation to study, at tissue scale, neuromuscular junctions with unprecedented spatio-temporal resolution, develop new hypotheses on the rules of their emergence, function, and dysfunction, and develop predictive models for their health.
Role: Co-PI Total Costs: $ 533,681 /1st yr

NIH R61/R33 HL159948 **Gillette**, Kong, Han (Purdue) 8/15/2023 - 8/31/2028
Dynamic Circadian Regulation of the Blood-Brain Interface in a Human Brain-mimicking Microfluid Chip
Major goals of this project are to create a new biomimetic brain transport model with mimicry of the coagulation system and circadian rhythm.
Role: Contact Investigator Total Costs: $2,305,423/ 5 yr

Beckman Vision & Spirit Award, unrestricted **Gillette** 9/2021, open-ended
Role: Awardee Total Award: $150,000

NIH R01 NS126061 Vlasov (PI), Bashir, Sweedler, **Gillette**, Christian-Hinman 6/01/2022-5/31/2027
Miniaturized Silicon Neurochemical Probe to Monitor Brain Chemistry
Project aims to develop a highly sensitive, multiplexed silicon platform technology for simultaneously monitoring a broad range of neurochemicals in the brain of awake and behaving animals with high spatiotemporal resolution and minimal tissue damage.
Role: Co-PI Total Costs: $3,617,008/4 yr

NSF CBET 1932192 Kong (PI), Popescu, **Gillette** 8/15/2019 – 8/14/2023
Engineering Neuron-Innervated Muscle with Stimulus-Responsive Contraction and Myokine Secretion
The goal of this project is to engineer a neuromuscular unit to test how physical cues such as surface topography and elasticity affect innervation. The function of the neuromuscular unit will be tested by applying excitatory chemicals while measuring muscle bundle contraction and quantifying the release of myokines during prolonged activation.
Role: Co-PI Total Costs: $390,000/3 years

NSF DGE 17-35252 **Gillette** (PI), Kong, Bashir,Chung, Cohen, Sutton, Sweedler 9/1/2017-8/31/2023
NRT-UtB: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery
The goal of this training grant is to produce a broadly diverse next generation of STEM workforce who will be able to develop advanced tools that can unite the two dominant paradigms in brain science studies, cognitive and behavioral studies with cell and tissue studies, to rationally engineer, and then decipher and harness, the living 3D brain.
Role: PI Total Costs: $2,999,996/5 years

Pending External Research Support

NSF NDMS/NIGM 2 Masud (PI), Kong,**Gillette** (co-PI) 4/1/2023 – 3/31/2026
Modeling and Simulation of Glymphatic Flow-mediated Restorative Brain Processes: Clearing of Metabolic and Neurotoxic Wastes via Interstitial Flows
Goal to research a platform of interwoven disciplines, combining biology and chemistry with mathematics and computer science to create a model of glymphatic fluid flow in the brain under circadian rhythm.
Role: co-PI Total Costs: $1,200,000/ 3 years

NSF ERC Iyer (PI), **Gillette**, Jones, Worrel Whittaker 4/1/2023 – 3/31/2026
NSF Engineering Research Center for Machine Intelligence-driven Diagnosis and Recovery from Neurological Disorders (CERBRAL)
Goal to research a platform of interwoven disciplines, combining biology and chemistry with mathematics and computer science to create a model of glymphatic fluid flow in the brain under circadian rhythm.
Role: co-PI Total Costs: $1,200,000/ 3 years

Submitted, Not Funded

NIH RM1 GM149401 Kong (PI), Bashir, Boppart, Chung, **Gillette** (co-PI) 7/1/2020 – 6/30/2022
Emergence Underlying Circadian Disruption-Induced Neural Stem Cell Niche Loss
This proposal will investigate the neural stem cell niches responsible for brain health in response to circadian disruption-induced brain senescence and brain-muscle crosstalk
Role: PI Total Costs: $11,590,280/ 5 years

NIH R21 641511 **Gillette** (PI), Sweedler (co-PI) 7/1/2020 – 6/30/2022
Spatio-temporal Assessment of Glymphatic Chemical Dynamics
This innovation proposal will enable us to 1) perform a global, high-resolution chemical characterization of the cerebrospinal fluid (CSF) vs. glymphatic fluids at different spatial sites and temporal stages during wake/sleep/disturbed sleep in response to circadian disruption in rodent models, and 2) directly manipulate glymphatic flux to evaluate the consequences of disrupted sleep.
Role: PI Total Costs: $425,277/2 years

NIH R01 AT011430 Gillette (PI), Kong, Sutton (co-PI) 4/1/2020 – 3/31/2025
Modulation of Glymphatic Transport in Circadian Disruption

This innovation proposal will discover the mechanisms by which circadian regulation of sleep intersects with glymphatic fluid transport and metabolic waste clearance in the brain and its modulation by nicotinamide riboside.
Role: PI Total Costs: $3,028,440/ 5 years

NSF IOS 1940327 Gillette (PI) 12/1/2019 – 11/30/2023
Network Dynamics of Hippocampal Astrocytes
This project will establish dynamic substrates, network dynamics, and functional consequences of gap-junction coupling (GJC) between brain astrocytes within the molecular layer of the dentate gyrus of the hippocampus across the day-night cycle. Outcomes will form a critical first step in understanding astrocyte functional dynamics and consequences for dentate gyrus microcircuits.
Role: Co-I Total Costs: $828,899/4 years

NSF BII Gillette (PI), Hauber, Kong, Rhodes, Sweedler 12/1/2019 – 11/30/2023
BII-Implementation: Institute for the Integrative Biology of Sleep
Through the assembly of a large team of biologist, chemist and engineers, the goal of this project is to understand the mechanisms underlying restorative processes of sleep across species, to answer the big questions of how sleep restores physiological processes.
Role: Co-I Total Costs: $12,500,000/5 years

NSF IOS 1940327 **Gillette** (PI) 12/1/2019 – 11/30/2023
Network Dynamics of Hippocampal Astrocytes
This project will establish dynamic substrates, network dynamics, and functional consequences of gap-junction coupling (GJC) between brain astrocytes within the molecular layer of the dentate gyrus of the hippocampus across the day-night cycle. Outcomes will form a critical first step in understanding astrocyte functional dynamics and consequences for dentate gyrus microcircuits.
Role: Co-I Total Costs: $828,899/4 years

DOD MURI Gillette (PI), Kong, Rhodes, Sutton, Sweedler, Villafañe (co-PIs) 6/01/2019-5/31/2024
Glymphatic Dynamics in Restorative Sleep
This proposal builds upon new evidence that experimental circadian misalignment generates a state where sleep is no longer restorative. Our hypothesis is that perturbing sleep causes circadian misalignment that affects glymphatic flow and transport, diminishing clearance of metabolic wastes with severe consequences for subsequent sleep/wake cycles and cognitive performance. Our multi-pronged approach will integrate quantitative assessments of glymphatic flow in space and time from the nano-to-systems scales, chemical composition of temporal changes glymphatic fluid, and cognitive performance to generate a multimodal framework of flow in waking/sleep/disordered sleep and the consequences.
Role: PI Total Costs: $6,250,000/5 years

Brain Research Fdn. Scientific Innovators Award LoI submitted May 3, 2018
Novel Chronotherapeutics for Neurological Disease
The objective of this new proposal is to design a “clock-on-a-chip” platform that can maintain cells of the suprachiasmatic nucleus in synchrony to study various neurological diseases such as Alzheimer’s disease, stroke, epilepsy, various sleep disorders, and drug abuse that have time-of-day dependent onsets.
Role: PI

NSF Kong (PI), Bashir, Gillette 06/01/2018- 05/31/2021
Engineering a Neurotransmitter-Respondent Muscle for a Locomotive Bio-Bot
The goal of this project is to engineer muscles that represent functional neuromuscular junctions and subsequently contract in response to neurotransmitters. We will validate the resulting muscle by using it to control locomotion of a miniature biological machine with neural impulses.
Role: co-PI Total Costs: $593,695/3 years

NSF BRAIN Initiative Neurotechnology Hub G. Popescu (PI) 7/1/2017 – 6/30/2022
Neurotechnology Hub: Scalable infrastructure for all-optical observation of neural connectivity

This Hub will consist of a set of novel instruments capable of label-free, noncontact measurements of electrical and chemical signaling in the SCN/hippocampus. New technology will be developed with the end goal of covering broad signaling spatiotemporal scales, from nanometer (e.g., exosomes/vesicles) to millimeter (brain slice) and millisecond (action potential) to hours (cell growth and intracellular mass transport).
Role: Co-PI Total Costs/5 years: $7,648,311

NIH S10 High-End Instrumentation Grant Program D. Llano (PI) 2/1/2017 – 1/31/2018
An Upright Multiphoton Microscope for Biomedical Research Applications
The aim of this equipment proposal is to acquire a multi-user 2-photon upright microscope to be housed at the Beckman Institute as a campus resource.
Role: Major User and Advisory Committee Member Total Costs: $770,546

NIH BRAIN Initiative Popescu (PI), Sengupta, Gillette 9/1/2015 – 8/31/2018
BRAIN Initiative: SLIM-Optogenetics System for Label-free, Non-contact Optical Detection of Single Action Potentials in Live Neuronal Networks
Our goal in this technology-driven proposal in the development of an innovative tool for spatiotemporal imaging of single cells and their electrical activity, with no physical contact, to advance understanding of the function and heterogeneity of the brain in health and disease. Total Costs: $1,585,570/3 years

NIH 1R21 Gillette (PI) 7/1/2016 – 6/30/2018
Astrocyte Structural Dynamics in Brain Networks
Our goal here is to understand how astrocyte dynamics modulate network connectivity and function in subregions of hippocampus.
Role: PI Total Costs: $436,150 /2 years
Annual direct costs to Gillette: $150,000 Total Costs: $1,982,500/5 years

NSF ADVANCE Proposal: Wise (PI), Wilson, Zimmerman, Rodrigues-Za
Internal Advisory Committee Member with Cangellaris, Dutta, Gallagher

NIH R21: NIH Brain Initiative Boppart (PI), Gillette 9/1/2015 - 8/31/2017
"Optogenetic-Free Modulation of Circadian and Metabolic Rhythms using Tailored Light"
The goal here is to understand how different forms of light can affect and control the outputs from intrinsically photosensitive ganglion cells in the mammalian retina and to deepening our understanding of the effects of light on our circadian and metabolic rhythms.
Role: Co-PI Total Costs: $457,703/2 years

Abbott-Illinois Center for Nutrition, Learning & Memory Rhodes (PI), Co-PIs: Boppart, Gillette, Helfrich, Jefferies, Johnson, Sweedler 8/16/14 – 8/15/16
Mouse Cognition and Hippocampal Neurogenesis Core Facility
Total request: $1,879,461/2 years

NSF The Graduate College, UIUC 8/16/2015-8/15/2018
"CORE: Examining the relative effectiveness of graduate funding mechanisms: The impact of assistantships, trainee-ships, and fellowships on doctoral students' experiences and outcomes"
Role: Participant $634,193

Applications Planned or in Preparation

Several in process

Grants to Support Undergraduate, Graduate or Professional Teaching

- Co-Advisor with D. Llano and G. Popescu, Ghazal Naseri Kouzehgarani, NSP, **Advanced Technological Imaging to Investigate Morphological and Coupling Heterogeneity of Astrocytes in Hippocampal Dentate Gyrus**, Beckman Fellow 2018.
- PI with co-PI Hyunjoon Kong on **Understanding the Brain NRT: Training the Next Generation of Researchers in Biofabrication and Deciphering the Miniature Brain.** NSF NRT 2017-2022.
- Mentor with R. Bhargava and others, **Tissue Microenvironment (TiMe) Training Program**, NIH T32. 2016-2021.
- Mentor on two NSF Research Experience for Undergraduates (REU) grants, **Emergent Behavior of Integrated Cellular Systems (EBICS)**, 2014-present, and **Frontiers in Biomedical Imaging REU**, PI Andrew Smith, Co-PI Stephen Boppart, 2015-present (renewed 2018).
- Co-Advisor with J.V. Sweedler, Itamar Livnat, MIP, MD/PhD, **D-Amino Acids in Nervous System Function.** Beckman Fellow 2013-14, NIH NRSA 2015-present.
- Co-Advisor with Gabriel Popescu, Taewoo Kim, ECE, **SLIM Microscopy-based Analysis of Nervous System Dynamics,** Beckman Fellow 2014.
- Member and Executive Comm., **Developmental Psychobiology and Neurobiology Training Grant,** NIH/NICHHD T32 HD007333 (2004-present) Trainees: Jessica Barnes (post-doc), CDB; Larry Millet, CDB; Harry Rosenberg, MIP/MSP
- Member., **Neuroengineering IGERT,** NSF IGERT 0903622 (2009–2015). Trainees: S. Christopher Liu, NEURO/MSP, Olivia Cangellaris, BIOE/MSP
- Member and Executive Comm., **Cellular & Molecular Mechanics and BioNanotechnology (CMMB) IGERT,** NSF IGERT NSF IGERT 0965918 (2010–2016). Trainees: Anika Jain, CDB, Ghazal Naseri Kouzehgarani , NEURO
- Advisor, Kathy Bottum, MH/PhD, American Heart Association Fellow-to-Faculty Award, **"The Suprachiasmatic Nucleus as a Model for Neuroprotection,"** July 2003-June 2007.
- Advisor, Christian Beaulé, Fonds de Recherche sur la Nature et les Technologies (Government of Québec) Postdoctoral Fellowship, February 2003–January 2005. Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship, **"Cytoskeletal Reorganization in the Circadian Response to Light,"** May 2005 – April 2006.
- Co-Advisor, Matthew Gerdin, NRSA, National Institute of Neurological Diseases and Stroke, **"Internalization of the hMT1 and hMT2 melatonin receptors: Cellular mechanisms and physiological significance,"** January 2003–December 2005.
- Sponsor, NIH Postdoctoral National Research Service Award (NINDS, Epilepsy Branch) to Shelley A. Tischkau: 1 F32 NS10170. **"Role of cGMP in Neural Regulation of the Circadian Clock,"** April 1996–March 1999.
- Sponsor, NIH Postdoctoral National Research Service Award to Penny W. Burgoon: 1 F32 NS11134, **"Neurotransmitter Regulation of the Circadian Clock"**, March 2001–February 2003.
- Sponsor, NIH Postdoctoral National Research Service Award to Jennifer W. Mitchell, 1 F32 NS11158, **"Interacting Signals in Circadian Clock Regulation,"** February 2001–January 2004.
- Sponsor, NIH Postdoctoral National Research Service Award to Eve A. Gallman, **"Ionic Current of Pacemaker Cells",** NINDS, January 1992-1995.
- Sponsor, NIMH Predoctoral National Research Service Award to Gordon A. Buchanan, 1 F30 MH12351-01-5. **"Cholinergic Influence on Circadian Function,"** February 2001–April 2005.
- Sponsor, Sabra Abbott, Ruth L. Kirschstein National Research Service Award, 1 F30 NS047802-01-04. **"Cholinergic Regulation of Circadian Rhythms and Sleep,"** August 2004–July 2008.
- Member, **Systems and Integrative Biology Training Grant**, NIH/NIGM GM07143 (1990–2003). Trainees: Jeffrey A. Barnes, CSB; Gordon F. Buchanan, MIP/MSP; Jessica W. Barnes, CSB; Sabra M. Abbott, MIP/MSP; Peder T. Lindberg, NSP/MSP
- Member, **Cell and Molecular Biology Training Grant,** NIH/NIGM T32 GM007283 (1989–present). Trainees: Jennifer Arnold, MIP/MSP
- Member and Executive Comm., **Developmental Psychobiology and Neurobiology Training Grant,** NIH/NICHHD T32 HD007333 (2004-present) Trainees: Jessica Barnes (post-doc), CDB; Larry Millet, CDB; Harry Rosenberg, MIP/MSP

Trainee Awards and Mentorship Summary

Trainees: 45 undergraduates (19 women), 47 graduate students (23 women), 14 postdocs (11 women);
Total: 105 (51 women)
Additionally, I have been the doctoral mentor of two veterans, one with Gulf War experience, as well as African-American and Latino undergraduate and graduate students, and present seminars to underrepresented groups, e.g., ASPIRE Early Application and Campus Visit Program (Diversity Recruitment Initiative). As of 2023, I advise 6 graduate students, 3 of them women, and co-advise 5 other graduate trainees, of which 3 are women and 1 male and 1 female are Latino students from Puerto Rico.

Conference Grant Support

Conference Grant: Principal Investigator, Unrestricted Educational Grant (grant number 000284), ***"2008 Society for Research on Biological Rhythms Conference,"*** Takeda Pharmaceuticals North America, Inc., in support of 2008 SRBR Biennial Meeting, Sandestin, FL. $45,000.

Principal Investigator, Conference Grant***, "2005 Chronobiology Gordon Research Conference,"*** National Institutes of Health, Institutes of Mental Health and Neurological Diseases and Stroke, in support of 2005 Gordon Research Conference on Chronobiology, $7,900.

Principal Investigator, Unrestricted Educational Grant*, "**2005 Chronobiology Gordon Research Conference**,"* Takeda Pharmaceuticals North America, Inc., in support of 2005 Gordon Research Conference on Chronobiology, $42,900. Overall, I raised more than $68,000, mostly from private sources, in support of this conference.

Campus Support

- Advisor, Larry J. Millet, Dissertation Completion Fellow, The Graduate College, 2008 (declined).
- School of Molecular & Cellular Biology, Grant-in-Aid of Research, May, 2006 - May, 2008.
- Principal Investigator, "Actin-Based Neuronal State Changes," Campus Research Board Award. Support for two graduate assistants and modest supplies. June 1, 2006 – May 31, 2007, $21,153.
- Principal Investigator, with 8 MCB faculty: Campus Research Board Award: "Preparation of Samples for Histology and Microscopy using a Cryostat Sectioning Device," November, 2004 – July, 2005,
- $24,999.
- Research Board Award #03055: "Cholinergic Regulation of Circadian Rhythms and the Sleep-Wake Cycle" October 2002–September 2003.
- Research Board Award #03123: "Genomic Studies Utilizing Microarray Analysis," December 2002–September 2003.
- Co-Principal Investigator, with D. Clayton (P.I.), W. Greenough, J. Mogil, Y.-Q. Li, J. Black. Critical Research Initiatives, UIUC. "Neuropsychiatric Analysis of Transgenic Mice: Establishment of a Campus Resource," July 1, 1998–June 30, 2001.
- Principal Investigator, UIUC Research Board Equipment Grant, "Decoding Neurochemical Regulators of the Circadian Timing of Behavior," December 1999–May 2000.
- University Scholar Award, UIUC, unrestricted grant, 1997–2000.
- Advisor, Amanda E. Hunt, Dissertation Completion Fellow, The Graduate College, 2000–2001.

Past Support

NIH 1R21 MH 117377-01 Gillette (PI) 3/01/2019 – 2/28/2022
High Resolution Analysis of Redox Regulation in Dendrites
This innovation proposal seeks to probe local regulators of dendritic filopodia development by integrating our expertise in cell signaling, the neurobiology of redox dynamics in neurons, and high-resolution imaging in living cells with our expertise in designing and fabricating nanoliter micro-environments for low density

neuronal cultures. We will use new concepts, technologies, and approaches to understand subcellular heterogeneities and localized functions of redox state in shaping development of the dendritic arbor. Novel engineering-based micro-environments and imaging methods will enable high resolution analyses of the spatial and temporal regulation of processes proposed to be critical for normal dendrite development in neurons.
Role: PI Total Costs: $436,150/2 years

AF FA9550-17-1-0387 Boppart (PI), Gillette, Tajkhorshid, Sengupta 9/30/2017-9/29/2022
Directed Electromagnetic Perturbation and Quantum Biological Effects in Retinal Cells and Networks using Coherent Control of Femtosecond Optical Pulses
This project establishes a new paradigm that retinal ganglion cells (RGCs), intrinsically-photosensitive RGCs, and subsequently mammalian circadian rhythms, can be modulated and controlled with novel tailored light stimuli.
Role: Co-PI Total Costs: $990,253/5 years

NIH/NIBIB T32 Institutional NRSA Bhargava (PI) 4/1/2016 - 3/31/2021
Tissue Microenvironment (TiMe) Training Program
Training Program emphasizing technological approaches in sensing and imaging, bioengineering, and computational modeling to develop a quantitative understanding of the tissue microenvironment, which is critical for advances in regenerative medicine and cancer management. The program will utilize 35 faculty mentors and recruit from over 500 training-grant eligible applicants across 14 graduate programs.
Role: Mentor Total Costs: $3,666,885/5 years

NSF STC CBET 0939511 Kamm-BioE/ME, MIT (PI) 9/15/2010 - 9/14/2020
(Renewed in 2015)
Science and Technology Center: Emergent Behaviors of Integrated Cellular Systems (EBICS)
The goal of the Science & Technology Center, which involves engineers and biologists at MIT, Illinois, Georgia Tech, UC Merced, Morehouse College, and CCNY, is to produce an exemplary biological machine, based upon understanding emergent, systems-level properties of cells interacting with native environments–other cells, matrices, chemical and mechanical signals.
Role: Investigator, Assoc. Director 2019, Working Group Lead, Research Committee, Strategic Planning Committee Total Costs: $25,000,000

P30 DA018310 Sweedler (PI), Gillette (Center User) 6/2009-5/2104; 6/2014-2019
NIH/NIDA Proteomics & Technology Center
Neuroproteomics Center on Cell-Cell Signaling
Two Competetive Renewals (years 06-10, 11-15)
NIH/NIDA Regional Center in Neuroproteomics. Gillette component: User time at Biotech Proteomics Center Despite the power of genetic techniques, no gene array can measure how much signaling neuropeptide is released at the synapse where neurons communicate. The UIUC Proteomics Center will sample the SCN, either in slice or in cell culture, and measure the released signaling molecules. The identification of potential neuromodulators acting as signaling partners to glutamate brings into sharp relief the large number of other signals which are critical to clock resetting. This collaboration applies novel protein collection techniques and MALDI-TOF and MS analytical methods to the proteomics of circadian rhythm generation. No direct costs to the Gillette lab, but sample processing costs are borne by the Center.
Role: Center User Gillette ADC to Center: $0

NSF Research Experiences for Undergraduates Program
NSF REU: Frontiers in Biomedical Imaging Steven Boppart (PI), Andrew Smith 3/01/2015 – 2/28/21
Funding provides first-hand opportunities for undergraduates in cutting-edge bioimaging research. Renewed in February 2018 for an additional three years.
Role: Mentor Total Award: $360,000

NSF IOS-1354913 Gillette (PI) 7/31/14 – 8/1/19

Regulation of SCN Glial Plasticity
The objective of this award was to understand diurnal modulation of glial plasticity in the suprachiasmatic nucleus (SCN).
Role: PI Total Costs: $620,000/5 years

NIH 1U01MH109062-01 Sweedler (PI), Gillette, Bhargava 9/18/2015 – 6/30/2018
BRAIN Innovation Grant: Integrated Multimodal Analysis of Cell- and Circuit-Specific Processes in Hippocampal Function
The overarching goal of this project was to create an integrated pipeline of technologies that can be used to probe the chemistry of large numbers of cells and examine cell-specific processes. We propose to develop and integrate two chemically information-rich technologies—high throughput single cell mass spectrometry (MS) and stimulated Raman spectroscopy (SRS)—to define the chemistry occurring in cells, identify the cell types present, and determine how their chemistry changes during time.
Role: Co-PI Total Costs: $2,034,206/3 years

NSF BRAIN Initiative Gillette (PI), Popescu, Rogers, Sweedler 9/01/2014 – 8/31/2017
BRAIN EAGER: Multiscale Dynamics and Emergent Properties of Suprachiasmatic Circuits in Real Time
This innovation award focused a constellation of expertise to undertake a pioneering program to develop and integrate novel non-invasive imaging, sensors, and chemical analyses to understand the dynamic geography of brain information processing and plasticity.
Role: PI Total Costs: $300,000/2 years

ABBOTT CNLM 2014-07443 Sweedler (PI) 8/16/14-5/15/17
Diet-Modified Brain Chemistry and Plasticity: Nutrition as a Case Study
This work focused on two synergistic objectives: (1) development of sensitive cell-based assays coupled to neurochemical measurements to determine the influence of nutrients on neuronal plasticity at the cellular level; and (2) implementation of the methodology to probe the effects of specific classes of nutrients on these processes.
Role: Co-PI Total Costs: $422,463/2 years

ABBOTT CNLM 2015-06958 Gillette (PI), Sweedler, Rhodes 8/16/2015-5/15/2017
Diet-Modified Neuron Physiology Assessments
This award evaluated the effects of dietary supplementation on neuronal membrane properties of hippocampal neurons in aged rats.
Role: PI Total Costs: $214,837/1.5 years

NSF CBET 1403660 Boppart (PI), Gillette 4/01/14 – 3/31/17
Enhanced Optogenetic Control of Neuronal Activity with Tailored Light Stimuli
The objective of this technology proposal was to precisely control the spectral, temporal, and spatial parameters of novel tailored-light stimuli to provide enhanced modulation and control of the electrical output activity of optogenetically-modified neurons.
Role: Co-PI Total Costs: $450,000/3 years

NIH 1R21MH101655 Gillette (PI) 7/01/13 – 6/30/16
High Resolution Analysis of miR125b in Dendrites via Microfluidic Devices
The objective of this innovation award was high-resolution analysis via microfluidic devices of the role of miR125b in determining the complexity of the dendritic arbor of developing hippocampal neurons
Role: PI Total Costs: $436,149/2 yea

NIH/NHLBI 5R01HL086870-03 Gillette (PI) 7/1/2007 – 6/30/2013
Actin-Based Neuronal State Changes
The overarching goal of this grant was to understand how experience signals long-term state changes in neurons that, in turn, change behavior. The major goal of this project is to understand the mechanisms by which the actin cytoskeleton regulates neuronal state by tethering/releasing key signaling molecules.
Role: PI Annual Direct Costs: $250,000, Total Award: $1,550,000

1R21MH085220-01 (Gillette, PI; Nuzzo, Co-PI) 7/1/09 – 6/30/12
Total Costs: $275,000/ 2 yr Total Award: $435,875
Nano-Scale Processes of Dendrogenesis
This R21 proposal bridges neuroscience with materials science to create and exploit complex nano-scale gradient chemical fields to understand factors influencing dendritic filopodia during wiring of brain circuits.

NSF Single Investigator Proposal No: 0818555 (Gillette) 8/1/2008 – 7/31/2012
Annual total costs: $100,000 x 4 yr, Total Award Costs: $400,000
Proteomics, Actin and Plasticity in Circadian Rhythms
Coupled proteomic and functional analyses will provide a foundation for understanding the process by which sensory experience is integrated into a coherent network response spanning molecular, cellular, brain and behavioral levels.

1R01HL092571-Z ARRA (Gillette), NIH/NHLBI (PA07-070) 9/1/2009 – 8/31/2012
Annual Direct Costs: $350,000. Total Costs: $967,363 (expended)
Neuropeptidomics of Clock-to-Clock Coupling
The proposal's goal is to identify and functionally characterize peptides that couple the suprachiasmatic nucleus (SCN) and glial circadian clocks to understand systems pathologies leading to sleep disorders.

Roy J. Carver Charitable Trust Proposal Gillette (PI) 4/16/10-4/15/11
$327,969
"Advanced Technology for Imaging Brain Circuit Dynamics"
Support for acquisition of advanced imaging equipment to create a cutting-edge brain imaging facility enabling laser photostimulation with flavoprotein autofluorescence (LPFA), a new non-invasive imaging technology, for use by the neuroscience research community. I prepared and submitted this proposal on behalf of the Restorative Neuroscience Initiative, a Translational Research Thrust under the Division of Biomedical Sciences and the recruitment of Daniel Llano, MD/PhD.

NIH 1 S10 RR027884A Major Equipment Grant. W. O'Brien, PI (Gillette, Co-PI).
9/2010-8/2011
Total costs: $557,904
"High-Resolution In Vivo Ultrasound Imaging using the Visual Sonics Vevo 2100 System".
Housed at the Beckman Institute, the Visual Sonics VEVO2100 enables high-frequency ultrasound system for small animal imaging. We proposed to image the beating heart in mouse.

NSF Critical Research Center CHE-0526692
10/1/2008 – 9/30/2010
"Chemical Approaches to Glial-Neuronal Networks"
Annual Total Costs: $150,000; Total Recommended Costs to MG: $300,000
CRC Members: Irving Epstein (PI, Brandeis), Jonathan Sweedler (Co-PI, UIUC), Rustem Ismagilov (Co-PI, Univ. of Chicago), Martha Gillette (Co-PI, UIUC); (I joined this ongoing initiative targeted at the chemical sciences in Years 4-5). This Center is applying the tools of chemistry to develop a molecular basis for understanding life processes that subserving the functioning of the brain. In particular, our research plan is to construct and analyze well-defined biological networks and model systems, simultaneously collecting data on multiple time and size scales, from the molecular to the network level. This will provide a unique set of data linking chemical and biological substrates of the dynamics, structure and function of the brain.

National Institutes of Health (NIDA) Proteomics & Technology Center Initiative P30 DA018310
(Years 01-05). J.V. Sweedler (PI), M. Gillette, Center User.
NIH/NIDA Regional Center in Neuroproteomics.
June 2004 – May 2009
Annual Direct Costs to Center: $898,780 x 4 yr.
Gillette component: User time at Biotech Proteomics Center

"Neuroproteomics Center on Cell-Cell Signaling."
Despite the power of genetic techniques, no gene array can measure how much signaling neuropeptide is released at the synapse where neurons communicate. The UIUC Proteomics Center will sample the SCN, either in slice or in cell culture, and measure the released signaling molecules. The identification of potential neuromodulators acting as signaling partners to glutamate brings into sharp relief the large number of other signals which are critical to clock resetting. This collaboration applies novel protein collection techniques and MALDI-TOF and MS analytical methods to the proteomics of circadian rhythm generation. No direct costs to the Gillette lab, but sample processing costs are borne by the Center.

W.M. Keck Foundation Research Grant (3 Years) J. Sweedler, M.U. Gillette and R.G. Nuzzo, Co-PIs.
January 2004 – December 2006
Annual Direct Costs to each Co-PI: $133,000. Total Costs: $1,200,000
"Neural Repair in the Microcircuit Domain"
This cross-disciplinary initiative seeks to discover novel insights, solutions and fabrications for neural repair and restoration of function through nano-scale bioengineering applications.

Gift Recipient, ***"Biologic Evaluation of Circadian Clock Proteins in Malignant and Normal Breast Tissue,"***
The Carle Foundation, July 2004 – 2005. Award Amount: $48,985.

National Institutes of Health (NINDS), Fundamental Neurosciences Research Grant PHS 5 NS22155
(Years 15 – 18). Principal Investigator.
April 2001 – March 2005
"Physiological Substrates of a Circadian Oscillator"
Annual Direct Costs: $250,000. No Cost Extension through March 2006. Total Costs: $1,887,310.
These investigations evaluate glutamate/PACAP interactions from the behavioral level through signal transduction mechanisms that engage the molecular clockwork.

National Institutes of Health (NHLBI), Airways Biology Research Grant NIH PHS 5 RO1 HL67007
(Years 5 – 8). Principal Investigator.
August 2000 – July 2004
"Cellular Regulators of Circadian Timing"
Annual Direct Costs: $250,000. No Cost Extension through July 2005. Total Costs: $1,618,810.
This study seeks to link NMDAR signaling to modulation of Ca^{2+}i fluxes to alterations in PER and TIM protein localization and proteolysis to two distinct state changes in the clock: phase delay vs. phase advance.

National Institutes of Health (NINDS), Research Grant NIH PHS 5 RO1 NS35859 (Years 5 – 8)
"Cholinergic Regulation of the Circadian Clock". Principal Investigator.
June 2001 - May 2005
Annual Direct Costs: $200,000. No Cost Extension through May 2006. Total Costs: $1,346,955.
The major goal of this award is to understand the role of cholinergic signaling in communication between sleep/arousal state and the circadian clock, as well as the role of ACh in SCN changes in dementia.

Advisory Committee to ***"Near Infrared Functional Imaging in the Medicine of the Future***," in response to the joint NCI/NASA Unconventional Innovations Program (BAA N01-CO-17016-32, Fundamental Technologies for Development in Biomolecular Sensors), E. Gratton, P.I., Laboratory of Fluorescent Dynamics, Dept. of Physics, UIUC. September 2001–September 2004.

Co-investigator with Jonathan Sweedler, ***"The Neurobiology of Time: Peptide Regulators of the Brain's Biological Clock."*** Subproject of NIH Major Equipment Proposal: MALDI-TOF Mass Spectrometer, S. Sligar/T. Rauchfuss, P.I., School of Chemical Sciences, UIUC. Awarded, May 2001.

Principal Investigator, National Institutes of Health (NHLBI), Airways Biology, Research Grant NIH PHS 5 RO1 HL67007(Years 5–8). ***"Cellular Regulators of Circadian Timing,"*** August 2000–July 2004.

Principal Investigator. National Institutes of Health (NINDS), Research Grant NIH NINDS PNB 1RO1NS35859-03. Equipment Supplement. ***"Cholinergic Regulation of the Circadian Clock."*** PA: Basic and Clinical Research on Sleep and Wakefulness. May 1999–April 2001.

Critical Research Initiative Award, Vice Chancellor for Research, $200,000 in support of equipment and one postdoctoral, ***"The Neuropsychiatry of Transgenic Mice",*** with D. Clayton (P.I.), W. Greenough, J. Mogil, Y.-Q. Li and J. Black.

Principal Investigator, UIUC Research Board Equipment Grant, ***"Decoding Neurochemical Regulators of the Circadian Timing of Behavior,"*** December 1999–May 2000.

Co-investigator, ***"The Neurobiology of Time: Peptide Regulators of the Brain's Biological Clock."*** Subproject of NIH Major Equipment Proposal: MALDI-TOF Mass Spectrometer, S. Sligar, P.I., School of Chemical Sciences, UIUC, 1996.

Principal Investigator, (FY92 AASERT) F49629-93-1-0413. ***"Augmentation of Research Training in Chronobiology: Regulation of the Mammalian Circadian Clock by Neurotransmitters,"*** June 1993–May 1996.

Affiliate Member, **National Science Foundation National Center for Learning and Memory Grant**. W. Greenough, P.D. (1989–1995).

Principal Investigator, Colgate-Palmolive Undergraduate Research Training Award, Oct. 1994 –May 1995.
Principal Investigator, UIUC Research Board Equipment Grant, **"Circadian Activity Monitoring System,"** September, 1994–May, 1995.

Principal Investigator, AFOSR University Research Initiative, Chronobiology Research Grant, AFOSR-NL-0205. **"The Organization of the Suprachiasmatic Circadian Pacemaker of the Rat and Its Regulation by Neurotransmitters and Modulators,"** April 1990–March 1993.

Sponsor, NIH Postdoctoral National Research Service Award to Dr. Eve Gallman. **"Intracellular Analysis of Mammalian Circadian Neurons,"** October 1991–September 1994.

EMBO Travel Grant to Britain, 1992.

Principal Investigator, **Beckman Scholar Award**, UIUC Campus Research Board, October 1990– May 1991.

Member, **National Science Foundation Site Research Experience for Undergraduates in Neuroscience**, W. Greenough, P.D., 1989–1990.

Member, **National Institutes of Mental Health Training Grant in Behavioral Neuroscience** for E. Satinoff, P.D., 1987–1992.

Principal Investigator, National Science Foundation Research Grant. "**Neuronal Substrates of Circadian Oscillation**," August 1985–August 1986. Relinquished after Year 1.

Burroughs Welcome Travel Grant to Britain, Cambridge University, 1985.

Gordon Research Conference Travel Grant, 1985.

Biomedical Research Support Grants, University of Illinois, 1979–1985.

American Philosophical Society Basic Research Grant at the University of California, Santa Cruz and University of Illinois, 1977–1983.

Sigma Xi Grant-in-Aid of Research at the University of California, Santa Cruz, 1977.

COLLABORATIONS:

Significant Research Collaborations

BRAIN Innovation Grant: Integrated Multimodal Analysis of Cell- and Circuit-Specific Processes in Hippocampal Function. Jonathan Sweedler (PI) with M. Gillette and R. Bhargava. The overarching goal of this project is to create an integrated pipeline of technologies that can be used to probe the chemistry of large numbers of cells and examine cell-specific processes. We propose to develop and integrate two chemically information-rich technologies—high throughput single cell mass spectrometry (MS) and stimulated Raman spectroscopy (SRS)—to define the chemistry occurring in cells, identify the cell types present, and determine how their chemistry changes during time.

Cross-disciplinary research with engineers. I am engaged with engineers, both on our campus and at MIT and Georgia Tech. Collaborations with engineering has expanded to a range of new cross-disciplinary proposals [2 IGERTS, STC, EFRI, 3 major equipment proposals, a number of 2-3 investigator proposals/ grants, and 2 recent training grants on the Tissue Microenvironment (PI Rohit Bhargava) and Miniature Brain Machinery (PI Gillette)]. These interactions have spawned technology-development proposals to study brain complexity under 3 BRAIN Initiative awards. Additionally, we are developing novel scaffolds to encourage and guide neuronal development through aligned matrices (Kong) and nano-tubes (Li). We are applying novel imaging techniques to study the brain in collaborations with Popescu and Boppart. The NSF NRT on Miniature Brain Machinery, initiated in Fall 2017, has awarded traineeships to 16 graduate students across engineering and biological/cognitive science disciplines and will develop scientists trained in this critical multi-disciplinary area. My engagement gives CDB/MCB/LAS a strong presence in these engineering-based initiatives and awards.

NSF Science & Technology Center in Emergent Behavior of Integrated Cellular Systems (EBICS). These interactions have increased significantly as a consequence of the maturation of this complex initiative. This STC has as its goal the next steps in synthetic biology: building machines with specific functionalities from biological parts. I am a member of the Research Planning Committee, and three research discussion groups (Neural Circuits, Neuromuscular Junctions, BioBots). These developments enable me to gain first-hand insight into the possibilities of working with biologically oriented engineers to advance development of cell and tissue engineering and machines comprised of biological components. I anticipate these tendrils will bear fruit in new collaborations and grants. I was one of the core readers/writers of EBICS 2.0, the renewal of this prestigious award, and was selected to present the 15-lab initiative that forms Aim 2: Emergence of Function to the NSF/Reviewer Site Visit Team.

Neuroproteomics Center on Cell-Cell Signaling. Jonathan Sweedler, PI. This collaboration applies novel protein collection techniques and MALDI-TOF and MS analytical methods to the proteomics of circadian rhythm generation. Through our long-term collaboration with Jonathan Sweedler, we have generated the most complete peptidome of any brain region. We also have identified novel, functionally significant signaling peptides. The identification of potential neuromodulators acting as signaling partners to glutamate is bringing into sharp relief the large number of other signals which are critical to brain function. We now are probing brain for the presence of D-amino acid bearing peptides and share 2 students engaged in this endeavor.

BRAIN EAGER: Multiscale Dynamics and Emergent Properties of Suprachiasmatic Circuits in Real Time. Martha Gillette, PI, with Sweedler, Rogers, Popescu. This multi-level collaborative effort just ended in 2017 and focused a constellation of expertise to undertake a pioneering program to develop and integrate novel non-invasive imaging, sensors, and chemical analyses to understand the dynamic geography of brain information processing and plasticity.

Diet-Modified Brain Chemistry and Plasticity: Nutrition as a Case Study Jonathon Sweedler, PI, with Gillette and Rhodes **/ Diet-Modified Neuron Physiology Assessments** M. Gillette, PI, with Jonathan Sweedler. Funded by the Abbott-Illinois Center for Nutrition, Learning & Memory, these collaborations between neuroscientists and analytical chemists focused on two synergistic objectives: (1) development of sensitive cell-based assays coupled to neurochemical measurements to determine the influence of nutrients on neuronal plasticity at the cellular level; and (2) implementation of the methodology to probe the effects of specific classes of nutrients on these processes.

Research Collaborators (current in BOLD)

- **Rhanor Gillette –**UIUC, Molecular & Integrative Physiology; Beckman Institute, Urbana, IL 1973-present
- Steven M. Reppert – Massachusetts General Hospital, Children's Service, Boston, MA, 1986-1987
- Michael Rea – School of Aerospace Medicine BRAIN Research Institute, Director, San Antonio, TX, 1990-1994
- Evelyn Satinoff, UIUC, Psychology, Champaign, IL, 1991-1994, University of Delaware, Psychology Newark, DE
- Jens Mikkelsen, University of Copenhagen & H. Lündbeck A/S, Dept. of Neurobiology, Head, Copenhagen, Denmark, 1993-1998
- David Earnest, Texas A&M Medical School, Dept. of Anatomy, College Station, TX 1995-2002
- Jens Hannibal -- Bispebjeg Hospital, Clinical Biochemistry, Copenhagen, Denmark, 1995-2004
- **Jonathan Sweedler –** UIUC, Analytical Chemistry, Director, School of Chemical Sciences and the Beckman Institute, Urbana, IL , 1995-present
- Bruce Wheeler – UIUC, Beckman Institute, Neural Pattern Array Group, Urbana, IL, 1996-1998
- Neil Nathanson – U. of Washington School of Medicine, Dept. of Pharmacology, Seattle, WA, 1996-2010
- Antonio Diez-Noguera – U. of Barcelona, Dept. of Physiology & Pharmacology, Barcelona, Spain, 1996
- Kate Albert / Paul Greengard – Cornell Medical Center/Psychiatry, Rockefeller University, New York, NY 1996-1998
- Kevin Campbell – U. of Iowa, Dept. of Physiology, HHMI, Iowa City, IA 1997-1998
- Amita Sehgal – U. of Pennsylvania, Dept. of Neuroscience, HHMI, Philadelphia, PA, 1997-1999
- Margarita Dubocovich – Northwestern U. School of Medicine, Dept. of Molecular Pharmacology, Chicago, IL 1998-2004
- Enrico Gratton – UIUC, Dept. of Physics, Fluorescence, Dynamics Lab, Urbana, IL 1998-2005
- Ben Bahr – U. of Connecticut, Dept. of Pharmacology & Toxicology, Storrs, CT 2000-2004
- Michael Uhler – U. of Michigan, Dept. of Biochemistry & Neuroscience, Neuroscience Institute, Ann Arbor, MI 2000-2004
- **Lee E. Eiden** – Chief, Laboratory of Molecular Neuroscience, NIMH Intramural Program, Bethesda, MD 2001-2012, 2018-2019
- Paul A. Gold – UIUC, Dept of Psychology & Neuroscience, Champaign, IL 2003-2012
- Ralph G. Nuzzo – UIUC, Materials Research Laboratories, DOE, and Dept. Materials Sci. Engineering & Chemistry, Urbana, IL 2003-2010
- Allan Levey – Emory University School of Medicine, Dept. of Neurology, Atltanta, GA 2004-2005
- Vladimir Gelfand – Northwestern University School of Medicine, Dept. of Cell Biology, Chicago, IL 2004-2008
- **Peter M. Yau** – UIUC, Director, Proteomics Center, Carver Center for Biotechnology, Urbana, IL, 2005-present
- **Gabriel Popescu** – UIUC, Electrical & Computer Engineering and Beckman Institute, Urbana, IL 2006-present
- David Welsh – U. of California, San Diego, Dept. of Biology, San Diego, CA 2007-2012
- **Rashid Bashir** – UIUC, Head, Bioengineering, and Electrical & Computer Engineering and Micro & NanoTechnology Labs, Urbana, IL 2006-present
- **Taher Saif** – UIUC, Mechanical Engineering, Urbana, IL 2008-present
- C. Lee Cox – UIUC, Molecular & Integrative Physiology, now Head of Physiology, Michigan State University, 2007-2012
- Todd P. Coleman – UIUC, Electrical & Computer Engineering, and Bioengineering, U. of California, San Diego, Dept. of Biology, San Diego, CA 2008-2015
- David Murphy – Bristol University, UK, Physiolology, Bristol, UK 2010-2013

- **HyunJoon Kong** – UIUC, Chemical & Biomolecular Engineering, Urbana, IL 2012-present
- Kristopher Killian – UIUC, Materials Science & Engineering and Micro & NanoTechnology Labs, Urbana, IL 2013-2016
- **Stephen A. Boppart** – UIUC, Electrical & Computer Engineering and BioImaging at the Beckman Institute 2013-present.
- Xiuling Li – UIUC, Electrical & Computer Engineering and Micro & NanoTechnology Labs, Urbana, IL 2014-2017
- Justin Williams – Wisconsin, Biomedical Engineering, Madison, WI 2014-2016
- Pari Sengupta – UIUC, Bioengineering, BioImaging at the Beckman Institute 2014-2016
- Rohit Bhargava – UIUC, Bioengineering 2015- present
- **Brad Sutton** – UIUC, Bioengineering 2018-present
- Laura Villafañe – MIT, UIUC, Aerospace Engineering 2018-2019

RESEARCH TRAINING and MENTORSHIP

Visiting Faculty and Postdoctoral Associates

Lia E. Faiman – 1989-2004
Senior Research Scientist, PhD - Purdue University
Current Position: Retired

Eve A. Gallman – 1990-1998
PhD University of North Carolina, NIH Postdoctoral Fellow, 1990-1993
Current Position: Associate Professor of Neurology, Georgia Regents University/University of Georgia Medical Partnership

Jian M. Ding – 1991-1998

Research Scientist, Asst. Research Prof., MD, Shanxi Med. College, China, PhD – U. of S. Carolina
Current Position: Assoc. Professor, Physiology Dept., East Carolina University, Greenville, NC

Shelley A. Tischkau – 1995-2001
Postdoctoral Fellow, PhD – UIUC, NIH Postdoctoral Fellow, 1996-1998
Current Position: Professor and Head, Pharmacology, SIU Medical School

Penny W. Burgoon – 1997-2004
Postdoc Research Assoc., PhD – Ohio St. Univ., NIH Postdoc. Fellow, 2001-2004
Current Position: Director, Office of Policy, Communications, and Education (OPCE), National Center for Advancing Translational Sciences, NIH, Bethesda, MD

Sheue-Houy Tyan – 1998-2006
Postdoc Research Assoc/Research Scientist, PhD – Natl Tsing-Hua Univ, Taiwan
Current Position: Research Scientist, Neuroscience, UCSD; National University, Singapore Deceased.

Shalini Manchanda – 1999-2000
Clinical Research Sleep Physician, Asst. Clinical Prof., College of Medicine, MD, New Delhi
Carle Clinic, Board Certified in Sleep Med., Urbana, IL, IUPUI, Indianapolis, IN
Current Position: Assoc Prof Clinical Medicine, Division of Pulmonary, Critical Care, Sleep and Occupational Medicine, Indiana University

Jennifer W. Mitchell – 2001-present
Postdoc. Research Associate, PhD – Univ. of Illinois, NIH Postdoc. Fellow, "*Interacting Signals in Circadian Clock Regulation,"* 2001-2004, Rsrch Scientist, 2006-present
Current Position: Research Scientist, Cell & Developmental Biology, UIUC

Kathy Bottum – 2003-2006
American Heart Association Fellow-to-Faculty Awardee, *"The Suprachiasmatic Nucleus as a*

Model for Neuroprotection", MD/PhD, UIUC, Postdoctoral Fellow
Current Position: Clinical Professor, SIU Medical School

Christian Beaulé – 2003-2006
Postdoc. Research Associate, PhD – Concordia Univ, Montreal, 2003
Postdoc Fellowship, Govt. of Québec, "*Behavioral, Molecular and Neurophysiological Characterization of the Role Played by Retinal Ganglion Cells Containing the Photopigment Melanopsin in Circadian Photoentrainment*," 2003-2005
Natural Sciences & Engrg. Research Council of Canada (NSERC) Postdoc Fellowship, May 2005-April 2006
Postdoctoral Fellow, Neuroscience, Washington University of St. Louis 2006-2010
Current Position: Director, Strategic Development Initiatives, University of Ottawa, Canada

Jessica W. Barnes – 2004-2005
NIH/NICHD Developmental Psychobiology & Neurobiology Training Grant, Postdoc Trainee, April 2004-July 2005
Current Position: Postdoc Fellow, Dana Farber Cancer Institute, Harvard Medical School

Patty Kandalepas Andrews – 2009-2010
BS, Loyola Univ. Chicago, IL 1998, MA, Univ. of Chicago, 1999, PhD Neuroscience Program UIUC, 2009, NIH/NHLBI American Recovery & Restoration Act Postdoc Fellow, UIUC, May 2009-2010. Postdoctoral Fellow 2010 – 2014: Robert Vassar Lab, Neurology, Northwestern Univ. School of Medicine, Chicago, IL
Current Position: Senior Scientist, Abbott Diagnostics, Lake Forest, IL

Yoon Sik Kim – 2016 - 2017
PhD, Neuroscience, Korea University College of Medicine
Postdoc, Korea University College of Medicine, Dr. Yang In Kim, 2010-2011
Postdoc, UCLA, Psychiatry and Biobehavioral Sciences, Dr. Christopher Colwell, 2015-2016
Current Position: Postdoctoral Fellow, St. Joseph's Medical Center, Phoenix, AZ

Rajashekar Iyer – 2018
BS, SASTRA University, India 2009; PhD, Cell & Developmental Biology, UIUC 2018
Thesis: *miR-125b Toggles Dynamics and Structure of Dendritic Filopodia in Development of Hippocampal Neurons*
2018 Cell and Developmental Biology Platform Presentation Award
Thesis Defense February 2018

Eman Hamad – 2022 - 2023
BchMed, University of Alexandria, Egypt, MS, Neurosurgery, Univ. College, London, UK, PhD, Neuroscience, UIUC 2022
Thesis: *Brain Glymphatic Flow Inhibited by Circadian Disruption and Increased by Arginine Vasopressin*
Beckman-Brown PostDoctoral Fellowship, 2022-2023
Current Position: Medical Residency: Child Neurology, UNJ Jersey Shore 2023

Eung Chung Kim – 2023 – present
Current Position: Postdoctoral Fellow, Beckman Institute for Advanced Science & Technology
Generating a blood-brain barrier from human induced pluripotent stem cells harboring Per1-LUC

SUPERVISION OF STUDENT RESEARCH

Graduate Student Research (Research training period included)

James M. Connor – 1983-1985
BS - Blackburn College, IL 1983, MS – Physiology, UIUC, 1985, MS – Computer Science, UIUC 1987
Current Position: Res. & Devel., Computer Science Application, Motorola, Rolling Meadows, IL

Rebecca A. Prosser – 1985-1989
BA – Pomona College, CA, 1981, PhD – Neural & Behavioral, 1989, Postdoc – Stanford University
Current Position: Professor, Dept. Biochem., Cell, & Mol. Biology, Univ. of Tennessee

Angela J. McArthur – 1988-1993
BS – Eastern Illinois Univ. 1986, PhD – Physology UIUC 1989, PhD – Univ. of IL, Physiology, SITG Trainee 1993, PD Sleep/Mood Disorder Lab, Oregon, Health Sci. Uni. 1993-1996
Current Position: Scientific Editor, St. Jude Children's Research Hospital, Memphis, TN

Thomas K. Tcheng – 1988-1998
BS – Illinois State University, 1988, NIMH Behavioral Neuroscience Trainee, PhD – UIUC Neuroscience Program 1998
Thesis: *Functional Organization and Information Processing Within the Suprachiasmatic Nucleus Assessed by Multiunit Recording in vitro*, 1999
Current Position: Dir. of Research, NeuroPace Inc., Mountain View, CA 2005-present

E. Todd Weber – 1989-1994
BS – Slippery Rock Univ. 1998; MS – UIUC 1990; DOD Research Fellow, School of Aerospace Medicine, San Antonio, TX; PhD – Physiology UIUC 1994
Current Position: Professor, Dept of Biology, Rider University, Lawrenceville, NJ

Marija Medanic – 1989-1994
BS – UIUC 1988, MS – UIUC 1990; NIH SIBTG Trainee Physiology, PhD – Physiology 1995
Current Position: Mother, Albuquerque, NM

Chen Liu – 1990-1995
BS – Beijing University, MS – National Academy of Sciences PRC, PhD – UIUC Neuroscience Program 1995
Current Position: Software Designer at Labvantage, NJ

Steven M. DeMarco – 1991-1994
BS – Cell & Structural Biology UIUC 1992; MS – Biology UIUC 1994
Post-Graduation: Graduate Student, Dept .of Neuroimmunology, Mayo Clinic, MN
Current Position: Director of Preclinical Development, Ra Pharmaceuticals, Cambridge, MA

Amy Fox – 1992-1995, 1996-1997
BS – Biology with Highest Distinction UIUC 1995; Hughes Undergraduate Research Awardee Colgate-Palmolive Fellowship Awardee, MS – Physiology UIUC 1997
Current Position: Research Specialist, Berlex Corporation, Pleasant Hill, CA

Dong Chen – 1993-1999
BS – Neurobiophysics, University of Science & Technology, An Hui, PRC 1991; MS – Physiology UIUC 1994; MS – Computer Science UIUC 1998, PhD – Physiology UIUC 1999
Thesis: *Integrated Entrainment of the Suprachiasmatic Clock by the two Neurotransmitters of the Retinohypothalamic Tract: Glutamate and PACAP*, 1999
Current Position: Software Engineer, Microsoft Research Institute, Redmond, WA

Steven Shinall – 1994-1995
BS – Physics UIUC 1992; MS – Biology UIUC 1996
Current Position: PhD – Dept. of Immunology, Univ. of Iowa; Mgr., External Grants Committee, Takeda Pharmaceuticals, IL

Amanda Hunt – 1993-2001
BS – University of Texas – Southwestern, 1993; NIH Cell & Mol. Biol. Trainee, 1993-1996; Clark Fellowship 1995;
Dissertation Fellow 1999; PhD – Neuroscience UIUC 2001
Thesis: *Investigation of the Signaling Mechanisms of the Pineal Hormone Melatonin in the in vitro Rat Suprachiasmatic Nucleus*, 2001
Current Position: Technical Specialist, U.S. Department of Veteran's Affairs, Washington, DC.

William J. Hurst – 1994-2001

BS – Penn State University, PA 1993; PhD – Cell & Structural Biology UIUC 2001; NIH Trainee, Systems and Integrative Biology Training Grant

Thesis: *Investigation of the SCN 2.2 Cell Line as a Model of the Central Mammalian Circadian Pacemaker,* 2001

Current Position: Clinical Research Scientist, Sanofi, Bridgewater, NJ

Weimen Zen – 1997-1998

BS – Xiamen University, An Hui, PRC 1991; MS – Biology, Eastern Illinois Univ. 1995; MS – Biology UIUC, 1998

Post-Graduation: Graduate School in Computer Science

Liana Artinian – 1995-2001

BS – Med. Biophys. Moscow Med. Inst., 1981; MS, MD – Mol. Pharm. Moscow Med. Inst, 1984; MS – Physiology UIUC 1997; PhD Physiology, UIUC 2001

Thesis: *Cholinergic Regulation of Circadian Rhythms in the SCN: Characterization of Signaling Mechanisms and the Role of Intracellular Calcium in the Directionality of Clock Resetting*, 2000

PhD – Postdoc Res. Assoc., Cell Biology, Emory Univ. of School of Med., GA

Current Position: Lecturer, Georgia State University, Atlanta, GA

Gordon F. Buchanan – 1994-2003, MD 2004

BS – Biology Honors, Chemistry, UIUC 1994; UIUC Medical Scholars Program/Physiology

MS – Physiology UIUC 1997

PhD – Physiology UIUC 2003, MD 2004

Student-Ranked Outstanding Teaching Assistant, UIUC, *1995, 1996*

NIH Predoctoral Trainee – Systems & Integrative Biology Training Grant, NINDS, 1997-2000

Graduate Student Meeting Award, FASEB Meeting on Chronobiology, Snowmass, CO, 1998

Walter Rice Craig Fellow UIUC College of Medicine, 1998

Meeting Fellow/Selected Speaker, Ninth Symposium on Subtypes of Muscarinic Receptors, Houston, TX, 2000

Graduate College Travel Award, UIUC, 2000

NIHM MD/PhD National Research Service Award, 2001-2004

Outstanding Contribution to the Dept. of Molecular and Integrative Physiology, UIUC, 2003

Thesis: *Cholinergic Regulation of the Mammalian Circadian System: Phase Shifting in vivo and in vitro in Wildtype and M_1 Knockout Mice Induced by Cholinergic Agonists*, 2003

MD –Medical Scholars Program, UIUC, 2004

Medical Intern, Primary Care Program, Yale University, June 2004 - June 2005

Neurology Resident, Neurology Department, Yale University/Yale-New Haven Hospital, July 2005 – June 2008

Bannister Award, Neurology Dept., Yale University, 2007

Meeting Fellow, Consortium of Multiple Sclerosis Centers Annual Meeting, Washington, DC, 2007

Post Graduate Position: Instructor, Neurology Dept., Yale Univ. School of Medicine, 2008-2014

Attending Neurologist, West Haven Veteran's Affairs Medical Center, 2008-2014

Fellowship Training Grant in Sleep Medicine, Jazz Pharmaceuticals, *2008-2009*

Veteran's Affairs Special Fellowship in Neuroscience, West Haven Veteran's Affairs Medical Center, *2008-2010*

Current position: Assistant Professor, Neurology, Board-Certified Physician, Psychiatry & Neurology, University of Iowa School of Medicine, Iowa City, IA, 2015-present

Jeffrey A. Barnes – 1996-2004

BS – Biotechnology, Wooster Poly Tech, 1996; UIUC Med. Scholars Program/Cell & Structural Biology; NIH Trainee Systems & Integrative Biology Training Grant; Finalist, Proctor & Gamble Res. Award, 2000; PhD – Cell & Structural Biology, UIUC 2004; Fellow, Center for Hematologic Oncology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, 2008

Thesis: *Timeless mRNA in the SCN clock*
Current Position: Medical Oncologist, Massachusetts General Hospital Cancer Center's Comprehensive Cutaneous Lymphoma Program and Center for Lymphoma

Jessica W. Barnes – 1996-2005
BS – Biotechnology, Wooster Poly Tech, 1996; NIH Trainee Systems & Integrative Biology Training Grant; PhD – Cell & Structural Biology, UIUC 2004; NICHD Postdoc Trainee in Developmental Neuroscience 2004-2005
Thesis: *GLU/PKG mechanism*
Current Position: Research Fellow, Dana-Farber Cancer Institute, Children's Hospital, Harvard Medical School, Boston

Peder Lindberg – 1998-2005
BA – Carleton College, Northfield, MN 1998
PhD – Neuroscience 2005
NIH Trainee, Systems & Integrative Biology Training Grant
Thesis: *Molecular targets of PACAP*
MD – Medical Scholars Program, UIUC 2008
Alpha Omega Alpha Medical Honorary, UIUC 2006
Residency Emergency Medicine, University of Chicago Hospitals
Current Position: Physician, Emergency Medicine Department, Advocate Lutheran General Hospital, Park Ridge, IL

Yanxun Yu – 2003-2007
BS – University of Wuhan, Wuhan, Hubei, PRC 1998
PhD – Neuroscience, UIUC 2007
Thesis: *Redox regulation of the circadian behavior*
Current Position: Postdoc at Dept. of Biology & Natl.Center for Behavioral Genomics, Brandeis Univ.

Sabra Abbott – 2000-2005, MD 2008
BS – Psychology cum laude, Carleton College, Northfield, MN, 1999
MS – Molecular & Integrative Physiology Physiology UIUC, 2002
University of Illinois Fellowship, 2000
PhD –Molecular & Integrative Physiology, 2005
NIH Predoctoral Trainee – Systems & Integrative Biology Training Grant, NINDS, 2001-2003
Outstanding Trainee Award, Sleep Research Society 2003
Eli Lilly Graduate Travel Award –Neuroscience UIUC 2003
Summer Research Grant, UI College of Medicine 2003
Sleep Research Society, Trainee Research Merit Award, APSS meeting, 2004, 2005
MD/PhD National Research Service Award, NINDS, 2004-2007
American Academy of Sleep Medicine, Young Investigator Award, Honorable Mention, 2005
Alpha Omega Alpha Medical Honorary, 2007
University of Illinois College of Medicine Research Symposium 1st place Clinical Research Poster, 2007
Summer Sleep Intern, Harvard Med. School, 2007
National Sleep Foundation Young Investigator Award, 2008
MD – Medical Scholars Program, UIUC, 2008
Thesis: *Regulation of Circadian Rhythms by Sleep-Wake Centers in the Brainstem and Basal Forebrain*, 2002
Combined Medical Residency in Gen. Med., Mass. General Hospital, and Neurology, Harvard Medical School, Clifford Saper, MD, preceptor, Beth Israel Deaconess, Medical Center, Cambridge, MA
Chief Resident in Neurology, Beth Israel Deaconess Medical Center
Clinical Fellowship in Sleep Medicine at Northwestern University Medical School
Current Position: Assistant Professor, Neurology, Northwestern University Feinberg School of Medicine; Board-Certified Physician, Neurology and Sleep Medicine, Northwestern Medical

Group

Matthew Gerdin – 2001, 2002
BA – St. Olaf College, Northfield, MN, Biology and Psychology 1996; PhD – Northwestern Univ. Evanston, IL
Current Position: NIMH / NIH Lab of Cell & Molecular Regulation, Bethesda, MA; AAAS Diplomacy Fellowship, US State Dept., Bureau of Oceans, Environment and Science, Office of Policy Initiatives and Coordination

Laura Pace – 2001-2007
BS – SUNY Stony Brook, NY 1998; Med Scholar, PhD – Neuroscience Program; Univ. of IL 2007; MD – 2009
Thesis: *Role of cGMP protein kinase in SCN regulation*
Residency in Internal Medicine, University of Utah Hospital, Salt Lake City, UT
Current Position: Clinical Specialization in Gastroenterology, UCSD, San Diego, CA

Ying Wang – 2002-2005
BS – Beijing University, Beijing, 1999; Neuroscience Program, Univ. of IL
Thesis: *GLU + ACh signaling*
Current Position: Biotech in Tokyo, Japan

Sufang Huang – 2002-2008
BS – Tsinghua Univ., Beijing, 1998; MS – Tsinghua Univ., Beijing, 2001; Cell & Developmental Biology, Univ. of IL; Outstanding Teaching Assistant, Cell & Developmental Biology 2006
Thesis: *The Role of Atypical PKC in the Plasticity of the Circadian Clock in the Rat Suprachiasmatic Nucleus*, 2008
Current Position: Principal Statistical Programmer, Novartis, New York, NY

Patty Kandalepas Andrews – 2002-2009
BS – Loyola Univ,, Chicago, 1998; MA – University of Chicago, 1999; PhD – Neuroscience Program, Univ. of IL 2009; John G. and Evelyn Hartman Heiligenstein Outstanding Teaching Asst., Cell & Dev. Biology 2007; Named among Teachers Ranked Excellent by Univ. of IL students, 2007; Neuroscience Program Fellowship 2008-09; IGB Fellow Travel Award, BioVision Sciences Forum, Chicago 2010; SRBR Trainee Excellence Award 2010;
Postdoctoral Fellow, Robert Vassar Lab, Neurology, Northwestern University School of Medicine, Evanston, IL
Thesis: *Mechanisms of melatonin action on the SCN molecular clockwork*
Current Position: Senior Scientist, Abbott Diagnostics, Lake Forest, IL

Larry Millet – 2003-2009
BS - Portland St. Univ., Oregon, 2001
PhD – Cell & Devel. Biology, UIUC, 2009; Named among Teachers Ranked as Excellent by Univ. of IL students in 2007
NIH Training Grant: Developmental Psychobiology & Neuroscience Trainee 2008-09
Thesis: *Neural repair in the microcircuit domain*
Postdoc Fellow in Elec. & Computer Engineering (R. Bashir), Micro & NanoTech Labs, UIUC 2009-13
Current Position: Senior Scientist, Oak Ridge National Labs, Oak Ridge, TN

Norman Atkins, Jr. – 2004-2009
BS – Birmingham-Southern College 1998; MBA – Univ. of IL; PhD – Neuroscience Program, Univ. of IL 2009; Kimberley-Clark Certificate in Business Admin Scholarship Recipient 2002; Runner-Up, V. Dale Cozad, Business Plan Competition 2003; BioVision Nxt Fellow, BioVision World Life Sciences Forum, Lyon, France 2003; Neuroscience Program Fellowship, 2004-2005; SORP Leader, Grad College UIUC 2003-2006; Selected for Participation, 7th Annual Student & Postdoc Symposium of W.M. Keck Center for Behavioral Biology 2005; Research Asst.,

NIH / NIDA Center for Neuroproteomics 2005; Illinois Summer Neuroscience Initiative Fellowship 2006-2007; Merck United Negro College Fund Postdoc Fellow, Northwestern University 2010; SRBR Trainee Excellence Award 2010
Thesis: *Functional Peptidomics: Combining Discovery-Based Mass Spectrometry and Neurophysiology to Explore Communication of Phase-Resetting Cues in the Rat Suprachiasmatic Nucleus*, 2009
Postdoc Fellow, Center - Sleep & Circadian Neurobiology (F. Turek), Northwestern U.
Current Position: Medical Affairs, Medical Director for Sleep-Wake Disorders, Eisai U.S., Inc.

Jennifer (Hanson) Shephard – 2004-2010
BS – Materials Engineering, Univ. of Michigan; Materials Engineering UIUC; Engineering in Biomedicine Conference Award to MIT; PhD – Materials Science and Engineering 2010
Current Position: 3M, Minnesota

Jennifer M. Arnold – 2006-2012, MD 2015
BS – Biology, Southeast Missouri State University 2005
MS – Molecular & Integrative Physiology, UIUC, 2007
Named among Teachers Ranked as Excellent by University of IL students in 2007
PhD – Molecular & Integrative Physiology, UIUC, 2012
NIH Trainee: Cell & Molecular Biology Training Grant, NIGM, 2007-2009
Hazel I. Craig Fellowship, COM Summer 2010
Thesis: *Actin's Role in Signaling Light-Induced Phase Shifts in the Mammalian Circadian Clock,* 2012
MD – Medical Scholars Program, UIUC, 2015
Neurology Residency, University of Michigan Health Systems & Hospitals, Ann Arbor, MI
Current Position: Asst. Professor of Neurology, University of Michigan Health Systems & Hospitals, Ann Arbor, MI

Tongfei (Alex) Wang – 2006-2012
BS – Peking University 2005
MS – Molecular & Integrative Physiology, UIUC 2008
PhD – Molecular & Integrative Physiology, UIUC 2012
Thesis: *Circadian Rhythms of Redox State and Regulation of Neuronal Excitability in Suprachiasmatic Nucleus of Rodents,* 2012
Postdoc in Dr. Lily Jan's lab at U.C. San Francisco, 2012 – 2020
Current Position: Principal Investigator, Chinese Institute for Brain Research, Beijing, China, 2020 – 20xx

Harry Rosenberg – 2008-2014
BS – Biochemistry, University of Chicago 2008
MS – Molecular & Integrative Physiology, UIUC 2010
Scholarship to NSF-funded Beckman Institute Summer School in Imaging and BioPhotonics, 2009
PhD – Molecular & Integrative Physiology, UIUC 2014
MD – Medical Scholars Program, UIUC 2017
NIH Trainee, Development Psychobiology and Neurobiology Training Grant, NICHD, 2010-13
Scholarship, RIKEN Brain Sciences Institute Summer School in Neuroscience, Tokyo, Japan, 2014
Thesis: *Diurnal and Stimulated Astrocyte Morphology Dynamics in the Rodent Central Nervous System,* 2014
Current Position: Intern in Neuropathology, Brigham & Women's Hospital, Harvard Medical School

Siyuan Christopher Liu – 2010-2016
BS – Chemical Engineering, Cornell University 2010
PhD – Neuroscience, UIUC, 2016
MD – Medical Scholars Program, UIUC, 2019
NSF Neuroengineering IGERT Trainee, July 2010-2012
Thesis: *Emergent Properties of Neuronal Networks for the Creation of Oscillatory Biological*

Machines
Current Position: Neurology Resident, Feinberg School of Medicine, Northwestern University, Chicago, IL

Anika Jain – 2009-2017
BS – University Institute of Engineering & Tech 2007
PhD – Cell & Developmental Biology, UIUC. 2017
Global Enterprise for MicroMechanics & Molecular Medicine (GEM4, Scholarship to NSF-funded Summer School on Cellular & Molecular Mechanics, MIT-UIUC Consortium 2009)
NSF IGERT Trainee: Cellular & Molecular Mechanics and BioNanotechnology (CMMB) 2010-12
Outstanding TA in Molecular & Cellular Biology Award, 2017
Doctoral student in Cell & Developmental Biology – 2010 - 2017
Thesis: *Neuronal Filopodia Borne Along Tips and Shafts of Dendrites Comprise Two Distinct Populations as Evidenced by Differences in Structure And Dynamics*
Postdoctoral Research Assistant, Gillette lab, UIUC, July 2017-July 2018

Rajashekar Iyer – 2010-2018
BS – SASTRA University, India 2009;
PhD – Graduate student in Cell & Developmental Biology, UIUC 2018
Thesis: *miR-125b Toggles Dynamics and Structure of Dendritic Filopodia in Development of Hippocampal Neurons*
2018 Cell and Developmental Biology Plataform Presentation Award
Thesis Defense February 2018
Postdoctoral Research Assistant, Gillette lab, UIUC, Feb-Dec 2018
Clinical Genomics Specialist thru Senior Scientific Consultant, Genomics Biotech, PierianDx, Inc., St. Louis, MO Jan 2018 – Jan 2023
Scientist and Product Development, Velsera Precision Medicine (incorporated Pierian), St. Louis, MO Jan2023 - present

Olivia Cangellaris – 2011-2018
BS – Bioengineering UIUC, 2011
MS – Bioengineering UIUC, 2014
Graduate student in Bioengineering and Medical Scholars Program, UIUC
NeuroEng. IGERT Trainee 2011-2013
Thesis: *Guiding Development of Neural Circuits on a Novel 3D Microtube Multielectrode Array Platform*
Thesis Defense, October 2018
PhD – Bioengineering UIUC, 2018
MD – University of Illinois College of Medicine, UIUC, 2021
Currently: Resident in Pediatrics, University of Chicago Pritzker School of Medicine, 2021-

Sam Irving – 2011-2017
U.S. Marine Corps, 2002-2006
BS – Microbiology, Immunology, Molecular Genetics, UCLA 2010
MS – Molecular & Integrative Physiology, UIUC 2012
PhD – Molecular & Integrative Physiology, Medical Scholars Program, UIUC 2017
Medical Scholars Program Advisory Committee (MSPAC) Incoming Class Rep and Secretary; MSPAC University Medical Student Council General (USMC) Rep
James E. Heath Award for Excellence in Teaching in Physiology, 2017
Thesis: *The Role of Light Signaling on Astrocytic Morphological Plasticity in the Adult Male Rat Suprachiasmatic Nucleus*
MD – Medical Student, University of Illinois College of Medicine, 2017-2020
Current Position: Intern in Emergency Medicine, Univ. of Iowa Medical School, 2020-

Mia Yu Bothwell – 2012-2018
- BA – Amherst College, double major in Fine Arts and Biology, 2007
- MS – Molecular & Integrative Physiology, UIUC 2013
- Teaching Assistant Ranked as Outstanding by Their Students, 2015-2017 MCB Courses
- Thesis: *The Role of Redox Oscillations in Circadian Physiology of the Supchasmatic Nucleus and Hippocampus*
- James E. Heath Award for Excellence in Teaching in Physiology 2018
- Outstanding Thesis Award, Molecular & Integrative Physiology 2018
- PhD – Molecular & Integrative Physiology, UIUC 2018
- MD – Medical Scholars Program, University of Illinois College of Medicine. 2020
- Current Position: Intern in Neurology, Brigham & Women's Hospital, Harvard Medical School, 2020-

James Chu – 2011-2018
- BA – Biochemistry/Molecular Biology at Lewis & Clark College, Portland, OR 2010
- PhD – Cell & Developmental Biology UIUC 2018
- Teaching Assistant Ranked as Excellent by Their Students, 2016 MCB and COM Courses
- Thesis: *Characterizing Cerebellin-Short, A Novel Circadian Peptide, in the Rat Suprachiasmatic Nucleus*
- Current Position: Postdoctoral Research Associate, Neuro-oncology, King Li, Dean, Carle-Illinois College of Medicine, 2018-

Ghazal Naseri Kouzehgarani – 2012-2019
- BS – Tehran University, Iran
- MS – Nutritional Sciences, UIUC 2012
- MS – Statistics, UIUC, 2014-16
- PhD – Neuroscience, UIUC, 2019
- NSF IGERT Trainee: *Cellular & Molecular Mechanics and Bionanotechnology*
- Best 1st year research project awarded, Neuroscience Program, 2014
- Teaching Assistant Ranked as Excellent by their Students, 2016 MCB and COM Courses
- Beckman Institute Graduate Fellowship, 2018-19
- Neuroscience Program Graduate Fellowship, 2019
- Thesis: *Structural And Functional Heterogeneity of Cells in the Rat Hippocampus*
- Current Position: Postdoctoral Research Fellow, AbbVie, Inc., Lake Bluff, IL, 2020-

Collin Kaufman – 2015-present
- BS – Bioengineering, University of Maryland, College Park, December 2014
- Graduate student in Neuroscience, UIUC, 2015-2021
- Neuroscience Program Fellowship, Fall 2015
- Teaching Assistant Ranked as Excellent by their Students, 2016 MCB and COM Courses
- Graduate Trainee, NSF Training Program, Miniature Brain Machinery, 2018-2021
- PhD, Neuroscience, UIUC, 2021
- Current Position: Postdoctoral Associate, Sanford Burnham Prebys Medical Discovery Institute, San Diego, CA, 2021-

Nikita Tushar Modi – 2016-2017
- BS – Padmashree Dr. D.Y.Patil University, Biotechnology, 2012
- Postgraduate diploma (PGdip) - Government Law College, Intellectual Property Law, 2013
- Professional Science Master's Degree - University of Arizona, Applied Biosciences, 2015
- Graduate student in Molecular & Integrative Physiology, UIUC
- Presently – PhD program in Biochemistry, UIUC

Tauseef Bashir Shah – 2016-2018
- BS – Veterinary Medicine and Animal Husbandry, Sher-E-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST)

MS – Animal Sciences, SIU Carbondale, 2015
MS – Molecular & Integrative Physiology, UIUC, 2018

Zoë MacDowell Kaswan – 2016-2018
BS – Neuroscience, UCLA, 2014
MS – Physiological Sciences, UCLA, 2016
Graduate student in Neuroscience, UIUC

Karla P. Ramos-Cruz – 2017-present
BS – Chemical Engineering, University of Puerto Rico, Mayagüez, 2016
NSF REU Trainee, UIUC, Summer 2016
Graduate student in Bioengineering, UIUC, 2017-present; co-advisors, Rashid Bashir
SURGE and Sloan Fellowships, Bioengineering and the Graduate College
Graduate Trainee, NSF Training Program, Miniature Brain Machinery, 2018-present
Currently working in Bashir lab, UIUC; co-advised by Gillette

Amanda Weiss – 2018-present
BS – Neuroscience, Muhlenberg College, 2015
Research Assistant, Plasticity and Epilepsy Laboratory, UIUC, 2015-2017
MS – Molecular & Integrative Physiology, UIUC, 2019
Graduate student in Molecular & Integrative Physiology, UIUC, 2017-present
Graduate Trainee, NSF Training Program, Miniature Brain Machinery, 2018-present
Currently in lab

Miles Norsworthy – 2018 - present
U.S. Army, 2002 - 2012
BS – Molecular and Cellular Biology, UIUC, 2016
Graduate student in Cell & Developmental Biology, UIUC, 2017-present
Graduate Trainee, NSF Training Program, Miniature Brain Machinery, 2019 - present
Currently in lab

Eman Hamed – 2018 - 2022 (US Citizen)
MMBCh - University of Alexandria Faculty of Medicine, Alexandria, Egypt, 2016
Neurosurgery Intern, University of Alexandria University Hospital, 2017-2018
M.Sc. – Advanced Neuroimaging, University College London, 2017-2019
Graduate student in Neuroscience, UIUC, 2018-2022
Thesis: *Brain Glymphatic Flow Inhibited by Circadian Disruption and Increased by Arginine Vasopressin*
Beckman Institute Graduate Fellowship, 2019-2022
Beckman-Brown PostDoctoral Fellowship, 2022-2023
Current Position: Medical Residency: Child Neurology, UNJ Jersey Shore 2023

Taylor Jorgensen – 2020 -2023
BS – Neuroscience, University of Iowa, 2019
Graduate student in Neuroscience, UIUC, 2020-2023
Graduate Trainee, NSF Training Program, Miniature Brain Machinery, 2019-2023
Transferred to Ted Abel's lab, University of Iowa, near where her new husband lives

Quang Nguyen – 2020 - present
BS – Biochemistry, California State, Fresno, 2020
MS – Molecular & Integrative Physiology, UIUC, 2022
Graduate student in Molecular & Integrative Physiology, UIUC, 2020-present
Graduate Trainee,
Currently in lab

Tanner Joe Cress – 2023 – present
BS – Occidental College, CA
Graduate student in Chemistry, UIUC, 2021 –

Graduate Fellow, NIH Training Grant on Chemical Biology

Sarah Asif – 2023 - present

BA – Neuroscience, UI Chicago

MS – Neuroscience, Northwestern University

Graduate student in Neuroscience, UIUC, 2020-2023

Graduate Trainee, NSF Training Program, Miniature Brain Machinery, 2023

Undergraduate Student Research

Daniel Richard – 1991-1992

BS – Cell & Structural Biology, with Highest Distinction UIUC 1992; Hughes Undergrad Research Awardee; SOLS Award for Most Outstanding Undergraduate Research

Post-Graduation: Medical Student, University of Illinois, Chicago

Steven M. DeMarco – 1991-1994

BS – Cell & Structural Biology UIUC 1992; MS – Biology UIUC 1994; PhD – Molecular Neuroscience, Mayo Clinic, Rochester MN

Current Position: Director of Preclinical Development, Ra Pharmaceuticals, Cambridge, MA

Mike Szurek – 1993-1994

BS – Honors Biology UIUC 1994

Current Position: DDS, PhD, Dept. of Oral Biology, University of Minnesota

Amy Fox – 1992-1995, 1996-1997

BS – Biology with Highest Distinction UIUC 1995; Hughes Undergraduate Research Awardee Colgate-Palmolive Fellowship Awardee, MS – Physiology UIUC 1997

Current Position: Research Specialist, Berlex Corporation, Pleasant Hill, CA

Derek Timmermann – 1993-1994

BS – Cell and Structural Biology UIUC 1995

Current Position: MD, Emergency Medicine, OSF Saint Anthony Medical Center

Jeremy van Buren – 1996-1998

BS – Molecular & Integrative Physiology, UIUC

Post-Graduation: Grad Student, Physiology & Neurobiology, Northwestern Univ., Evanston, IL

Ariane Peralta – 1999-2003

Undergrad, Honors Biology

PhD – Environmental Sciences, UIUC

Current Position: Asst. Professor, Dept. of Biology, Eastern Carolina Univ., Greenville, NC

William German – 2002

Undergrad, Honors Biology

Post-Graduation: MBA, Kellogg, NWU

Craig Williamson – 2001-2003

Undergrad, Honors Biology

Post-Graduation: Truman Fellow in Science Policy, Washington, DC; Stanford Med. School

Jessica Jendrzejewski – 2002-2005

Undergrad, Integrative Biology

Post-Graduatoin: Medical School

Robaab Siddiqui – 2003-2005

Undergrad, Molecular & Cellular Biology, Colgate-Palmolive Fellowship Awardee

Post-Graduation: Medical School

Daniel Baluch – 2003-2006

Undergrad, Molecular & Cellular Biology

Post-Graduation: Loyola School of Medicine

Melanie Clark – 2005-2008

Undergrad, Molecular & Cellular Biology

Post-Graduation: Medical School, University of Chicago

Darshil Jhaveri – 2005-2008

Undergrad, Molecular & Cellular Biology, James Scholar Awardee 2007

Post-Graduation: Grad School, Johns Hopkins University

Christopher Beitel – 2005-2006
Undergrad, Neuroscience, Grinnell College, Summer 2005, 2006
Post-Graduation: Graduate School in Mathematics, UIUC

Christopher Storti – 2006-2008
BS – Molecular & Cellular Biology, UIUC 2008
Post-Graduation: Dental School

Michael Daunov – 2007-2009
Pre-med in MCB
Post-Graduation: Medical School

Kate Croegaert – 2007-2009
Pre-med in MCB
Post-Graduation: Medical School

Elizabeth Berry – 2008-2010
Current Position: CEO: Professional Tutoring Company

Elaine E. Orendorff – 2010-2012
Junior in Integrative Biology
Post-Graduation: Naval enlistment

Sophia Li – 2010-2012
Undergrad, Molecular & Cellular Biology
Post-Graduation

Sapana Parikh – 2010-2012
Undergrad, Molecular & Cellular Biology
Post-Graduation: Medical School

Kristina Ciaglia – 2010-2014
Undergrad, Molecular & Cellular Biology
Post-Graduation: Medical School

Grace Hopp – 2010-2014
Undergrad, Molecular & Cellular Biology
Post-Graduation: Medical School

Elizabeth McInerney – 2010-2014
Undergrad, Molecular & Cellular Biology
Post-Graduation: Dental School

Cassandra Robinson – 2010-2014
Undergrad, Molecular & Cellular Biology
Post-Graduation: Medical School

Aoi Shimomura – 2011-2014
Undergrad, Molecular & Cellular Biology
Post-Graduation: Graduate School, Univ. of Miami

Michael Adams – 2011-2013
Undergrad, Electrical & Computer Engineering
Post-Graduation: Graduate School

Nguyen Ha – 2011
NSF REU Awardee, Co-advised with Gabriel Popescu, Neuroscience, Amherst College

Ryan Tapping – 2012
Co-advising with Gabriel Popescu, Neuron analytical algorithms, UIUC
NSF-REU awardee

Kyle Gollon – 2014-2015
Undergrad, Psychology/Pre-Med, Chemistry minor

Forrest Ericksen – 2014-2015
Undergrad, Molecular & Cellular Biology

Hilary Lohman – 2014-2015
Undergrad, Molecular & Cellular Biology

Maura Slattery – Summer 2015

Discoveries in Bioimaging REU Student from St. Xavier University, Chicago

Jacob Bennick – 2014-2016
Undergrad, Molecular & Cellular Biology

Clarence Dukes – 2015-2016
Undergrad, Molecular & Cellular Biology

Quan Vo – 2015-2016
Undergrad, Molecular & Cellular Biology

Neil Patel – 2015-2016
Undergrad, Molecular & Cellular Biology

Chris Brenden – Summer 2016
Emergent Behavior of Integrated Cellular Systems (EBICS) REU Student from University of New Mexico

Karla Ramos – Summer 2016
Discoveries in Bioimaging REU Student from University of Puerto Rico

Amanda Sremac – 2016-2017
Undergrad, Molecular & Cellular Biology

Sarah Zwick – 2016-2017
Undergrad, Molecular & Cellular Biology

Vincent Fiorentino – Summer 2017
Emergent Behavior of Integrated Cellular Systems (EBICS) REU Student from Univ of Kansas

Jasmine Thornhill – Summer 2018
Emergent Behavior of Integrated Cellular Systems (EBICS) REU Student from Oakwood University, Huntsville, AL

Gabriel Evatt-Machado – Summer 2018
Frontiers in Biomedical Imaging REU Student from Georgia Tech University

Joshua Dupaty – Summer 2019
Frontiers in Biomedical Imaging REU Student from Mercer University, GA

Harsha Namburi – Summer 2019-present
Undergrad, Integrative Biology (B.S. 2021)
Beckman Institute Undergraduate Fellowship, 2019-20

Rachel Orpano – Summer 2021
Emergent Behavior of Integrated Cellular Systems (EBICS) REU Student from University of Iowa

Mimi Weary – Summer 2021
Emergent Behavior of Integrated Cellular Systems (EBICS) REU Student from UCLA

Lydia Ng – Fall 2021 - Spring 2023
Undergrad, Molecular &Cellular Biology B.S. 2023, with Distinction

Hanifa Mohammed –Spring 2020 – Spring 2023
Undergrad, Molecular &Cellular Biology B.S. 2023, with Honors

Andrew Nisipeanu – Spring 2022 – Fall, 2023
Undergrad, Molecular &Cellular Biology (Antip B.S. 2023)
MCB Summer Undergraduate Research Fellow, Beckman Undergraduate Research Fellow

Jack Storm – Spring, 2023 -
Undergrad, Molecular &Cellular Biology (Antip B.S. 2024)

Malia Jennings – Summer, 2023
Undergrad Trainee, NIH TG in Quantative Biology, Fiske University, TN

Advisory/Thesis Committees

Bioengineering

Kathryn Sullivan (Kong)
Karla P. Ramos-Cruz (Bashir/Gillette)
Olivia V. Cangellaris (Gillette)
Eunkyung (Clare) Ko (Kong/Bashir)

Gelson Pagan-Diaz (Bashir)
Lisa Pulcinski (Liu)
Yanfen Li (Kilian)
Liliana Khaertdinova (Bashir)

Biophysics and Computational Biology
Jeffery Brown (R. Gillette)

Cell & Developmental Biology
Tayyab Adil (Ceman)
James Chu (Gillette)
Rajashekar Iyer (Gillette)
Anika Jain (Gillette)
Phillip Kenney (Ceman)
Yun Li (Clayton)
Hui-Chia Yu-Kemp (Brieher)
Chih-Ying Chen (Stubbs)
James Kemp (Brieher)
Ambika Nadkarni (Brieher)
Monica Chinea Diliz Lannom (Ceman)
Christopher Seward (Stubbs)
Yuan Tian (Smith-Bolton)
Yuou Wang (Brieher)
Jeffery Barnes (Gillette)
Jessica Barnes (Gillette)
Diane DeZwaan (Freeman)
Shu Dong (Clayton)
Cory Funk (Katzenellenbogen)
Xioafeng (Frank) Ho (Greenough)
William Hurst (Gillette)

Chemistry
Shannon Murphy (Sweedler)
Krishna Anapindi (Sweedler)
Chaenyung Cha (Kong/Leckband)
James Checco (Sweedler)
Troy Comi (Sweedler)
Callie Courshore (Sweedler)
Jessica Jakubowski (Sweedler)
Ann Knolhoff (Sweedler)
Shannon Murphy (Sweedler)
Elizabeth Neumann (Sweedler)
Nobutoshi Ota (Sweedler)
Ming Zhong (Sweedler)

Chemical & Biomolecular Engineering
Max Rich (H. Kong)

Materials Sciences & Engineering
Jennifer (Hanson) Shephard (Nuzzo/Gillette)

Molecular & Integrative Physiology
Jennifer Arnold (Gillette)
Dong Chen (Gillette)

Colin Lee (R. Gillette)
Itamar Livnat (Sweedler)
Angela McArthur (Gillette)
Marija Medanic (Gillette)
Jennifer W. Mitchell (Best)
Kieran Noromoyle (Brieher)
Harry Rosenberg (Gillette)
Tongfei (Alex) Wang (Gillette)
E. Todd Weber (Gillette)
Samuel Irving (Gillette)
Mia Yu (Gillette)
Amanda Weiss (Gillette)
Quang Nguyen (Gillette)

Neuroscience

Rebecca Androwski (Schroeder)
Sarah Asif (Gillette)
Norman Atkins, Jr. (Gillette)
Shannon Bernache (Sweedler)
Adriana Bora (Sweedler)
Ekaterina Gribkova (R. Gillette)
Chen Huang (Gillette)
Eman Hamed (Gillette)
Graham Heusmann (Clayton)
Amanda Hunt (Gillette)
Taylor Jorgensen (Gillette)
Patty Kandalepas (Gillette)
Collin Kaufman (Gillette)
Peder Lindberg (Gillette)
Siyuan Christopher Liu (Gillette)
Zoë A. MacDowell Kaswan (Gillette)
Ghazal Naseri Kouzehgarani (Gillette)
Thomas K. Tcheng (Gillette)
Emily Tilamaand (Sweedler)
Ian Traniello (Robinson)
Johanna Vega (Kong/Leckband)

Electrical & Computer Engineering

Andrew Bower (Boppart)
Taewoo Kim (Popescu)

Mechanical Engineering – Massachusetts Institute of Technology

Sebastien Uzel (Roger Kamm)

Research Specialists / Coordinators of Research Programs

Ann Benefiel, BS, 2014-2020
Karen Weis, BS, 2003-2014
Maureen Holtz, BA, 2010-2013
Rand Hartsell, BA, 2007-2008
Stephanie Baker, BA, 2003-2006
Jamie Richards, BA, 2003-2005

TEACHING EXPERIENCE

Professor/Instructor (Graduate/Medical *; Undergraduate+ Courses)

2018-present	Miniature Brain Machinery Seminar*	University of Illinois
2014-present	Integrative Neuroscience* ,+	University of Illinois
2013	Biological Rhythms in Health & Disease* ,+	University of Illinois
2013	Discovery Course: *Discovering Circadian Rhythms Research*+	University of Illinois
2013	Individual Research Topics *Views of the Nature of Science* +	University of Illinois
2012	Experimental Methods for Biological Machines+	University of Illinois
2011	Special Topics in the Cytoskeleton, with Bill Brieher* ,+	University of Illinois
2010-present	Current Topics in Neurons & Glia* ,+	University of Illinois
2008-2012	Neurophysiology/Neuroethology*,+	University of Illinois
2005-2007	Dialogues in Neuroscience:* Crossing levels of analysis--From behavior to genes: Circadian rhythms	University of Illinois
2004-2007	Molecular Medicine: *Sleep Disorders	University of Illinois
2002-2010	Special Topics in Circadian Biology*,+	ellaUniversity of Illinois
2002	Special Topics in Molecular Plasticity In the Nervous System, with David Clayton*,+	University of Illinois
2001	Special Topics in Cell Biology* (cell signaling)	University of Illinois
2000-2002	Neurobiology of Motor Control / Kinesiology* (circadian rhythms and Consequences)	University of Illinois
1998-2002	Current Topics in Cellular Chronobiology*	University of Illinois
1997-2003	Cell & Molecular Neurobiology* (guest lecturer)	University of Illinois
1996	The Neurobiology of Time+	
2001	Special Topics in Cell Biology* (cell signaling)	University of Illinois
2000-2002	Neurobiology of Motor Control / Kinesiology* (circadian rhythms and consequences)	University of Illinois
1998-2002	Current Topics in Cellular Chronobiology*	University of Illinois
1997-2003	Cell & Molecular Neurobiology* (guest Lecturer)	University of Illinois
1996	The Neurobiology of Time+ (Institute)	Grinnell College
1995-2000	Graduate Student Survival Skills (Research Ethics & Survival Skills, co-originator of a new course)*	University of Illinois
1995	Receptors and Signal Transduction Mechanisms (co-organizer of new course)*,+	University of Illinois
1995	Hypothalamic Integration of Circadian Rhythms (summer school)*	Netherlands Institute for Brain Research
1995	*In vitro* Methods in Biomedical Studies*	University of Illinois
1994-1995	Integrative Neurophysiology,*,+ (Circadian Rhythms and Sleep)	University of Illinois

1991-2000	Medical Neuroscience* (Neurocytology, Axonal Transport and Degeneration, Synaptic Transmission, Neurophysiology, Neurochemistry, Neuropharmacology, Hypothalamus, Limbic System, Autonomic and Enteric Nervous Systems, Neuroimmunology, Consciousness, Sleep)	University of Illinois College of Medicine
1990-1995	Eukaryotic Cell Biology*,+ (Cell Signaling and Oncogenes)	University of Illinois
1989-1995	Research Topics in Physiology	University of Illinois
1992-1994	Current Topics in Cellular Neuroscience*,+	University of Illinois
1989-1993	Integrative Neurophysiology*,+ (Molecular and Cellular Mechanisms Underlying Neuromodulator Transduction)	University of Illinois
1986	Physiological Instrumentation: Mammalian Brain Slice Techniques*	University of Illinois
1984	Mammalian Physiology+ (Neurophysiology)	University of Illinois
1983	Integrative Neurophysiology and Neurophysiology Lab*	University of Illinois
1982-1995	Individual Research Topics*,+	University of Illinois
1981-1989	Comparative and Adaptational Physiology* (Circadian Rhythms)	University of Illinois
1978-1980	Honors Biology Curriculum+ – The Organism (Developmental Biology and Neurobiology)	University of Illinois
1978	Neurophysiology and Behavior+	U. of California, Santa Cruz

Lecturer (Graduate Courses)

1976	Neurochemistry & Neuropharmacology	U. of California, Santa Cruz
1972	Experimental Embryology and Morphology	University of Toronto

Graduate Teaching Assistant

1969-1973	Genetics	University of Toronto
1969-1970	Invertebrate Biology	University of Toronto
1968-1969	Cell Biology	University of Hawaii
1968-1969	Embryology	University of Hawaii
1967-1968	General Zoology	University of Hawaii

UNIVERSITY OF ILLINOIS SERVICE

Board of Trustees

- **Faculty Leaders Presentation**, Board Trustee Patrick Fitzgerald: Medicine-Science Frontiers presentation, March 12, 2015, Beckman Institute, UIUC, Urbana, IL
- **Faculty Leaders Panel/Presentation**, Board of Trustees Retreat: Health Science Opportunities, January 22, 2014, UIC campus, Student Center West, Chicago, IL.

President's Office

- **President B. Joseph White's University-Wide Strategic Plan Implementation/Progress Report Working Group**, 2006-2010
- **UIUC Strategic Plan Implementation/Progress Report Committee**, together with Vice Provost Richard Wheeler, Asso. Dean of Engineering Bruce Vojak, Assistant Provost for Assessment Stig Lanesskog, 2006-2010

Office of the Chancellor

- **Democratized Drug Discovery Initiative (D3I)**, M. Burke, Chr. Member, Charge to develop a white paper that guides the launch of an initiative to Democratize Drug Discovery. 2023. Beckman D3I Conf, June, 2023.
  M. Burke, Chr., R. Bhargava, Y. Diao, T. Fan, P. Hergenrother, *M. Gillette, H. Ji, Z. Madak-Erdogan, R. Mendenhall, C. Schroeder, R. Siebel, E. Tajkhorshid, A. Wagoner Johnson, J. Woods, H. Zhao, M. Loots, J. Moore, G.Robinson, C. Young
- **Chancellor's Health Sciences Visioning Committee,** S. Boppart, Chr. A *New Model for Technology-Inspired Health Innovation, Research, and Education,* Charge: to assess the University's Health Innovation Ecosystem and develop a pioneering vision for sustained global innovation in education and research impact on human health.
- S. Boppart, Chr, R. Bhargava, M. Burke, R. Dilger, S. Donovan, *M. Gillette, R. Hernandez, E. Hsiao-Wecksler, H. Kilicoglu, R. Mendenhall, Jeff Moore, E. Pomerantz, W. Rogers, C. Vanderpool, .A. Wagoner Johnson, .N. Cohen, P. Jushkevich, S. Koshy, M. Loots, G. Snyder, K. Wagenecht
- **Carle- Illinois Engineering-based Medical School**
  - *Faculty, 2017-present*
  - *Liaison Committee, 2015-present*
- Spoke to visitors to Campus regarding our innovative Neuroengineering research, in support of the new **Carle-Illinois College of Medicine:**
  - *BOT Member Patrick Fitzgerald, 2015*
  - *National Institute of Bioengineering Director Rodrick Pettigrew (NIH), 2015*
  - *Local potential donors to the Carle-Illinois COM*
  - *U of I Foundation Members, 2016*
- **Chancellor Phyllis Wise's Visioning Excellence into the Future,** 2012-2013
  - White-Papers in Neuroscience/Neuroengineering, 2013-2014
- **Chancellor Herman's & Provost Katehi's Strategic Plan Implementation**, 2008
- **Chancellor Richard Herman's Intellectual Visioning Group**, 2006-2007
- **Chancellor Nancy Cantor's Cross-Campus Initiative**, 2002-2003
  - Cross-Campus Retreat: Discussion Group Leader: *Bioengineering in a Nano World*
  - Co-Chair, Chancellor Nancy Cantor's White Papers on Biotechnology/Bioengineering Cross-Campus Initiatives, 2002
  - Chair, Chancellor's Cross-Campus Initiative, PharmaEngineering™: NeuroRepair in the Nano Domain, with Jonathan Sweedler, 2002–2005
  - Co-Chair, Chancellor's Cross-Campus Initiative, The Cell as a MicroMachine, with Jonathan Sweedler, 2002–2005

Office of the Provost

- **Cluster Hires in Neuroscience, Author of Translational *Neuroscience Cluster Hire White Paper,* 2023; Committee on Cluster Hires in Computational Neuroscience & Neuroengeering (SUCCESSFUL!), 2023**
-
- **Illinois Interdisciplinary Health Sciences Initiative Working Group, 2022 - 2023**
- **Health Sciences Strategy Task Force,** 2017-2022
- **Illinois Health Sciences Institute (IHSI) Executive Committee**, 2014 - 2020
- **Biology Coordinating Committee,** 2012-2014

- **Biology Coordinating Committee/Illinois Interdisciplinary Health Sciences Initiative Working Group,** Cluster Hires in Health & Wellness, Co-author of *Neuroscience & NeuroEngineering Cluster Hire White Paper,* 2013-2014
- **Center for Advanced Study** Advisory Board, 2014-2020
- **Center for Advanced Study** Nominator of new CAS Fellows, 2012-present
- **Center for Advanced Study** Fellow and Associate Selection Committe**e**, 2009-present
- **Provost Robert Easter's and Vice-Chancellor Dick Wheeler's Advisory Group**, 2009-2012
- **Provost Linda Katehi's Advisory Group**, 2006-2009
- **Provost's Resource Planning Group**, 2008-2009
- **Provost's Committee on Biology Education**, 2006-2008. Subgroup Leader: Cross-Disciplinary Opportunities
- **Provost's Women and Gender Equity Team**, 2006-2007
- **Biotechnology Council**, Office of the Provost, UIUC, 1999-2001

Campus-Wide / Vice Chancellor for Research and Innovation

- **Chan-Zuckerberg Initiative Team**, contributed to planning the UIUC consortium with NWU and U Chicago; developed the ideas for our research thrusts; contributed to writing the successful proposal, 2022 - 2023
- **Brain Research Foundation**, reviewer for Campus nominee, 2016
- **Delegation member to the Korean Institute for Science & Technology (KIST), to establish a collaborative research agreement with the University of Illinois,** 2016
- **VCR Division of Animal Resources Strategic Financial Planning Committee,** 2014-2015
- **Advisor for campus rankings for awards in the neurosciences,** 2015-present
- **Faculty Champion,** Vice Chancellor for Research & the College of Liberal Arts & Sciences: liaison with federal agencies and private endowments, 2014-present
- **Campus BRAIN Initiative Response Group**, May 2013-present
- **Campus Research Board:** Ad hoc reviewer, 2015
- **Abbott-Illinois Center for Nutrition, Learning, & Memory,** Executive Committee, 2013-present
- **Office of Technology Management (OTM) 'Share the Vision'** event presenter, speaking to venture capitalists and prospective investors, 2013
- **Review Committee -** campus nomination for the Vallee Foundation Young Investigator Award in Biomedical Sciences, 2013
- **Campus Grainger Enhancement of Bioengineering Initiative Response Group**, Discussion groups in BioImaging, Mechanobiology, Developmental Biology, May 2013
- **CNST 10th Annual Nanotechnology Workshop –** Invitation to chair Technical Session II at University of Illinois (MNTL) on May 2012, 2013. Declined.
- **Chair of Search Committee for Director of the Institute of Genomic Biology,** Office of VC Research. (members: David Clayton, Lizanne Destafano, Nigel Goldenfield, Taekijp Ha, Paul J.A. Kenis, Jay Kesan, Arthur Kramer, Stephen Long, William Metcalf, Don Ort, Nathan Price, Mayandi Sivaguru, Brenda Wilson), February-December 2011.
- **Institute for Healthcare Technologies, Advisory Committee.** 2011-2014.
- **Critical Research Initiatives (CRI)** – seed grant program on Health Science and Technology, January 2011-present.
- **Division of Biomedical Sciences (DBS) Faculty Development Committee** – Prepared report to Chancellor on recommendation for series of workshops on grant writing. Proposed a 2-day workshop, *Introduction to Clinical Research,* with Peter Imrey of the Cleveland Clinic. January 2011-2013.
- **Chancellor's Vision 2020: Illinois Interdisciplinary Health Sciences Initiative**: Center for Healthcare Technology Discussion Team Member, 2010-present
- **Center for Medical and Pharmaceutical Nanotechnology**, planning group, Irfan Ahmed, Convener, Micro- and Nano-Engineering Lab/ ECE.
- **Translational Research Thrust Initiative**: Restorative Neuroscience Leader, Author and Facilitator of

White Paper Proposal to hire 8 faculty spanning 3 research thrusts: (Neural Prostheses, Neuronal Network Repair, and Metabolism and Energetics of Neural Disease and Treatment, 2008-present. Coordinated initiative to recruit clinical neuroscientist, 2009-2010. From 2009-2010 we succeeded in:

- Coalescing faculty, department heads and senior administrators around the RNS initiative and the position we were offered to fill;
- Conducting a successful search/recruitment that included both Carle and UIUC (MIP, MCB, COM);
- Negotiating space in the Beckman and Mills Cancer Center at Carle, equipment and salary;
- Recruiting Daniel Llano, BS/MD/PhD from UIUC, with subsequent training/experience at Harvard Medical School/Brigham & Women's Hospital, U of Chicago and Vice President for Neuroscience Research, Abbott Labs, Chicago, IL; and
- Writing and securing funding to establish a new multi-user imaging facility for laser photostimulation with flavoprotein autofluorescence (LPFA), a new non-invasive technology, which will enable non-invasive dynamic imaging of brain circuits at the level individual cells/cell-groups. The Carver Charitable Trust awarded us $327,969 for this major equipment acquisition; I am the Principal Investigator.

- **UIUC Institutional Representative**, Regional Translational Research Committee (RTRC), NIH Roadmaps Initiative UIUC Representative, Regional Translational Research Committee, which includes Argonne Labs, Northwestern Univ., Univ, of Illinois-Chicago, Univ. of Chicago, 2004-2006
- **External Advisory Meetings** with Leo Selker, CEO Evanston Hospital-Northwestern University consortium during external evaluation of translational research
- **Research Presentation**, Diane Witt Visit, Director of Behavioral Neuroscience, National Science Foundation (NSF), May 2005
- **Research Presentation**, NIH/NIDA site visit: UIUC Center in Neuroproteomics of Cell-to-Cell Signaling, June, 2005, May, 2006, May, 2007
- **Beckman Institute Coordinating Committee**, 1998-2008
- **Faculty Ganfalon Carrier, UIUC Commencement Ceremony**, May, 2006
- Co-Chair, Vice Chancellor's **Translational Research Initiative Workshops** on Stem Cell and Regenerative Biology and on Therapeutic Devices/Delivery Systems, 2005
- Member, Campus **Translational Research Advisory Committee (CTRAC)**, 2004–2006
- **Search Committee**, Chair of Bioengineering, College of Engineering, UIUC, 2004–2005
- **Cross-disciplinary research training seminar in neuroscience, chemistry and materials engineering:** Originally organized around an award from the Keck Foundation, Neural Repair in the Micro-Circuit Domain, this continues as a collaborative research group that engages graduate students and postdoctorals in the Sweedler, Gillette and Nuzzo labs. The seminar continues to serve as a productive forum for students, postdocs and faculty in biology, materials engineering and chemistry. (2003-present)
- **Advisory Board**, Fluorescence Dynamics Laboratory, Department of Physics 2003–2005
- Speaker: "How to Build a Department and Retain Faculty" at the **Provost's Senior Administrator's Retreat**, UIUC, Allerton Conference Center, Monticello, IL, 2000–2002
- **Director Search Committee**, PostGenomic Institute, UIUC, 2000 –2003
- **Executive Committee**, Cell & Molecular Biology Training Grant, NIGM, 1998–present
- **Beckman Institute Advisory Committee**, Beckman Director, UIUC, 1998–2008
- **Search Committee for the Regional Dean**, College of Medicine Urbana-Champaign, Office of the Dean, College of Medicine, University of Illinois-Chicago, 1998
- *Ad Hoc* Member of **Research Policy Council**, science policy meeting with Rep. Vernon Ehlers (R-MI), 1997
- **Search Committee**, Director of Office of Lab Animal Research, Office of the Vice Chancellor for Research, 1997–1998
- *Ad Hoc* **Committee for Animal Quarantine Facility**, Office of V.C. Research, 1997
- **Center for Advanced Study**/Sabbatical Leave, 1996–1997

- **Unit One Advisory Board**, Office of V.C. for Student Affairs, 1995–1999
- **Grant Proposal Reviewer**, The University Research Board, 1988-present Beckman Institute, Animal Care Policy Committee, 1988–present

Institute for Genomic Biology (IGB)

- **Chair of Program Review Committee**, reviewing the performance of 1-2 themes. Starting spring 2013 for 5 years
- **Faculty Member**, Genomics of Neural Plasticity Theme, Institute for Genomic Biology, Gene Robinson, Theme Leader. This cross-disciplinary research group involves faculty and one postdoctoral from biology, psychology, bioengineering, statistics, physics and information sciences. Our bi-weekly meetings serve to educate the group as to the research nodes at which we can interact in addressing genomic problems of the nervous system.
- Participated in **bi-weekly planning meetings** of the Genomics of Neural & Behavioral Plasticity Theme. Discussed mutual research interests, faculty searches, equipment needs, space in the IGB. Evaluated papers in the genomics field and explored nodes of mutual interest/interaction.
- Planned and submitted one joint proposal: "Genomics, Neural Plasticity and Acetylcholine", an NSF **Multi-Investigator proposal**, Paul Gold (PI).
- Participating in planning a **Center/Program Project** on the genomics of neural plasticity to be submitted to the NIH.
- Hosted Guilo Tononi, Pioneer in Genomic Biology Seminar Series, 2005.
- Core faculty, **Multi-Cellular Dngineered Living Systems (M-CELS) Theme**. 2021 – present.

The Graduate College

- Neuroscience Faculty Representative**, ASPIRE Early Application and Campus Visit Program** (Diversity Recruitment Initiative), September 21, 2015
- **Office of the Dean, Postdoctoral Affairs Advisory Committee,** 2011-2014
- Member or Chair, 100+ students' Preliminary and Final Thesis Examination Committees in the Departments of Cell & Structural/Cell & Developmental Biology, Physiology & Biophysics/Molecular & Integrative Physiology, Genetics & Development, Animal Sciences, Neural & Behavioral Biology/Neuroscience Program, Psychology, Chemistry, and Materials Engineering, Biomolecular and Analytical chemistry methods. 1979–present
- Faculty Trainer, **NIH Cell and Molecular Biology Training Grant**, Jim Morrissey, PI; **NIH Psychobiology and Developmental Neurobiology Training Grant**, William T. Greenough and Jan Juraska, PIs; **NSF IGERT in NeuroEngineering**, Doug Jones, PI
- Executive Committee, **Psychobiology and Developmental Neurobiology Training Grant**, NIMH, William T. Greenough, PI

Beckman Insitute for Advanced Science and Engineering

- Faculty, MRI Technology P41 Proposal Group
- Originator with Jonathan Sweedler of new working group: "Neurotechnology of Memory & Cognition" Co-Leader and convener
- Member: Intelligent Systems Global Theme Leadership
- Awards Committee: Graduate and Undergraduate Beckman Awards for research in the Neurotechnology of Memory & Cognition

College of Liberal Arts and Sciences (LAS)

- **LAS Cluster Hire Committee: Neuroscience & Cognition,** 2015-present
- **MCB Executive Committee,** 2013-present

- **MCB Promotion & Tenure Committee**, 2013
- **Executive Officers' Meetings** with Deans Jesse Delia and Sarah Mangelsdorf, 1998-2008
- **LAS Strategic Planning Committee**: This was a significant commitment of time, as it involved thorough reading and writing evaluations of about1/3 of the departments and programs within the College. The Committee convened most Wednesday during the Spring Semester; I participated in all committee meetings for which I was in town, and engaged in the discussions that shaped our final Strategic Plan. I read and critiqued drafts of the final Plan. 2005-2006
- **MCB School Development Committee**, School of Life Sciences reorganization, 1996–2008
- **Graduate College Courses & Curriculum Committee**, Life Sciences Sub., 1995–1998
- **Promotions Committee** (Full Professor), Department of Psychology, 1993–1994
- **Admissions Committee**, Cell & Molecular Biology Training Grant, 1992–1995
- **Honors Seminar for Exceptional High School Students**: From Genes to Brains, 1992–1994
- Member, **Markey Trust Molecular Neuroscience Search Committee**, 1992–1993
- **LAS Liaison** for establishing Review of Head of Cell & Structural Biology Committee, 1992
- Member, **Committee to Review Head of Cell & Structural Biology**; Author of the Departmental evaluation report, 1992

College of Engineering

- **Dean's Search Committee for New Head of Bioengineering,** Outside committee member, MCB Interim Dean Mike Bragg, March-May, 2013
- **Graduate Program Committee**, Dept. of Bioengineering, 2009-present
- **Departmental Executive Committee**, Dept. of Bioengineering, 2011-2014
- **Contributor:** Qualifying exam committees, Interviewing job candidates in Bioengineering 2009-present
- **Contributor at Programmatic Levels:**
  - NSF Science & Technology Center on Emergent Behaviors of Integrated Cellular Systems (EBICS):
    - Strategic Planning Committee, 2018-present
    - Research Committee, 2010-present
    - Working Groups: Neuronal Circuits, Neuromuscular Junctions (Neuron-Muscle), & BioBot Groups, 2012-present; faculty leader of Neuron-Muscle Working Group.
    - EBICS 2.0: Grant Renewal Committee, Proposal Development, 2013-present
    - EBICS @ Illinois: Faculty Leadership Committee, 2012-present
  - IGERT – NeuroEngineering: Advisory/Thesis Committees, 2009-present
  - IGERT – Cellular & Molecular Mechanics & Biotechnology: Co- Principal Investigator, 2010-present
  - M-CNTC/IGERT Executive Committee, BioNanotechnology Summer Institute Organizing Committee
- **College of Engineering Office of Research**. **Liaison Faculty**, *"Neuroengineering & Neurorestoration: Enabling Technologies and Applications.* **Lawrence-Livermore National Labs Group**, May 14-15, 2015

College of Medicine, UICOM, UC

- **Medical Scholars Program Steering Committee,** 2003-present
- **COM-UC Committee on Appointments, Reappointments, and Promotions**, February 2010-2012
- **COM-UC** Committee on Research, 2012-2013.
- **COM-UC Hazel Clark Summer Grant Review Committee**, April 2013
- **Basic Sciences Department Heads Committee**, 1998-2008
- **MSP Research Retreat and Symposium** Introduction of Student Speakers, Sept. 2005, April 2006
- **Hosted MSP Speaker**, MSP Research Conference, Prof. Robert McCarley, Harvard Medical School, April 2005

- **COM Strategic Planning Committee:** Engaged in extensive discussions and deliberations while our Strategic Plan was developed and refined. Read and critiqued the final plan, 2005-2006
- **Liaison Committee on Medical Education**, Curricular Review Committee, 2001
- **Search Committee**, Assoc. Dean and Head of the Medical Scholars Program, 1999–2000
- **Search Committee**, Assoc. Dean for Student and Academic Affairs, 1999–2000
- **Medical Scholars Program Admissions Subcommittee**, 1999–2000
- **Space Utilization Committee**, 1999–2000
- **COM Executive Officers Committee**, 1998–2008
- **Academic Advising Committee** for M-1 Students, 1992–1995
- Member, **Committee on Educational Policy**; and Subcommittee on Basic Medical Science Educational Policy, 1992–1993

School of Molecular & Cellular Biology (formerly part of the School of Life Sciences)

- **Search Committee, New Director of the School of MCB**, 2017
- **MCB Commencement Ceremonies**, Presenter and Reader, May 17, 2015, May 14, 2017
- **Promotion & Tenure Committee** of the School of Molecular and Cellular Biology, Elected to represent the Department of Cell & Developmental Biology, 2014—present
- Developing MCB/NEURO 462 **- *Integrative Neuroscience* as a major new offering**
- Developing an MCB **undergraduate concentration in Neurobiology**, 2013-present
- **MCB Executive Committee**, 1998–2008, 2013 - present
- **Named Chairs and Professors Committee**, 2013-present
- ***Molecular & Cellular Neurobiology Search Committee*** – Member, 2013- 2014: hired 2 new faculty members for MIP, and sent one to BioE, for which I continued to actively recruit, which also was successful.
- **MCB Faculty Staffing Committee**: I participated in *numerous* recruitment interviews, seminars and receptions for as well as for various candidates in the MIP search in Pharmacology, and the BIOCHEM searches. 1999–present
- Cell & Molecular Biology **Training Grant Executive Committee,** 1998-2013
- **Communications & Branding Committee:** Engaged in extensive discussions and deliberations while the new MCB Communications Initiative was developed and refined.
- **MCB Development Office Presentations**: Research presentations to various prospective donors, including Mr. Hank Warner to benefit the Neuroscience Program. Consequently, he donated a graduate fellowship and engaged in discussions regarding a building. 2004-2006
- **Strategic Planning Committee**: Engaged in extensive discussions and deliberations while our Strategic Plan was developed and refined. Read and critiqued the final plan. 2005-present
- **Media Development/Marketing Strategy Committee**: Engaged in extensive discussions and deliberations on how best to present the School of MCB to the outside world. 2006
- **Cellular Neurobiology Search Committee**, School of MCB, 1998–1999
- **School of Life Sciences Promotions & Tenure Committee**, 1998–2000
- **Molecular and Cellular Biology Promotions & Tenure Committee**, fall 2010
- **CMB School Development/Alumni Outreach Committee**, Chair, 1997–1998
- **School Animal Care Committee**, Chair, 1997–1998
- **Qualifying Examination Committees**, Member or Chair, 3 students, 1997–1998
- **Preliminary or Final Thesis Examination Committees**, Member or Chair, 22 students, 1997–1998
- **Qualifying, Preliminary or Final Thesis Examination Committees**, Member or Chair, 6 students, 1995–1996
- **Qualifying Examination Committees**, Member or Chair, 7 students, 1993–1995
- **Preliminary or Final Thesis Examination Committees**, Member or Chair, 27 students, 1993–1994
- **Executive Committee**, Systems & Integrative Biology Training Grant, 1991–1994

Department of Cell and Developmental Biology (formerly Cell & Structural Biology)

- **Chair Jie Chen's Strategic Planning Group,** 2015
- **Departmental Standing Preliminary Exam Committee**, 2012-present
- **Peer Evaluator of Faculty Teaching**, Annually 1992–present
- **Advisory/Thesis Committees**
- **Departmental Advisory Committee**, 2008-2012
- **Chair, Promotions and Tenure Committee**, 2009–2011
- **Departmental Seminar Committee**, 2008-2011
- **Departmental Newsletter Committee**, 2008-2010
- **Head of Department**, CSB/CDB, 1998–2008. I served and represented our department, Cell & Developmental Biology, to the School of Molecular & Cellular Biology, the Colleges of Liberal Arts & Sciences and Medicine, and to the Campus in ways too numerous to catalog here. These activities included managing the external affairs, as well as resolving the day-to-day problems of faculty, graduate students and staff, which are many and diverse for a department of 22 faculty and >100 graduate students, and numerous post-doctoral and academic staff. I participated in cases where grievances, potential ethical problems or advisor problems occurred. I wrote letters of reference for individuals at all levels. Each year I nominated our most outstanding faculty for campus and national awards, and they have received significant recognitions, as a consequence. I conducted faculty meetings, and contributed to recruiting and retaining individuals at all levels. I also interfaced with the secretarial staff and organized recognition events for them.
- **Faculty Staffing Committee:** I participated in numerous recruitment interviews, seminars and receptions for 14 faculty positions in Cell & Developmental Biology (CDB). During my headship, between 1998–2008, CSB/CDB was successful in recruiting 14 faculty members, 13 as assistant professors and 1 Faculty Excellence Professor:
    - Tzumin Lee (Stanford)
    - Huey Hing (Yale)
    - Michele Bellini (Carnegie Institution of Washington)
    - Phillip Newmark (Carnegie Institution of Washington)
    - Christopher Schoenherr (Princeton)
    - Peter Jones (NIH)
    - Craig Mizzen (University of Virginia)
    - Stephanie Ceman (Emory)
    - Brian Freeman (UCSF)
    - Fei Wang (UCSF)
    - Kannanganattu Prasanth (Cold Spring Harbor)
    - Supriya Prasanth (Cold Spring Harbor)
    - William Breiher (Harvard)
    - Lisa Stubbs (Lawrence Livermore National Laboratory)
- I participated in developing, with Director Charles Miller, spousal-offers in CDB for competitive candidates associated with searches in other departments, such as physics.
- **Promotion & Tenure Committee:** We undertook departmental evaluation of all faculty eligible for promotion. I prepared department head evaluation of the P&T dossier. I organized Third-Year Reviews and evaluations of all Assistant Professors in CDB when they reached this point in their probationary period.
- **Awards Committee Chair**, 1998-2008
- **Chair, Promotions and Tenure Committee**, 1998–2000
- **Member, Graduate Admissions Committee**, 1993–1998
- **Advisory Committee for Spousal Appointments**, 1997–2008
- **Member, Seminar Committee**, 1995–1996
- **Chair, Graduate Admissions Committee**, 1993–1995
- **Member, Promotions and Tenure Committee**, 1994–1996
- **Chair, Graduate Admissions and Advisory Committee**, 1992–1993

- **Member, COM Course and Curriculum Committee**, 1990–1996
- **Member, Graduate Admission and Advisory Committee**, 1990–1993
- **Member, SOLS Courses and Curriculum Committee**, 1990–1992

Department of Chemistry

- **Contributor** to the Departmental **Awards Committee, Advisory/Thesis Committees**

Department of Molecular & Integrative Physiology

- Poster Judge, **Annual Retreat**, April 29, 2016, April 2017
- **Chair, Professor Selection Committee**, 2017
- **Promotion & Tenure Dossier preparation**
- **Cell & Molecular Neuroscience Search Committee,** 2013-2014
- Contributor to the **Departmental Newsletter**, 2012-2014
- **Advisory/Thesis Committees**

Neuroscience Program

- **Chair, External Evaluation of the NSP**, 2022
- **NSP Executive Committee** Chair, Director 2015-present
- **Director:** 2015-present; evaluated, 2022, renewed 2023
- **NSP Executive Committee:** 2013-2014
- **Advisory/Thesis Committees**
- **NSP Restorative Neuroscience Initiative Working Group:** Engaged in defining a new hiring initiative to ensure continuing strength in neuroscience as many of our most visible neuroscientists announce retirement plans.
- **Neuroscience News Videos:** Participated in the first set of videos developed to engage alumni, graduate students and prospective undergrads in the excitement of neuroscience research and discovery. Video currently is posted on the LAS, Engineering and MCB websites.
- **Media Outreach:** Upon announcement of the NSF Science & Technology Center, gave interviews to the public affairs officers/staff writer for LAS and MCB and helped craft press-releases. These were the basis of postings on these unit websites, and news stories that appeared in the hard-copy newsletters to LAS alumni.
- **NSP Executive Committee**, Member, 1991–1993, 2008–2009
- **Illinois Summer Neuroscience Institute (ISNI)**. Invited speaker May 2012 but unavailable. Participated in institute recruiting under-represented minority students to our Neuroscience Graduate Program, 2007
- **Hosted Gene Block's campus visit.** Seminar presentation of negative impact of continuous exposure to jet-lag on health and longevity. Dr. Block was Provost at the University of Virginia at that time. He since become the Chancellor of UCLA. October, 2006
- **Summer Research Opportunity Program (SROP)**, Regional Conference, participated in conference recruiting event, June, 2006
- **Strategic Planning Committee** of NSP, 2005-2006
- Member, Swanlund Professor Advisory Committee, 1995–1996
- Member, Graduate Admissions Committee, 1995–1996
- Member, 16 graduate students' Diagnostic Committees, 10 students' Qualifying Committees, 1983–1995
- Member, NSP Courses and Curriculum Committee, 1990–1991
- Admissions Chair, Organizer of 1st Graduate Recruiting Weekend, 1989–1990
- Member, NBB Guidelines Revision Committee, 1988–1989
- Member NBB/NSP Admissions Committee, 1987–1991

PUBLICATIONS

Complete List of Published Work in MyBibliography:
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Thesis

Gillette, M.L.U. 1976. The role of the cell surface in aggregation of the cellular slime molds Dictyostelium discoideum and D. mucoroides: Morphological and biochemical studies using Concanavalin A. **Ph.D Thesis**, University of Toronto.

Journals

1. **Ulbrick, M.L.** 1969. *Studies on Crucibulum spinosum* (Sowerby). **Proc. Malacol. Soc. (London) 38**: 431-438. No PMID.
2. Hadfield, M.G., E.A. Kay, **M.U. Gillette** and M.C. Lloyd. 1972. *The Vermetidae (Mollusca: Gastropoda) of the Hawaiian Islands.* **Marine Biol. 12**: 81-98. No PMID.
3. **Gillette, M.U.** and M.F. Filosa. 1973. *Effect of Concanavalin A on cellular slime mold development: Premature appearance of membrane-bound cyclic AMP phosphodiesterase.* **Biochem. Biophys. Res. Comm. 53:**1159-1166. PMID #4356053
4. **Gillette, M.U.**, R.E. Dengler and M.F. Filosa. 1974. *Localization and fate of Concanavalin A in amoebae of the cellular slime mold, Dictyostelium discoideum.* **J. Exp. Zool. 190**: 243-248. PMID #4474351
5. Filosa, M.F., S.G. Kent and **M.U. Gillette.** 1975. *The developmental capacity of various stages of a macrocyst-forming strain of the cellular slime mold, Dictyostelium mucoroides.* **Dev. Biol. 46**: 49-55. PMID #1171801
6. Gillette, R., **M.U. Gillette** and W.J. Davis. 1980. *Action-potential broadening and endogenously sustained bursting are substrates of command ability in a feeding neuron of Pleurobranchaea.* **J. Neurophysiol. 43**: 669-685. PMID #6246219
7. Gillette, R., **M.U. Gillette** and W.J. Davis. 1982. *Substrates of command ability in a buccal neuron of Pleurobranchaea. I. Mechanisms of action potential broadening.* **J. Comp. Physiol. 146**: 449-459. No PMID.
8. Gillette, R., **M.U. Gillette** and W.J. Davis. 1982. *Substrates of command ability in a buccal neuron of Pleurobranchaea. II. Potential role of cyclic AMP*. **J. Comp. Physiol. 146**: 461-470. No PMID.
9. **Gillette, M.U.** and R. Gillette. 1983. *Bursting neurons command consummatory feeding behavior and coordinated visceral receptivity in the predatory mollusk Pleurobranchaea.* **J. Neurosci. 3**: 1791-1806. PMID #6886746
10. **Gillette, M.L.U.** 1984. *Stimulation of chemosensory pathways and intracellular alkalinization mimic cAMP activation of endogenous bursting in feeding command neurones.* **J. Exp. Biol. 111**: 239-245. PMID #6092509
11. **Gillette, M.U.** 1985. *Preparation of brain slices from the suprachiasmatic nuclei of rat can reset the circadian clock.* **J. Physiol. (London) 369**: 55P. No PMID
12. **Gillette, M.U.** 1986. *The suprachiasmatic nuclei: circadian phase-shifts induced at the time of hypothalamic slice preparation are preserved in vitro.* **Brain Res. 379**: 176-181. PMID #3742212
13. **Gillette, M.U.** and S.M. Reppert. 1987. *The hypothalamic suprachiasmatic nuclei: circadian*

patterns of vasopressin secretion and neuronal activity in vitro. **Brain Res. Bull.** 19:135-139. PMID #3651837

14. **Gillette, M.U.** and R.A. Prosser. 1988. *Circadian rhythm of the rat suprachiasmatic brain slice is rapidly reset by daytime application of cAMP analogs.* **Brain Res. 474**: 348-352. PMID #2850092
15. Prosser, R.A. and **M.U. Gillette**. 1989. *The mammalian circadian clock in the suprachiasmatic nuclei is reset in vitro by cAMP*. **J. Neurosci. 9**: 1073-1081. PMID #2538580
16. Prosser, R.A., A.J. McArthur and **M.U. Gillette**. 1989. *cGMP induces phase shifts of a mammalian circadian pacemaker at night, in antiphase to cAMP effects.* **Proc. Natl. Acad. Sci. USA 86**: 6812-6815. PMID #2549549; PMCID #297936
17. Gillette, R., **M. U. Gillette**, L. E. Lipeski and J. M. Connor. 1990. *pH-sensitive, Ca^{2+}/calmodulin-dependent phosphorylation of unique protein in molluscan nervous system.* **Biochim. Biophys. Acta 1036**: 207-212. PMID #2257277
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19. McArthur, A.J., **M.U. Gillette** and R.A. Prosser. 1991. *Melatonin directly resets the rat suprachiasmatic circadian clock in vitro.* **Brain Res. 565**: 158-161. PMID #1773352
20. Medanic, M. and **M. U. Gillette**. 1992. *Serotonin regulates the phase of the rat suprachiasmatic circadian pacemaker in vitro only during the subjective day.* **J. Physiol. 450**: 629-642. PMID #1432721; PMCID #1176142
21. Satinoff, E., H. Li, T.K. Tcheng, C. Liu, A.J. McArthur, M. Medanic and **M.U. Gillette.** 1993. *Do the suprachiasmatic nuclei oscillate in old rats as they do in young ones?* **Am. J. Physiol. 265**: R1216-R1222. PMID #8238624
22. Medanic, M. and **M.U. Gillette**. 1993. *Suprachiasmatic circadian pacemaker of rat shows two windows of sensitivity to neuropeptide Y in vitro.* **Brain Res. 620**: 281-286. PMID #8369959
23. **Gillette, M.U.**, S.J. DeMarco, J.M. Ding, E.A. Gallman, L.E. Faiman, C. Liu, A.J. McArthur, M. Medanic, D. Richard, T.K. Tcheng and E.T. Weber. 1993. *The organization of the suprachiasmatic circadian pacemaker of the rat and its regulation by neurotransmitters and modulators.* **J. Biol. Rhythms 8**: S53-S58. PMID #7903877
24. Ding, J. M., D. Chen, E.T. Weber, L.E. Faiman, M.A. Rea and **M.U. Gillette**. 1994. *Resetting the biological clock: mediation of nocturnal circadian shifts by glutamate and NO*. **Science 266**: 1713-1717. PMID #7527589
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culturing, single cell mass spectrometry and microfluidics to study formation of a well-defined neural network. **Neural Restoration Workshop**, Sandia National Laboratories and the Center for Neurotechnology Studies of the Potomac Institute for Policy Studies.

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172. Sweedler, J.V., **M.U. Gillette**, July 2011. Neuropeptidomics of the suprachiasmatic nucleus: from discovery to function. Boston, MA: **9th World Congress on Neurohypophysial Hormones**.
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181. Wang, T.A, Y.V. Yu, G. Govindaiah, X. Ye, L. Artinian, T.P. Coleman, J.V. Sweedler, C.L. Cox, **M.U. Gillette.** May 2012. Circadian rhythm of redox state non-transcriptionally regulates excitability in suprachiasmatic nucleus neurons. Sandestin, FL: **Society for Research on Biological Rhythms.**
182. Liu, S.C., M. Mir, G. Popescu, **M.U. Gillette**. June 2012. Characterizing the Development of Neuron Clusters*.* Urbana, IL: **EBICS Retreat**.
183. Mitchell, J.W., J.E. Lee, N. Atkins, Jr., B. Southey, **M.U. Gillette**, J.V. Sweedler. November 2012. Advances toward a functional peptidome for the suprachiasmatic nucleus. **Society for Neuroscience Annual Mtg.** New Orleans, LA.
184. **Gillette, M.U.** November 2012. A metabolic oscillator in the…brain?! **15th Annual Neuroscience of Sleep & Circadian Biology Datablitz - Plenary Society for Neuroscience Annual Mtg**., New Orleans, LA.
185. Liu, S.C., M. Mir, G. Popescu, **M.U. Gillette**. June 2012. Characterizing the Development of Neuron Clusters. **EBICS Retreat**. Urbana, IL.
186. Mitchell, J.W., J.E. Lee, N. Atkins, Jr., B. Southey, **M.U. Gillette**, J.V. Sweedler. 2012. Advances toward a functional peptidome for the suprachiasmatic nucleus. **Society for Neuroscience Annual Mtg.** New Orleans, LA.
187. **Gillette, M.U.** October 2012. A metabolic oscillator in the…brain?! 15th **Annual Neuroscience of Sleep & Circadian Biology Datablitz** - Plenary Society for Neuroscience Annual Mtg., New Orleans, LA.
188. **Gillette, M.U.** March 2013. A Metabolic Oscillator Governs Neuronal Excitability in the Brain's Circadian Clock. **Chicago Society for Neuroscience Meeting**, Chicago, IL.
193. Liu, S.C., **M.U. Gillette**. 2013. Characterizing Emergent Behaviors of Neural Clusters. **EBICS@Illinois**, April 2013.
194. Liu S.C., **M.U. Gillette**. 2013. Understanding Neuron Development to Create a Biological Machine. **Illinois Summer Neuroscience Institute**. Champaign-Urbana, IL May 2013.
195. Liu S.C., M. Mir, R. Tapping, G. Popescu, **M.U. Gillette**. 2013. Characterizing the Emergence of Neuron Clusters. **EBICS Science & Technology Center Annual Retreat**. Georgia Institute of Technology, Atlanta, GA June 2013.
196. **Gillette, M.U.**, J.W. Mitchell, J.V. Sweedler. 2013. Neuropeptides of the Hypothalamic Circadian Timing System: from Discovery to Function. **World Congress of Hypothalamic Hormones**. Bristol, U.K. June 2013.
189. **Gillette, M.U.** 2013. Neuropeptides in the Hypothalamic Circadian Timing System: from Discovery to Function, **World Congress of Neurohypophseal Hormones,** Bristol, UK July 2013.
190. Mitchell, J.W. and **M.U. Gillette**. A short, bioactive form of vasoactive intestinal peptide (VIP) in the brain. **Midwest Rhythms Meeting**, Michigan State University, East Lansing, MI. September 2013.
191. **Gillette, M.U.** The SCN Peptidome: from Discovery to Function. **Midwest Rhythms Meeting**, Michigan State University, East Lansing, MI. September 2013.
197. **Gillette, M.U.** 2013. Understanding Emergent Behaviors of Neurons. **EBICS@Illinois**, September 2013
198. Liu, S.C., M. Mir, T. Kim, G. Popescu, **M.U. Gillette.** 2013. Emergent Behaviors of Neuron-Glia Integrated Networks and Cluster Formation. **Society for Neuroscience** Annual Mtg., San Diego, CA.
199. Liu, S.C., M. Mir, T. Kim, G. Popescu, **M.U. Gillette**. 2014. Emergent Behaviors of Neuronal Network Formation. **EBICS Science & Technology Center Site Visit**. MIT, Cambridge, MA Jan. 2014.
200. Liu, S.C., M. Mir, T. Kim, G. Popescu, **M.U. Gillette**. 2014. Emergent Behaviors of Heterogeneous Neuron-Glia Networks. **Neuroscience Program Open House**, Beckman Institute, Urbana, IL, Feb. 2014.
201. Naseri Kouzehgarani, G., S.C. Liu, M.K. Lee, H.Kong, **M.U. Gillette**. 2014. Structural and Functional Properties of Neurons in Engineered 3D Microenvironments vs. Brain Slices. **IGERT: Training the Next Generation of Researchers in Cellular & Molecular Mechanics and BioNanotechnology (CMMB) Annual Retreat**. Urbana, IL May 2014.

202. **Gillette, M.U.** 2014. Do Glia Shape SCN Circuits? **Society for Research on Biological Rhythms**, Big Sky, MT.
203. Iyer, R., T.A. Wang, **M.U. Gillette**. 2014. Circadian Gating of Neuronal Functionality: A Basis for Iterative Metaplasticity. **Society for Research on Biological Rhythms**, Big Sky, MT.
204. Mitchell, J.W., J.E. Lee, B.R. Southey, N. Atkins, Jr., L. Zamdborg, N.L. Kelleher, J.V. Sweedler, **M.U. Gillette.** 2014. Progress toward a Functional Neuropeptidome for the Suprachiasmatic Nucleus. **Society for Research on Biological Rhythms**, Big Sky, MT.
205. Irving, S.J., H.J. Rosenberg, J.W. Mitchell, G. Naseri Kouzehgarani, J.L. Chu, J.S. Rhodes, **M.U. Gillette**. 2014. Heterogeneous Astrocyte Dynamics: Diurnal Morphological Changes in the Dentate Gyrus and Suprachiasmatic Nucleus. **Society for Neuroscience Annual Mtg**., Washington, DC. November, 2014.
206. Iyer, R., T. Kim, G. Popescu, **M.U. Gillette**. 2014. miR125b mediated Filopodial Dynamics in Developing Dendrites. **Society for Neuroscience Annual Mtg**., Washington, DC. November, 2014.
207. Jain, A., T. Kim, G. Popescu, **M.U. Gillette**. 2014. Designer Microfluidic Environments for Deciphering Dendrite Guidance Cues in Developing Filopodia. **Society for Neuroscience Annual Mtg.** Washington, DC. November, 2014.
208. Kim, T., M. Mir, A. Majumder, M. Xiang, R. Wang, S.C. Liu, **M.U. Gillette**, S. Stice, G. Popescu. 2014. Label-free Quantification of the Emergent Behavior of Human Neuron Networks. **Society for Neuroscience Annual Mtg**. Washington, DC. November, 2014.
209. Naseri Kouzehgarani, G., **M.U. Gillette**. 2014. Heterogeneity of Astrocyte Morphology and Function in Hippocampal Dentate Gyrus. **Society for Neuroscience Annual Mtg**. Washington, DC. November, 2014.
210. Popescu, G., T. Kim, S.C. Liu, **M.U. Gillette**. 2014. Label-free 3D Imaging of Live Neurons. **Society for Neuroscience Annual Mtg**. Washington, DC. November, 2014.
211. **Gillette, M.U.**, G. Popescu, J.A. Rogers, J.V. Sweedler. 2014. Multiscale dynamics and emergent properties of suprachiasmatic circuits in real time. **Joint NIH/NSF BRAIN Initiative Awardee Meeting**. Washington, DC. November 2014.
212. Iyer, R., T. Kim, G. Popescu, **M.U. Gillette**. 2015. miR125b-Mediated Filopodial Dynamics in Developing Dendrites. **NSP and MCB Recruitment Weekend Presentations**. UIUC, Urbana, IL.
213. Cangellaris, O.V., P. Froeter, X. Li, **M.U. Gillette**. 2015. Characterization of Neurite Growth on a Novel 3D Microtube Platform. **College of Medicine Research Day**, Urbana, IL. April 16 2015.
214. Cangellaris, O.V., P. Froeter, X. Li, **M.U. Gillette**. 2015. Examining the Orientation of Neurite Growth on a Novel 3D Microtube Platform. **ASME 2015 4th Global Conference on Nanoengineering for Medicine and Biology**. Minneapolis, MN. April 19-22, 2015.
215. Naseri Kouzehgarani, G., S.C. Liu, M.K. Lee, H.J. Kong, **M.U. Gillette**. 2015. Structural and Functional Properties of Neurons in Engineered 3D Microenvironments vs. Brain Slices. **IGERT/Midwest Cancer Nanotechnology Training Center (M-CNTC) Annual Symposium.** Urbana, IL May 2015.
216. Froeter, P., Y. Huang, O.V. Cangellaries, W. Huang, **M.U. Gillette**, J. Williams, X. Li. 2015. Superior Neuronal Outgrowth guidance and Rate Enhancement Using Silicon Nitride Self-Rolled-up Membranes. **Device Research Conference**. The Ohio State University, Columbus, OH. June 21-24, 2015.
217. **Gillette, M.U.**, H.J. Rosenberg, S.J. Irving, G. Naseri Kouzehgarani, J.L. Chu, J.S. Rhodes, J.W. Mitchell. 2015. Diurnal Glial Plasticity in Suprachiasmatic Nucleus and Dentate Gyrus. **Chronobiology Gordon Research Conference**. Girona, Spain. June 28 – July 3, 2015.
218. **Gillette, M.U.**, A. Jain, O.V. Cangellaris, S.C. Liu, R. Iyer, L.J. Millet, T. Kim, P. Froeter, M.K. Lee, A. Abdeen, K. Kilian, G. Popescu, H. Kong, X. Li. 2015. Enabling Technologies for Neurons: New Approaches for Axonal and Dendritic Growth and Guidance. **Biomedical Engineering Society Annual Meeting.** Tampa, FL. October 7-10, 2015.
219. Liu S.C., M.K. Lee, B.J. Slater, G. Naseri Kouzehgarani, M. Yu, O.V. Cangellaris, D.A. Llano, H.J. Kong, **M.U. Gillette**. 2015. Engineering a 3D platform to Mimic in vivo Neural Network Morphology and Activity. **Cell Symposia: Engineering the Brain – Technologies for Neurobiological Applications (SfN Satellite Meeting)**. Chicago, IL. October, 2015.

220. Cangellaris, O.V., P. Froeter, X. Li, **M. U. Gillette**. 2015. Self-rolled-up 3D microtube arrays for enhanced control and guidance of hippocampal neurons in synthetic circuits**. Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
221. Kim, T., P. Sengupta, **M. U. Gillette**, G. Popescu. 2015. Quantitative phase imaging (QPI) of optogenetic signals in neurons. **Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
222. Iyer, R., T. Kim, G. Popescu, **M.U. Gillette**. 2015. Keeping Filopodia Dynamic: the role of miR-125b in dendrite development. **Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
223. Chu, J., J.W. Mitchell, **M.U. Gillette**. 2015. Characterizing Cerebellin-short, a Novel Circadian Peptide, in the Rat Suprachiasmatic Nucleus. **Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
224. Yu M., Y.V. Yu, J.W. Mitchell, M.X. Lu, **M.U. Gillette**. 2015. Redox state of the suprachiasmatic nucleus affects photic resetting in early night. **Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
225. Jain, A., T. Kim, G. Popescu, **M.U. Gillette**. 2015. High-resolution analysis of semaphorin3A effects on the dynamics of filopodia on the tips and shafts of developing dendrites using SLIM imaging. **Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
226. Irving, S.J., J.W. Mitchell, **M.U. Gillette**. 2015. Diurnal Plasticity in Regional Astrocyte Morphology. **Society for Neuroscience Annual Meeting**. Chicago, IL. October, 2015.
227. Yu, M., G. Naseri Kouzehgarani, J.W. Mitchell, **M.U. Gillette**. 2016. Circadian Rhythm of Redox State in Hippocampal CA1 Regulates Neuronal Membrane Excitability. **Society for Research on Biological Rhythms**, Palm Harbor, FL. May, 2016.
228. Chu, J., J.W. Mitchell, G. Naseri Kouzehgarani, S. Tiwari, M. Kole, E.K. Neumann, T.J. Comi, S.S. Rubakhin, R. Bhargava, J.V. Sweedler, **M.U. Gillette**. 2016. Integrated Multimodal Analysis of Cell- and Circuit-Specific Processes in Circadian Hippocampal Functions. **Society for Research on Biological Rhythms**, Palm Harbor, FL. May, 2016.
229. Liu, C.S., C. D. Kaufman, G. Naseri Kouzegharani, C. Cvetkovic, R. Bashir, **M.U. Gillette**. Inducing Contraction of C2C12 via Spinal Cord Stimulation. **EBICS Annual Retreat,** St. Charles, IL. July 31-Aug 2, 2016.
230. Cangellaris, O.V., E. A. Corbin, P. Froeter, X. Li, **M.U. Gillette**. Self-rolled-up 3D Microtube Arrays for Enhanced Guidance of Hippocampal Neurons in Synthetic Circuits. **EBICS Annual Retreat,** St. Charles, IL. July 31-Aug 2, 2016.
231. Bhargava, R., **M.U. Gillette**, J.V. Sweedler. Correlating Mass Spectrometry Imaging and Vibrational Imaging of the Brain for Enhanced Chemical Information Content. **American Chemical Society, 252nd Meeting**, Philadelphia, PA. Aug. 21-25, 2016.
232. Cangellaris, O.V., P. Froeter, X. Li, **M.U. Gillette**. Self-Rolled-Up 3D Microtube Arrays Enhance Alignment of Hippocampal Neurons in Synthetic Circuits. **Biomedical Engineering Society (BMES) Annual Meeting**, Minneapolis, MN, October 5-8, 2016.
233. Naseri Kouzehgarani, G. and **M.U. Gillette.** Heterogeneity of Glial Populations in Hippocampal Dentate Gyrus. **Society for Neuroscience Annual Meeting**. San Diego, Nov 2016.
234. Liu, C.S., C. Cvetkovic, G. Naseri Kouzegharani, C. D. Kaufman, R. Bashir, **M.U. Gillette**. A three-dimensionally engineered spinal cord-skeletal muscle bioactuator. **Society for Neuroscience Annual Meeting**. San Diego, Nov 2016.
235. Jain, A., T. Kim, G. Popescu, **M.U. Gillette**. Femtogram-level Analysis of Mass-change Dynamics in Filopodia on the Tips and Shafts of Developing Dendrites in Response to Semaphorin3A. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2016.
236. Iyer, R., T. Kim, M.E. Kandel, G. Popescu, **M.U. Gillette**. miR125b-mediated Filopodial Dynamics in Developing Dendrites. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2016
237. Kim, T., M. Shan, V. Nastasa, M. Wang, **M.U. Gillette**, P. Sengupta, G. Popescu. Light-evoked Responses from Channel Rhodopsin-expressing Neuronal Cells Studied by Quantitative Phase Imaging. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2016.

238. Kim, T., M. Shan, V. Nastasa, M. Wang, P. Sengupta, **M.U. Gillette**, G. Popescu. Optogenetic Signaling in Neurons Studied by Quantitative Phase Imaging. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2016.
239. Sweedler, J.V., T. J. Comi, E. K. Neumann, S. Tiwari, C. Kaufman, J. W. Mitchell, S. Deb, N. Spegazzini, S. S. Rubakhin, R. Bhargava, **M.U. Gillette**. Integrated Multimodal Chemical Analysis of Well-Defined Brain Regions and Cells. **3rd Annual NIH BRAIN Investigators' Meeting,** Dec 2-3 2016.
240. Hu, C., M.E. Kandel, H. Majeed G. Naseri Kouzehgarani, Y.-J. Lee, A. Levine, M. Do, P. Sengupta, C. Best, J. A. Rogers, J.V. Sweedler, **M.U. Gillette**, G. Popescu. Label-free Observation of Neural Connectivity. **BRAIN Investigators Meeting**, Bethesda, MD. December 2016
241. Kandel M., H. Majeed, G. Naseri Kouzehgarani, Y.-J. Lee, A. Levine, M. Do, P. Sengupta, C. Best, J. A. Rogers, J.V. Sweedler, **M.U. Gillette**, G. Popescu. Multiscale dynamics and emergent properties of suprachiasmatic circuits in real time. **BRAIN Investigators Meeting**, Bethesda, MD. December 2016
242. Kaufman, C.D., C.S. Liu, G. Naseri Kouzehgarani, C. Cvetkovic, R. Bashir, **M.U. Gillette**. Induction of Functional Communication between Spinal Cord and Skeletal Muscle. **EBICS Annual Retreat**, Calloway Gardens, GA. July 28-30, 2017.
243. Cangellaris, O.V., E.A. Corbin, P. Froeter, X. Li, **M.U. Gillette**. Tuning Topography of Self-Rolled-Up 3D Microtube Arrays to Improve Alignment of Hippocampal Neurons. **BMES Annual Meeting**. Phoenix, AZ. October 13, 2017.
244. Fiorentino,V., C.D. Kaufman, **M.U. Gillette**. Characterization of Spinal Cord Outgrowths In Vitro with Immunohistochemistry. **Annual Biomedical Research Conference for Minority Students (ABRCMS)**, Phoenix AZ. November 1-4, 2017.
245. Voloshin, M., **M.U. Gillette**, R. Gillette. Odor Tracking Computations in the Peripheral Nervous System of a Predatory Snail. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
246. Kandel, M.E., G. Naseri, **M.U. Gillette**, G. Popescu. Gradient Light Interference Microscopy (GLIM) for label-free imaging of acute brain slices. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
247. Hu C., R. Sam, **M.U. Gillette**, P. Sengupta, G. Popescu. Label-free imaging of optogenetically activated neural activities. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
248. Spegazzini N., S. Deb, J. W. Mitchell, K. Yeh, S. Tiwari, K. Falahkheirkhah, C. Kaufman, E. K. Neumann, T. J. Comi, S.S. Rubakhin, J.V. Sweedler, **M.U. Gillette**, R. Bhargava. Brain mapping and stainless staining for computed digital histopathology using vibrational hyperspectral imaging. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
249. Iyer R., T. Kim, M. Kandel, Y.S. Kim, J. Mitchell, G. Popescu, **M.U. Gillette**. miR-125b Toggles Dynamics and Structure of Dendritic Filopodia in Developing Hippocampal Neurons. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
250. Naseri Kouzehgarani, G. & **M.U. Gillette**. Glial Heterogeneity in the Molecular Layer of Hippocampal Dentate Gyrus. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
251. Kaufman, C.D., S.C. Liu, C. Cvetkovic, R. Bashir, **M.U. Gillette.** Engineering a Bio-inspired, Three-Dimensional Spinal Cord-Skeletal Muscle Soft Robot. **Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
252. Millet, L.J., A. Jain, **M.U. Gillette**. Sub-cellular Compartmentalization and Focal Stimulation of Glial Cells and Networks Using Microfluidic Devices**. Society for Neuroscience Annual Meeting,** Washington DC. November 2017.
253. Chu, J.L., J.W. Mitchell, **M.U. Gillette.** Characterizing a Novel Circadian Peptide, Cerebellin-short, in the Rat Suprachiasmatic Nucleus. **Society for Neuroscience Annual Meeting**, Washington DC. November 2017.
254. Naseri Kouzehgarani, G., J.W. Mitchell, **M.U. Gillette**. Glial Heterogeneity of Glia in the Molecular Layer of Hippocampal Dentate Gyrus. **University of Illinois Neuroscience Program Open House**, Urbana, IL, February 2018.

255. Norsworthy, M., Jain, A., Weiss, A., Mitchell, J.W., **Gillette, M.U.** Redox states and dynamics of neuronal filopodia. **Tissue Microenvironment (TiME) Symposium**, Urbana, IL. April 13, 2018.
256. Sweedler, J.V., S.S. Rubakhin, E. K. Neumann, T. J. Comi, S. Deb, N. Spegazzini, C. Kaufman, J.W. Mitchell, S. Tiwari, R. Bhargava, **M.U. Gillette**. Multiplexed Chemical Analysis Of Single Cells In The Brain Using Vibrational Spectroscopy And Mass Spectrometry. **4th BRAIN Initiatives Investigators' Meeting,** Bethesda MD. April 9-12, 2018.
257. Fiorentino,V., C.D. Kaufman, **M.U. Gillette**. Characterization of Spinal Cord Outgrowths In Vitro with Immunohistochemistry. **2018 University of Kansas Undergraduate Research Symposium**, Lawrence, KS. April 28, 2018.
258. Mitchell, J.W., N. Atkins, Jr., S. Ren, N. Hatcher, P.W. Burgoon, J. V. Sweedler, **M.U. Gillette**. Functional peptidomics: Stimulus- And Time-Of-Day-Specific Peptide Release in the Mammalian Circadian Clock. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 12-16, 2018.
259. Naseri Kouzehgarani, G., **M.U. Gillette**. Diurnal Heterogeneity of Glia in the Molecular Layer of Hippocampal Dentate Gyrus. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 12-16, 2018.
260. Neumann, E.K., T. J Comi, N. Spegazzini, J. Mitchell, S. S. Rubakhin, R. Bhargava, **M. U. Gillette**, J. V. Sweedler. Mid-level Data Fusion and Pan Sharpening of MALDI-FT-ICR MS by Infrared Imaging for Enhanced Chemical Analysis of the Rodent Hippocampus. **American Society for Mass Spectrometry Annual Meeting 2018**, San Diego, CA. June 3-7, 2018.
261. Thornhill J., C. D. Kaufman, G. Pagan-Diaz, R. Bashir, **M. U. Gillette** (2018) Quantification of Pattern Generation Within Intact Spinal Cords over Long-Term Culture. **Illinois Summer Research Symposium**, Urbana, IL. July 19, 2018.
262. Evatt-Machado, G., G. Naseri Kouzehgarani, M.E. Kandel, G. Popescu, **M.U. Gillette**. Advanced Optical Imaging to Quantify Morphological Variance in Hippocampal Neurons. **Illinois Summer Research Symposium**, Urbana, IL. July 19, 2018.
263. Kaufman, C.D., J. Thornhill, G. Pagan-Diaz, R. Bashir, **M.U. Gillette**. Quantification of Pattern Generation Within Intact Spinal Cords over Long-Term Culture. **EBICS Annual Retreat**, St. Charles, IL. July 30-Aug 2, 2018.
264. Yu, M., G. Naseri Kouzehgarani, A. Jain, M. Norsworthy, J.W. Mitchell, R. Iyer, **M. U. Gillette**. Elucidating the Role of Redox State in Neuronal Development and Timekeeping. **MCB Recruitment Fair**, September 2018.
265. Pagan- Diaz, G., K.P. Ramos-Cruz, A. C. Weiss, L.C. Grant, E. Ko, H. Kong, P. Sengupta, **M. Gillette**, R. Bashir. Modulating Electrical Behavior of Motor Neuronal Embryoid Bodies through Optogenetic Perturbation during Neurogenesis and Synaptogenesis. **NSF NRT Annual Meeting**, Alexandria, VA. September 2018.
266. **Gillette, M.**, H. Kong, A. (S.) McKinney. Understanding the Brain: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery. **NSF NRT Annual Meeting**, Alexandria, VA. September 2018.
267. Evatt-Machado, G., G. Naseri Kouzehgarani, M.E. Kandel, G. Popescu, M.U. Gillette. Advanced Optical Imaging to Quantify Morphological Variance in Hippocampal Neurons. **BMES Annual Meeting**, Atlanta, GA. October 17-20, 2018.
268. Weiss, A., K. Ramos-Cruz, J. Mitchell, R. Bashir, **M.U. Gillette**. CLARITY Imaging of Neurosphere Development. **Miniature Brain Machinery Annual Retreat**, Urbana, IL. October 26, 2018.
269. Kaufman, C.D., R. Bashir, **M.U. Gillette**. Controllable Muscle Contraction at an Engineered NMJ via Spinal Cord Neurons. **Miniature Brain Machinery Annual Retreat**, Urbana, IL. October 26, 2018.
270. Pagan-Diaz, G.J., K.P. Ramos-Cruz, A.C. Weiss, L. C. Grant, E. Ko, H. Kong, P. Sengupta, **M.U. Gillette**, R. Bashir. Modulating Electrical Behavior of Motor Neuronal Embryoid Bodies Through Optogenetic Perturbation During Neurogenesis and Synaptogenesis. **Miniature Brain Machinery Annual Retreat**, Urbana, IL. October 26, 2018.

271. Aw, N., A. Cerjanic, J. Mitchell, **M. Gillette**, B. Sutton. Diffusion Tensor Imaging of Rat Brain Slice with 3 T Clinical MR Scanner. **Miniature Brain Machinery Annual Retreat**, Urbana, IL. October 26, 2018.
272. Kandel, M.E., G. Naseri Kouzehgarani, C. Hu, S. Young, E. Min, K.M. Sullivan, H. Kong, D.N. Robson, **M.U. Gillette**, C. Best-Popescu, G. Pospescu. Compact Epi-GLIM Module for Imaging Bulk and Opaque Structures. **Miniature Brain Machinery Annual Retreat**, Urbana, IL. October 26, 2018.
273. Iyer, R., T. Kim, M.E. Kandel, G. Popescu, **M.U. Gillette**. miR125b-mediated Filopodial Dynamics in Developing Dendrites. **Neurotechnology for Memory & Cognition Annual Retreat**, Urbana, IL. October 26, 2018.
274. Kandel, M.E., J. Sangyun, G. Naseri Kouzehgarani, **M.U. Gillette**, C. Best-Popescu, G. Popescu. Gradient Light Interference Microscopy for Label-Free Quantitative Assessment of Brain Slices. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2018.
275. Naseri Kouzehgarani, G., M.E. Kandel, G. Popescu, **M.U. Gillette**. Astrocytes in the Hippocampal Dentate Gyrus Exhibit Diurnal Morphological and Coupling Heterogeneity via Label-free Imaging. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2018.
276. Kaufman, C.D., S.C. Liu, G. Naseri Kouzehgarani, R. Bashir, **M.U. Gillette**. Toward Developing Biorobots that Walk. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2018.
277. Zhang, L., V.S. Hernández, E. Weihe, L. E. Eiden, S.Z. Jiang, P.T. Lindberg, J.W. Mitchell, C. Beaule, **M.U. Gillette**. Conservation of retinohypothalamic, hippocampal, and amygdalar PACAPergic circuits in mouse and rat. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2018.
278. Qin, E., M. Kandel, E. Liamas, Z. Zhang, **M. Gillette**, G. Popescu, D. Leckband, H. Kong. Enhanced Cell Adhesion on N-Cadherin Modified Graphene Oxide Stimulates Neuronal Growth and Intracellular Transport. **2018 Materials Research Society (MRS) Fall Meeting & Exhibit**, Boston, MA. November 25-30, 2018.
279. Pagan-Diaz, G., K. Ramos-Cruz, L. Grant, A. Weiss, E. Ko, H. Kong, P. Sengupta, **M.U. Gillette**, R. Bashir. Modulating Electrical Behavior of Motor Neuronal Embryoid Bodies through Optogenetic Perturbation during Neurogenesis and Synaptogenesis. **Cellular Molecular Bioengineering Conference (CMBE)**, San Diego, CA. January 2-6, 2019.
280. Murphy, S., A. Weiss, J.W. Mitchell, S.S. Rubakhin, **M.U. Gillette**, J.V. Sweedler. Analysis of Neurotransmitters During Rodent Brain Development using Capillary Electrophoresis-Mass Spectrometry. **American Society for Mass Spectrometry Annual Meeting 2019**, Atlanta, GA. June 2-6, 2109.
281. Dupaty, J.S., M. Norsworthy, G. Naseri Kouzehgarani, M. Kandel, G. Popescu, **M. U. Gillette**. Tracking Neurite Complexity for Better Understanding of Glutathione Redox States. **Illinois Summer Research Symposium**, Urbana, IL, July 18, 2019.
282. **Gillette, M.U.**, H. Kong, A. (S.) McKinney. Understanding the Brain: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery. **NSF NRT Annual Meeting**, Evanston, IL, September 25-26, 2019.
283. Dupaty, J.S., M. Norsworthy, G. Naseri Kouzehgarani, M. Kandel, G. Popescu, **M. U. Gillette**. Tracking Neurite Complexity for Better Understanding of Glutathione Redox States. **Biomedical Engineering Society (BMES)**, Philadelphia, PA, October 2019.
284. Yu, M., G. Naseri Kouzehgarani, A. Jain, M. Norsworthy, J.W. Mitchell, R. Iyer, **M. U. Gillette**. Elucidating the Role of Redox State in Neuronal Development and Timekeeping. **Neuroscience Program SfN Night**, October 2018.
285. Seo, Y., Y.-T. Hong, J.W. Mitchell, **M.U. Gillette**, H. Kong. Reactive Oxygen Species-Responsive Drug Delivery System for Balanced Anti-Oxidation of Inflamed Brain Tissue. **Society for Neuroscience Annual Meeting**, Chicago IL, October 2019.
286. Murphy, S.E., A.C. Weiss, K.P. Ramos-Cruz, C.D. Kaufman, H. Kong, J.V. Sweedler, **M.U. Gillette**. Neurotransmitter Levels in Spinal-Organoids vs. Rodent Models During Central Nervous System Development Using Capillary Electrophoresis-Mass Spectrometry. **Society for Neuroscience Annual Meeting**, Chicago IL, October 2019.

287. Naseri Kouzehgarani, G., M.E. Kandel, G. Popescu, **M.U. Gillette.** Diurnal Morphological and Coupling Dynamics in Hippocampal Dentate Gyrus Astrocytes via Label-Free Imaging**. Society for Neuroscience Annual Meeting**, Chicago IL. Nanosymposium presentation, October 2019.
288. Aw, N., A. Cerjanic, J.W. Mitchell, **M.U. Gillette**, B. Sutton. Diffusion Imaging of Young and Aged Rat Brain Slices on a Human Clinical MRI Scanner. **Society for Neuroscience Annual Meeting**, Chicago IL, October 2019.
289. Murphy, S.E., A.C. Weiss, K.P. Ramos-Cruz, G. Pagan-Diaz, S.S. Rubakhin, R. Bashir, **M.U. Gillette**, J.V. Sweedler. Capillary Electrophoresis-Mass Spectrometry Analysis of Neurotransmitters During Rodent Spinal Organoid and Spinal Cord Development. **PITTCON 2020**.
290. Hamed, E.E., H. Namburi, H., J.W. Mitchell, A.C. Benefiel, G. Naseri Kousehgarani, H. Kong, **M.U. Gillette**. Circadian Rhythm Disruption Alters Glymphatics Fluid Transport within Hippocampus and SCN. Neuroscience Program Open House, Urbana, IL. January 30, 2020.
291. Mitchell, J.W., G. Naseri Kouzehgarani, M. E. Kandel, G. Popescu, **M.U. Gillette**. Diurnal Coupling Dynamics of Astrocytes in the Molecular Layer of Hippocampal Denate Gyrus. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 9-15, 2020.
292. Hamed, E.E., H. Namburi, H., J.W. Mitchell, A.C. Benefiel, G. Naseri Kousehgarani, **M.U. Gillette**. Circadian Rhythm Disruption Alters Glymphatics Fluid Transport within Hippocampus and SCN. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 9-15, 2020.
293. Span, L., S. Torrellas, Q. Nguyen, A. Weiss, M. Weary, M.U. Gillette. Investigating Diurnal Patterns of the Brain Microvasculature. **SpHERES (Sparking High Schoolers Excitement for Research in Engineering & Science) Summer of STEM High School Research Symposium** Urbana, IL. July 19, 2021
294. Weary M., Q. Nguyen, A. Weiss, J.W. Mitchell, **M.U. Gillette**. Endogenous Circadian Rhythm of Claudin-5 and ZO-1 and Their Effect on Micro-Solute Permeability of In vitro Endothelial Cells. **Illinois Summer Research Symposium**, Urbana, IL. July 22-23, 2021
295. Orpano, R.M.,T.D. Jorgensen, **M.U. Gillette**. Phosphorylated Ezrin Expression in the Dentate Gyrus of the Rat Hippocampus. **Illinois Summer Research Symposium**, Urbana, IL. July 22-23, 2021
296. Hamed, E., J.W. Mitchell, H. Namburi, A.C Benefiel, G. Naseri-Kouzehgarani, R. Iyer, H. Kong, **M.U. Gillette**. Glymphatic System Alteration Following Circadian Rhythm Disruption Impacts Chronotherapy. **American Association for Neurosurgical Societies Annual meeting (AAANS)**. Orlando, FL. Aug 21-25, 2021
297. Hamed, E., S. Majumdar, H. Mohammed, J. W. Mitchell, H. Kong, B. Sutton, **M.U. Gillette**. Monitoring enhancement of glumphatic flow due to arginine vasopressin in rat brain using dynamic contrast enhancement MRI. **International Society for Magnetic Resonance in Mediine (ISMRM).** London, England. May 7-12, 2022
298. Nguyen Q., J.W. Mitchell, W. Kao, K. Weis, A. Weiss, S. Fok, H.M. Cheng, K. Obrietan, B. Han, H.J. Kong, **M.U. Gillette**. Development of Circadian Dynamics of The Blood-Brain Interface in A Human-Brain Mimicking Microfluidic Chip. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 9-15, 2022.
299. Hamed, E.E., H. Mohammed, J.W. Mitchell, H. Namburi, S. Majumdar, B. Sutton, H. Kong, **M.U. Gillette**. Circadian Rhythm Disruption adnd Vasopressin Alters Glymphatics Fluid within Hippocampus and SCN. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 9-15, 2022.
300. Jorgensen, T.D., G. Naseri Kouzehgarani, H. Rosenberg, J. W. Mitchell, **M.U. Gillette**. Diurnal Variation of Astrocyte Gap-Junction Dynamics in the Molecular Layer of the Hippocampal Dentate Gyrus. **Society for Research on Biological Rhythms (SRBR)**, Amelia Island, FL. May 9-15, 2022.
301. Berneche, S., W. Kao, D. Parmar, **M.U. Gillette**, J.V. Sweedler. Characterization of the Glymphatic Peptidome by nanoLC-QqTOF. **ASMS Conference on Mass Spectrometry and Allied Topics**. Minneapolis, MN. June 5-9, 2022
302. Nguyen Q., J.W. Mitchell, **M.U. Gillette**. Circadian Regulation of Tight Junction Proteins of the Blood Brain Interface. **Molecular and Integrative Physiology Departmental Retreat**. Urbana, IL. October 27, 2022.

303. Norsworthy, M., M. Sakakura, G. Popescu, **M.U. Gillette**. Redox Environment and Semaphorin 3a effects on Rat Hippocampal Neurites. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2022.
304. Weiss, A., Q. Nguyen, J.W. Mitchell, K. Weis, W. Kao, S. Fok, H. Cheng, K. Obrietan, B. Han, H. Kong, **M.U. Gillette**. Circadian Rhythmicity of Blood-Brain Interface Permeabiltiy *in vitro*. **Society for Neuroscience Annual Meeting**, San Diego, CA. November 2022.

STATEMENT OF RESEARCH INTERESTS AND GOALS

Timekeeping is part of the very fabric of life, embedded in the genes and expressed in tightly orchestrated cycles that extend from molecular through cellular and systems levels. The range of time scales upon which clocks regulate life processes is broad: Neuronal oscillations occur in the millisecond to second range, changes in cellular metabolism and cell division are on a time scale of hours, circadian rhythms and the cycle of sleep/wakefulness take place over a day, and seasonal adjustments to the varying photoperiod extend over the course of the year. Understanding the molecular and cellular mechanisms underlying biological timing processes will lead to understanding normal behaviors, as well as targets of therapy for abnormal behaviors and body states. Answers to age-old questions, such as the following, will emerge. Why do birds sing in the morning, while frogs call at night? Why are heart attacks likely to strike before dawn, while asthmatic attacks generally occur after sunset? Why do we most often feel lethargic and depressed during the short, dark days of winter, while on long, sunny summer days, we feel energetic and alert? Why do victims of Alzheimer's dementia suffer from complete disintegration of patterned sleep and wakefulness?

At the same time, we are applying technologies from micro- and nano-engineering technology to fabricate designer environments that enable us to control the emergence and development of neuronal extensions that form axons, dendrites, and synapses, the sites where memories are formed, or lost. This has led us, in turn, to probing the most fundamental issues of self-organization of biological systems, and how to harness and direct these intrinsic properties of emergence to generate designed multi-cellular functions.

My research program has advanced through significant new discoveries and through cross-disciplinary collaboration with colleagues at Illinois in the physical sciences and engineering. Major accomplishments and current thrusts of my research program are summarized here.

Career Contributions to Science

1. SCN: The Clock in the Dish. My early publications became seminal contributions to proving that the suprachiasmatic nucleus (SCN) is the central endogenous circadian clock in the mammalian brain. We were the first to demonstrate multiple ~24-h cycles of neuronal firing rate in the SCN of a hypothalamic brain slice. These circadian rhythms of neuronal activity are maintained in the isolated SCN *in vitro* in minimal salts and glucose. I became known for the 'clock in the dish'. We discovered windows of sensitivity to resetting of the circadian rhythm by second messenger pathways such that cAMP- and cGMP-sensitivities are 180° out-of-phase. I served as the primary investigator in all of these studies, often working alone with methods I had learned by myself.

a. Gillette, MU. *The suprachiasmatic nuclei: circadian phase-shifts induced at the time of hypothalamic slice preparation are preserved in vitro.* **Brain Research**, **1986**, 379(1):176-81

b. Gillette, M.U., Reppert, S.M. *The hypothalamic suprachiasmatic nuclei: circadian patterns of vasopressin secretion and neuronal activity in vitro.* **Brain Research Bull.**, **1987**, 19(1):135-9.
c. Prosser, R.A., Gillette, M.U. *The mammalian circadian clock in the suprachiasmatic nuclei is reset in vitro by cAMP.* **J. Neuroscience**, **1989**, 9(3):1073-81.
d. Prosser, R.A., McArthur, A.J., Gillette, M.U. *cGMP induces phase shifts of a mammalian circadian pacemaker at night, in antiphase to cAMP effects.* **Proc. Natl. Acad. Sci. USA**, **1989**, 86(17):6812-5.

2. Signals that Reset the Brain's Circadian Clock. Building upon the discoveries described above, we proved that glutamate is the primary messenger of environmental light in projections from the retina to the SCN. We then discovered key elements of signaling pathways that mediate the differential effects of light/glutamate signals in altering clock state in early *vs.* late night. In doing so, we provided the first demonstration of a functional role for ryanodine receptors in the CNS. These studies emphasized that dynamic contextual factors in the SCN determine its response to signals that adjust temporal state. Again, I was the primary investigator in these studies.

a. Ding, J.M., Chen, D., Weber, E.T., Faiman, L.E., Rea, M.A., Gillette, M.U. *Resetting the biological clock: mediation of nocturnal circadian shifts by glutamate and NO.* **Science**, **1994**, 266(5191):1713-7.
b. Ding, J.M., Faiman, L.E., Hurst, W.J., Kuriashkina, L.R. & Gillette, M.U. *Resetting the biological clock: mediation of nocturnal CREB phosphorylation via light, glutamate, and nitric oxide.* **J. Neuroscience**, **1997**, 17(2):667-75.
c. Ding, J.M., Buchanan, G.F, Tischkau, S.A., Chen, D., Kuriashkina, L., Faiman, L.E., Alster, J.M., McPherson, P.S., Campbell, K.P., Gillette, M.U. *A neuronal ryanodine receptor mediates light-induced phase delays of the circadian clock.* **Nature**, **1998**, 394(6691):381-4.
d. Chen, D., Buchanan, G.F., Ding, J.M., Hannibal, J. & Gillette, M.U. *Pituitary adenylyl cyclase-activating peptide: a pivotal modulator of glutamatergic regulation of the suprachiasmatic circadian clock.* **Proc. Natl. Acad. Sci. USA**, **1999**, 96(23):13468-73.

3. Circadian Gating of Neuronal Functionality and Plasticity. We then built on the above discoveries by exploring the relationship between light/glutamatergic signals and time-restricted activation of second-messenger signaling pathways. We demonstrated that circadian clocks comprise a cyclic series of dynamic cellular states, characterized by the changing availability of substrates that alter clock time when activated. We determined that circadian clocks, like the cell cycle, exhibit regulation by key phosphorylation events. This body of work demonstrated unanticipated complexity in access of these stimuli to cAMP vs. cGMP signaling pathways. All of these studies emerged from work I directed in my laboratory.

a. Tischkau, S.A., Gallman, E.A., Buchanan, G.F., Gillette, M.U. *Differential cAMP gating of glutamatergic signaling regulates long-term state changes in the suprachiasmatic circadian clock.* **J. Neuroscience**, **2000**, 17(2):667-75.
b. Tischkau, S.A., Weber, E.T., Abbott, S.M., Mitchell, J.W., Gillette MU. *Circadian clock-controlled regulation of cGMP-protein kinase G in the nocturnal domain.* **J. Neuroscience**, **2003**, 23(20):7543-50.
c. Tischkau, S.A., Mitchell, J.W., Pace, L.A., Barnes, J.W., Barnes, J.A., Gillette, M.U. *Protein kinase G type II is required for night-to-day progression of the mammalian circadian clock.* **Neuron**, **2004**, 43(4):539-49.
d. Iyer, R., Wang, T.A., Gillette, M.U. *Circadian gating of neuronal functionality: a basis for iterative metaplasticity.* In, *"Sleep and Circadian Rhythms in Plasticity and Memory",* edited by J. Gerstner, H.C. Heller, S. Aton, **Frontiers Systems Neuroscience, 2014**, 8:164. 32 pgs. PMCID: PMC4168688.

4. The Cholinergic Paradox and the Redox Oscillation. In parallel to studies elucidating the roles of glutamatergic signaling from the retina, we resolved a long-standing paradox about the role of cholinergic signals in regulation of the SCN circadian clock. Acetylcholine was originally proposed by the field to transmit light signals from the eye to SCN. We demonstrated that the acetylcholine adjusts clock timing at night, but in the opposite direction as glutamate, and comes from brain stem sleep nuclei. We had found that glutamate signals via NO/ryanodine receptor activation in early night and has the opposite effect on phasing as cGMP. We discovered that acetylcholine signals are transduced via an M1 receptor/ CO/ cGMP-dependent mechanism. This caused us to predict that the redox state of the clock system is relatively oxidized in early night, but more reduced in late night, switching access for activation of guanylate cyclase from NO *to* CO. Using a variety of elegant methodologies, including imaging intrinsic NADP/FAD fluorescence, we found this to be true! This is the basis of the switch in the directionality of the effects of light on the circadian system in early *vs.* late night. Early studies were completely within my lab, but later ones engaged collaborators on campus. I served as head of my department from 1998-2009, a period of extensive faculty recruitment and growth. My publication rate declined toward the end of my service.

a. Liu, C., Ding, J.M., Faiman, L.E., Gillette, M.U. *Coupling of muscarinic cholinergic receptors and cGMP in nocturnal regulation of the suprachiasmatic circadian clock.* **J. Neuroscience**, **1997**, 17(2):659-66.

b. Buchanan, G.F., Gillette, M.U. *New light on an old paradox: site-dependent effects of carbachol on circadian rhythms.* **Experimental Neurology**, **2005**; 193(2):489-96

c. Abbott, S.M., Arnold, J.M., Chang, Q., Miao, H., Ota, N., Cecala, C., Gold. P.E., Sweedler, J.V., Gillette, M.U. *Signals from the brainstem sleep/wake centers regulate behavioral timing via the circadian clock.* **PloS One**, **2013**; 8(8):e70481. PMCID: pmc3741311

d. Wang, T.A., Yu, Y.V., Govindaiah, G., Ye, X., Artinian, L., Coleman, T.P., Sweedler, J.V., Cox, C.L., Gillette, M.U. *Circadian rhythm of redox state regulates excitability in suprachiasmatic nucleus neurons.* **Science**, **2012**, 337:839-842. PMCID: PMC3490628

e. Gillette, M.U., Wang, T.A. *Brain circadian oscillators and redox regulation in mammals.* **Antioxidants & Redox Signaling**, **2014**, 20(18):2955-65. PMCID: PMC4038987

f. Bothwell, M.Y., M.U. Gillette. *Circadian redox rhythms in the regulation of neuronal excitability.* **Free Radical Biol. Med**. 2018. Special Issue: Circadian Regulation of Metabolism, Redox Signaling and Function in Health and Disease. M.E. Young, A.G. Reddy, D.M. Pollock, eds. 2018 May 1; 119: 45-55. DOI:10.1016/j.freeradbiomed.2018.01.025. PMID:29398284

Current Research

1. Dynamics of SCN and Hippocampal Glial Cells Over the Day-Night Cycle. Beyond their roles in structural and trophic support of brain tissue, astrocytic glia mediate rapid responses to altered internal and environmental conditions through plastic morphological changes. Astrocytes have been regarded as morphologically similar throughout the brain, however, we found unstimulated daily changes in astrocyte morphology in both the hippocampal dentate gyrus (DG) and suprachiasmatic nucleus (SCN). Branching patterns are quantitatively more elaborate in the SCN relative to the DG. These patterns increase and decrease in complexity throughout the day-night cycle, but with a 180° phase difference. Light experienced in the early night changes astrocyte branch morphology in both regions, but in opposite directions. *The magnitude of daily*

changes in astrocyte morphology in the hippocampus and SCN raises questions about their functional consequences Electrical coupling between astrocytes also changes dynamically.

Mapping these neuron-glial dynamics was the target of two recently completed BRAIN Initiative grants from NSF and NIH.

a. Mitchell, J.W., G. Naseri Kouzehgarani, G., M.E. Kandel, G. Popescu, M.U. Gillette. **2020.** *Diurnal coupling dynamics of astrocytes in the molecular layer of hippocampal dentate gyrus.* **Society for Research on Biological Rhythms**. Abstract accepted March 2020. Virtual Mtg. scheduled for Jun 2020.
b. Naseri Kouzehgarani, G., M.Y. Bothwell, M.U. Gillette. **2020.** *Circadian rhythm of redox state regulates membrane excitability in hippocampal CA1 neurons..* **European Journal of Neuroscience.** Special Issue on Circadian Rhythms. 2020 Jan 4; 51(1): 34-46. DOI: 10.1111/ejn.14334
c. Naseri Kouzehgarani, G., M.E. Kandel, G. Popescu, M.U. Gillette. **2019.** *Astrocytes in the hippocampal dentate* gyrus *exhibit diurnal morphological and coupling heterogeneity via label-free imaging*. **Society for Neuroscience Annual Meeting.** Chicago, Oct 2019.
d. Bothwell, M.Y., M.U. Gillette. **2018.** *Circadian redox rhythms in the regulation of neuronal excitability.* **Free Radical Biol. Med**. Special Issue: Circadian Regulation of Metabolism, Redox Signaling and Function in Health and Disease. M.E. Young, A.G. Reddy, D.M. Pollock, eds. 2018 May 1; 119: 45-55. DOI:10.1016/j.freeradbiomed.2018.01.025. PMID:29398284

2. Quantitative Analysis of Suprachiasmatic Nucleus (SCN) Peptides and Identification of a New Functional Form of the Neuropeptide, Vasoactive Intestinal Peptide (VIP). Understanding how a small brain region, the suprachiasmatic nucleus (SCN), can synchronize the body's circadian rhythms is an ongoing research area. This important timekeeping system requires a complex suite of peptide hormones and chemical transmitters that remain incompletely characterized. With our colleague, Jonathan Sweedler, a renowned analytical chemist, we developed novel sample-collection methods and then characterized in the SCN the most complete peptidome (>440 peptides) of any brain region. Of these, nearly half are from propeptides that are cleaved into functional peptides. 207 peptides were analyzed by two label-free methods, spectral count and spectral index. There were 24 peptides with significant (adjusted p-value < 0.01) differential peptide abundance between daytime and nighttime. We determined/are determining functionality of the most salient novel SCN peptides, with surprising results. These discoveries are being made via the National Institute of Drug Abuse (NIDA) Center in the Neuroproteomics of Cell-Cell Signaling (J.V. Sweedler, PI, now its third funding period). We are extending these discoveries to examine *the roles of small molecules and peptide neuromodulators,* released by the brain's circadian clock in the SCN, in coupling to and synchronizing peripheral body clocks. The many papers we have co-published in this area are listed in my *c.v.*; examples are listed here.

a. Lindberg, P.T., J.W. Mitchell, P.W. Burgoon, C. Beaule, E. Weihe, M.K-H. Schaefer, L.E. Eiden, S.Z. Jiang, M.U. Gillette. **2019.** *Pituitary adenylate cyclase-activating peptide (PACAP)-glutamate co-transmission drives circadian phase-advancing responses to intrinsically photosensitive retinal ganglion cell projections by suprachiasmatic nucleus.* **Frontiers in Neuroscience. *Special Issue on PACAP.*** 2019 Dec; 13: 1281. eCollection 2019. DOI: 10.3389/fnins.2019.01281.
b. Atkins, Jr., N., S. Ren, N. Hatcher, P.W. Burgoon, J.W. Mitchell, J.V. Sweedler, M.U. Gillette. **2018.** *Functional peptidomics: Stimulus- and time-of-day-specific peptide release in the mammalian circadian clock.* **ACS Chem. Neurosci. *Special Issue: Model Systems.*** 2018, 9 (8): 2001-2008. Online 20 June 2018. DOI: 10.1021/acschemneuro.8b00089

c. Neumann, E.K., T.J. Comi, N.Spegazzini, J.W. Mitchell, S.S. Rubakhin, M.U. Gillette, R. Bhargava, J.V. Sweedler. **2018.** *Multimodal chemical analysis of the brain by high mass resolution mass spectrometry and infrared spectroscopic imaging.* **Anal. Chem.** 2018, 90 (19): 11572-11580. Online 19 September 2018. DOI: 10.1021/acs.analchem.8b02913

d. Wu, Q., J.L. Chu, S.S. Rubakhin, M.U. Gillette, J.V. Sweedler. **2017**. *Dopamine-modified TiO2 monolith-assisted LDI MS imaging: Development and application to simultaneous localization of small metabolites and large lipids in mouse brain tissue with high detection selectivity and sensitivity.* **Chemical Science**, 2017 May 1; 8 (5), 3926-3938. DOI: 10.1039/C7SC00937B. PMID:28553535; PMCID: PMC5433501

e. Yang, N., S.J. Irving, E.V. Romanova, J.W. Mitchell, M.U. Gillette, and J.V. Sweedler. **2016.** *Neuropeptidomics: The characterization of neuropeptides and hormones in the nervous and neuroendocrine systems*. **2016.** In: Volume 4: **International Neuroendocrine Federation (INF) Masterclass Series: Molecular Neuroendocrinology**: "From Genome to Physiology" D. Murphy and H. Gainer (Eds.). John Wiley & Sons, Ltd., Chichester, UK, pp. 155-169 (Chapter 8).

3. NeuroEngineering: High Resolution Analysis of Neuronal Development in Novel Micro-environments. Understanding and producing ordered networks of neurons with defined connectivity *in vitro* presents unusual technical challenges because the results must be compliant with the biological requirements of rewiring neural networks. To address this issue, we developed the ability to form stable, instructive surface-bound gradients of laminin that guide postnatal hippocampal neuron development *in vitro*. Using this microfluidic environment, we are able to direct single dendrites through fluidically isolated channels. Nascent neuronal extensions are initiated by dendritic filopodia. We guide emerging filopodia into distinct, controlled micro-environments. We are using this highly controllable environment to study the function of miR125b, a microRNA implicated in schizophrenia, depression, and fragile X mental retardation, as well as extracellular guidance cues. We have completed 3 innovation grants in this area: one from the Keck Foundation and two from the National Institute of Mental Health (NIMH) and recently been awarded a new R21 from NIMH to study redox regulation in dendrites. We have published highly-cited papers in this domain, including in Lab on a Chip, as well as a book chapter on methodology.

a. Qin, E.C, M.E. Kandel, E. Liamas, T.B. Shah, C. Kim, C.D. Kaufman, Z.J. Zhang, G. Popescu, M.U. Gillette, D.E. Leckband, H. Kong. **2019.** *Graphene oxide substrates with N-cadherin stimulates neuronal growth and intracellular transport.* **Acta Biomater.** 2019 May; 90:412-423. DOI: 10.1016/j.actbio.2019.04.005.

b. Cangellaris, O.V. and M.U. Gillette. **2018**. *Biomaterials for enhancing neuronal repair.* **Frontiers in Materials *Special Issue: Biomaterials*** (Invited Review), 10 April 2018. DOI: doi.org/10.3389/fmats.2018.00021

c. Cangelleris, O.V., Corbin, E.A., Froeter, P., Li, X., Gillette, M.U. **2018**. *Aligning synthetic hippocampal neural circuitds via self-rolled-up silicon nitride microtube arrays.* **ACS Appl. Mater. Interfaces**. Article ASAP (Web): September 25, 2018. DOI: 10.1021/acsami.8b10233

d. Iyer, R., M. E. Kandel, Y.-S. Kim, G. Popescu, M. U. Gillette. **2018**. *High-resolution studies of miR-125b in filopodial structure and dynamics*. **Society for Neuroscience Annual Meeting**, San Diego, CA November 3-7, 2018.

e. Jain, A. and M.U. Gillette. **2015.** *Development of microfluidic devices for the manipulation of neuronal synapses*. In: **Microfluidic and Compartmentalized Platforms for Neurobiological Research**: **Neuromethods 103**, Emilia Biffi, Ed., Wolfgang Walz, Editor-in-Chief, v. 103 Springer Science+Business Media New York, pp. 127-137. DOI 10.1007/978-1-4939-2510

4. NeuroEngineering: Emergent Behaviors of Integrated Cellular Systems (EBICS). The goal of our research under the NSF-funded EBICS Science & Technology Center is to understand and control the emergence of complex neuronal systems. To generate systems-level behaviors, we are studying effects of self-directed differentiation, cell-to-cell signaling, and local environmental cues. We are probing developmental capacities of hippocampus and spinal sensory neurons in order to generate clusters of cells with specific types of functionalities. This comparison includes defining conditions that optimize cell density for innervations. Our near-term goal is to build an oscillatory spinal-skeletal muscle system, the neuronal circuitry that drives oscillatory motor activity. The long-term goal of this research endeavor is to build machines out of cellular parts.

In collaboration with the Bashir, Kong, and Popescu labs at UIUC, we continue to develop a living biological machine composed of multiple cell types, characterize the physiology of hippocampal neurons, and optimize the use of Spatial Light Interference Microscopy (SLIM) to image neurons in culture with the eventual aim of using the technique to study the mass dynamics of the bioactuator.

With these studies, we have bridged the usual communications gulf between scientists and engineers. We succeeded in publishing these studies well *because* they are strong in both neuroscience and novel methodologies. We are competitive for funding that fosters cross-disciplinary research applying cutting-edge technology. Additionally, our strong collaborations across disciplines contributed to our success in acquiring an NSF Understanding the Brain Training Grant focused on Miniature Brain Machinery to develop future scientists with expertise ranging from engineering and cognitive sciences. Importantly, these approaches are enabling us to understand the biology in new and unanticipated ways.

a. Kaufman, C.D.*, S.C. Liu*, C. Cvetkovic, C. Lee, G. Naseri Kouzehgarani, R. Gillette, R. Bashir, M.U. Gillette. **2020.** *Emergence of functional neuromuscular junctions in an engineered, multicellular spinal cord-muscle bioactuator.* **APL Bioengineering** *In press, March 2020*

b. Hu, C., R. Sam, M. Shan, V. Nastasa, M. Wang, T. Kim, M.U. Gillette, P. Sengupta, G. Popescu. **2019**. *Optical excitation and detection of neuronal activity.* **J. Biophotonics** 2019 Mar; 12(3): e201800269. 10.1002/jbio

c. Kandel, M.E., C. Hu, G. Naseri Kouzehgarani, E. Min, K.M. Sullivan, H. Kong, J.M. Li, D.N. Robson, M.U. Gillette, C. Best-Popescu, G. Popescu. **2019.** *Epi-illumination gradient light interference microscopy for imagin opaque structures.* **Nature Comm.** 2019 Oct 16; 10(1): 4691. DOI: 10.1038/s41467-019-12634-3.

d. R.D. Kamm, R. Bashir, N. Arora, R.D. Dar, M.U. Gillette, L.G. Griffith, M.L. Kemp, K. Kinlaw, M. Levin, A.C. Martin, T.C. McDevitt, R.M. Nerem, M.J. Powers, T.A. Saif, J. Sharpe, S. Takayama, S. Takeuchi, R. Weiss, K. Ye, H.G. Yevick, M.H. Zaman. **2018.** *Perspective: The promise of multi-cellular engineered living systems.* **APL Bioeng.** 2018 Dec; 2(4): 040901. DOI: 10.1063/1.5038337

e. Seo, Y., J. Leong, J.Y. Teo , J.W. Mitchell, M.U. Gillette, B. Han, J. Lee, H. Kong. **2017**. *Active antioxidizing on-demand pressure-driven molecular release.* **ACS Appl Mater Interfaces**, 2017 Sept 29; 9 (41): 35642-35650. DOI: 10.1021/acsami.7b12297. PMID: 28961399

f. Ma, L., G. Rajshekhar, R. Wan, B. Bhadur, S. Sridhara, M. Mir, A. Chakraborty, R. Iyer, S. Prasanth, L. Millet, M. U. Gillette & G. Popescu. **2016.** *Phase correlation imaging of unlabeled cell dynamics.*

Scientific Rep. 6, 32702. Accepted 05Aug 2016. DOI: 10.1038/srep32702. PMID: 27615512; PMCID: MPC5018886.

Curriculum Vitae ----- Xin Li

Name: Xin Li
Title: Assistant Professor
Institution: University of Illinois
Department: Cell and Developmental Biology

601 S. Goodwin Ave. CLSL B107
Urbana, IL 61801-3761
E-mail: lixin@illinois.edu
Alternate email: xli2007@gmail.com

Education/Training:

1992-1997, *Beijing Medical University*, Beijing, China
B.M. in Nursing, July 1997

1997-2000, *Peking University, Health Science Center*, Beijing, China
M.S. in Biochemistry and Molecular Biology, June 2000

2000-2001, *University of Pittsburgh*, Pittsburgh, PA
Ph.D. in Biological Sciences (incomplete)

2001-2006, *Northwestern University*, Evanston, IL
Ph.D. in Molecular Genetics and Developmental Biology, December 2006
Advisor: Dr. Richard W. Carthew

2007-2014, Postdoctoral Training, *New York University*, New York, NY
"Neuronal Specification and Connectivity in the *Drosophila* Optic Lobes"
Advisor: Dr. Claude Desplan

Honors:

1992-1997, People's scholarships for excellent undergrad students, Beijing Medical University, Beijing, China

1999, IET scholarship for excellent graduate students, Peking University, Health Science Center, Beijing, China

2005, The Katten Muchin Rosenman Travel Scholarship,
Robert H. Lurie Comprehensive Cancer Center, Northwestern University

2008-2010, Robert Leet and Clara Guthrie Patterson Trust Postdoctoral Fellowship Program in Brain Circuitry, The Medical Foundation, Bank of America, Trustee.

2022-2024, Lincoln Excellence for Assistant Professors (LEAP) Award, College of Liberal Arts & Sciences, University of Illinois Urbana-Champaign

Positions:

Nov. 2014-present, Assistant Professor, University of Illinois at Urbana-Champaign

Service for Department /School/ Campus:

2017-2022, Seminar Committee Chair for the Department of Cell and Developmental Biology.

2021-2022, Chair for the Committee organizing the CDB Early-Career Inclusive Excellence Seminar Series.

2014-present, member of Graduate Recruitment Committee for the Department of Cell and Developmental Biology.

2015-2016, member of Graduate Program & Fellowship Committee for the Department of Cell and Developmental Biology.

2021-2022, Drafted the Stem cell hiring proposal for CDB.
2022-2023, acting as co-chair for Stem cell search committee

2017-2022, Member of Seminar Committee for the School of MCB.

2022, Peer Reviewer of a grant application to the Campus Research Board.

2022-2023, Peer Reviewer of a grant application to the Campus Research Board

Service for the Science Community:

2015-present, Peer Reviewer for Journals: *eLife*; *Developmental Biology*; *Fly, PLOS Genetics; PLOS One; BMC Neuroscience; Development, Genes and Evolution, Neural Development, Genetics; Nature.*

2015, Peer Reviewer Service for Governmental Agencies, Educational Institutions:
Peer reviewer for a grant application at BBSRC (Biotechnology and Biological Sciences Research Council) in UK.

2017, External reviewer for a research rank promotion at Indiana University.

July 2021, Peer reviewer for a study session of K99/R00 grant applications in NIH/NIGMS.

2022, Session co-chair for the Neural development and physiology Session at the 2022 Drosophila Research Conference.

2021-2022, Co-guest editor for a Special Issue on "Temporal Patterning in the CNS" for the journal *Seminars in Cell and Developmental Biology.*

2023, ad hoc reviewer for French National Research Agency.

Supervision of Graduate Student Research

Ray, Alokananda, Ph.D student, May 2015-May 2022, thesis on "Mechanisms of regulation of sloppy-paired genes in the temporal patterning program of optic lobe medulla neuroblasts in drosophila", Successfully defended in December 2021; thesis deposited in Spring 2022.

Zhu, Hailun, Ph.D student, Jan 2018-present, thesis project on "A comprehensive temporal patterning gene network in Drosophila medulla neuroblasts revealed by single-cell RNA sequencing."

Tejus Sreelal, Ph.D student, Jan 2022-present, thesis project on "Mechanism of neuronal specification regulated by temporal patterning of neural progenitors."

Serving on prelim exam or thesis committees of students from other laboratories:
2015, Prelim exam committee, member, for Ph.D student Umair Khan.
2016, Prelim exam committee, member, for Ph.D student Yo-Chuen Lin.
2019, Prelim exam committee, member, for Ph.D student Yunshu Song.
2019, Substitute committee member for Thesis defense of Ph.D student Soumya Negi.
2021, Prelim exam committee, member, for Ph.D student Temirlan Shilikbay.
2021 and 2022, Prelim exam committee, member, for Ph.D student Felicity Hsu.
2023, Prelim exam committee, member, for Ph.D student Sihang Zhou

2015-2020, Thesis committee, member, for Ph.D student Chris Seward.
2016- 2020,Thesis committee, member, for Ph.D student Yuan Tian.
2017-2019, Thesis committee, member, for Ph.D student Nayab Abidi.
2018-present, Thesis committee, member, for Ph.D student Janhavi Kolhe.
2020-present, Thesis committee, member, for Ph.D student Miles Norsworthy.
2022-present, Thesis committee, member, for Ph.D student Felicity Hsu

Supervision of Undergraduate Students

Naidu, Vamsikrishna G; Summer 2015, Fall 2015, Spring 2016 and Fall 2016, - MCB290 research; Summer 2016, -MCB summer research fellowship; Spring 2017, Senior Thesis. Graduated with High Distinction in May 2017. Thesis title: "Specification of T1 Neuron Fate in Drosophila", winner of the Outstanding Undergraduate Research Achievement Award from the Department of Cell and Developmental Biology. Currently in medical school.

Phillip Quach, Fall 2015, Spring 2016- MCB290 undergrad research on Beat/Side family proteins, graduated in May 2016.

Shihao Liu, Fall 2015, Spring 2016, Fall 2016 and Spring 2017- MCB290 undergrad research; Summer 2017, Jenner Family Internship; Spring 2018, Senior Thesis. Graduated in May 2018.

Thesis title: "The ligand-receptor interaction of Netrin in regulation of axon targeting in the Drosophila visual system". Currently in medical school.

Arcan, Elizabeth, Fall 2015, MCB290 undergrad research.

Tongyu Zhang, Fall 2016, Spring 2017, and Fall 2017-MCB290 undergrad research; Spring 2018, Senior Thesis research. Graduated in May 2018. Currently a PhD student in MCB.

Xiaowen Yang, Spring 2017 and Fall 2017-MCB290 undergrad research; Summer 2017,- MCB summer research fellowship; Spring, summer and fall 2018, MCB290 undergrad research. Spring 2019 - Senior Thesis research. Thesis title: "Imp and Syp RNA-Binding Proteins and Temporal Patterning in Drosophila Medulla Neuroblasts".

Alankrita Venkatesh, Fall 2016, Summer 2017, Fall 2017, Fall 2018, Spring 2019, BIOC290 undergrad research. Graduated in May 2019. Currently in medical school.

Katherine Anderson, Summer and Fall 2018 – MCB290 undergrad research, Spring 2019, Senior Thesis research. Thesis title: " The Effects of Hdac1 and Trx on Temporal Expression Patterns in Medulla Neuroblasts.". Graduated in May 2019. Currently a PhD student in CUNY.

Andrew Ding, Spring and Fall 2020, Spring and Fall 2021, Spring and Fall 2022, Spring 2023 – MCB290 undergrad research.

Zheng Fang, Summer-Fall 2022, Spring 2023**,** MCB290 undergrad research.

Teaching Activities:

Spring 2016, half of MCB410, Developmental Biology, contact hours (lecturing): 21hrs, attending the lectures of the other lecturer: 21hrs, office hours: 14hrs, proctoring exams: 7hrs

Summer 2016, attended Mobile Summer Institute on Undergrad STEM Education

Spring 2017, half of MCB410, Developmental Biology, contact hours (lecturing): 35hrs (21hrs lecture+14 discussion sessions), proctoring exams: 13hrs

Spring 2017, MCB529, New Technologies in Cell & Developmental Biology, contact hours: 29hrs

Spring 2018, MCB410, Developmental Biology, Stem Cells and Regenerative Medicine, revised syllabus, contact hours: 42 hrs.

Spring 2019, MCB410, Developmental Biology, Stem Cells and Regenerative Medicine, contact hours: 42 hrs.

Spring 2020, MCB410, Developmental Biology, Stem Cells and Regenerative Medicine, contact hours: 42 hrs.

Spring 2021, MCB410, Developmental Biology, Stem Cells and Regenerative Medicine, contact hours: 42 hrs.

Spring 2022, MCB410, Developmental Biology, Stem Cells and Regenerative Medicine, contact hours: 42 hrs.

Spring 2023, MCB410, Developmental Biology, Stem Cells and Regenerative Medicine, contact hours: 42 hrs.

Publications:

# Denotes any publication derived from the candidate's thesis.
* Denotes publication that has undergone stringent editorial review by peers.
+ Denotes publication that was invited and carries special prestige and recognition.
[1] Equal contribution.
^ Xin Li as the Corresponding author
Student and postdoc trainees are underlined.

#* **Xin Li** and Richard W. Carthew (2005) "A microRNA mediates EGF receptor signaling and promotes photoreceptor differentiation in the *Drosophila* eye." ***Cell*** 123, 1267-1277.

#* **Xin Li**[1], Justin J. Cassidy[1], Catherine A. Reinke, Stephen Fischboeck and Richard W. Carthew (2009) "A microRNA imparts robustness against environmental fluctuation during development." ***Cell*** 137, 273–282.

* Young Sik Lee, Sigal Pressman, Arlise P. Andress, Kevin Kim, Jamie L. White, Justin J. Cassidy, **Xin Li**, Kim Lubell, Do Hwan Lim, Ik Sang Cho, Kenji Nakahara, Jonathan B. Preall, Priya Bellare, Erik J. Sontheimer & Richard W. Carthew (2009) "Silencing by small RNAs is linked to endosomal trafficking." ***Nature Cell Biology*** 11, 1150 - 1156

Zhenqing Chen, **Xin Li** and Claude Desplan (2012) "Deterministic or Stochastic Choices in Retinal Neuron Specification." ***Neuron***, 75, 739-742.

* **Xin Li**[1], Ted Erclik[1], Claire Bertet, Zhenqing Chen, Roumen Voutev, Srinidhi Venkatesh, Javier Morante, Arzu Celik and Claude Desplan (2013) "Temporal patterning of *Drosophila* medulla neuroblasts controls neural fates." ***Nature***, 498(7455):456-62.

+* **Xin Li**, Zhenqing Chen and Claude Desplan (2013) "Temporal patterning of neural progenitors in *Drosophila*" ***Current Topics in Developmental Biology***, 105:69-96.

* Claire Bertet, **Xin Li,** Ted Erclik, Matthieu Cavey, Brent Wells and Claude Desplan (2014) "Temporal patterning of neuroblasts controls Notch-mediated cell survival through regulation of Hid or Reaper.". ***Cell***. 158 (5):1173-86.

* Zhenqing Chen, Alberto Del Valle Rodriguez, **Xin Li**, Ted Erclik, Vilaiwan M. Fernandes, and Claude Desplan (2016). "A Unique Class of Neural Progenitors in the *Drosophila* Optic Lobe Generates Both Migrating Neurons and Glia." ***Cell Reports***, *15*(4), 774-786.

* Ted Erclik[1], **Xin Li[1]**, Maximilien Courgeon[1], Claire Bertet, Zhenqing Chen, Ryan Baumert, June Ng, Clara Koo, Urfa Arain, Rudy Behnia, Alberto Del Valle Rodriguez, Lionel Senderowicz, Nicolas Negre, Kevin P. White & Claude Desplan (2017) "Integration of temporal and spatial patterning generates neural diversity." ***Nature,*** 541, 365–370.

* Filipe Pinto-Teixeira, Clara Koo, Anthony Michael Rossi, Nathalie Neriec, Claire Bertet, **Xin Li**, Alberto Del-Valle-Rodriguez, and Claude Desplan (2018), "Development of Concurrent Retinotopic Maps in the Fly Motion Detection Circuit." ***Cell***. 173(2):485-498.e11. doi: 10.1016/j.cell.2018.02.053.

* Vamsikrishna G. Naidu, Yu Zhang, Scott Lowe, Alokananda Ray, Hailun Zhu and **Xin Li^** (2020) "Temporal progression of *Drosophila* medulla neuroblasts generates the transcription factor combination to control T1 neuron morphogenesis." ***Developmental Biology*.** 464 (1): 35-44. doi: https://doi.org/10.1016/j.ydbio.2020.05.005. ^ Corresponding author.

* Hailun Zhu, Sihai Dave Zhao, Alokananda Ray, Yu Zhang, and **Xin Li^** (2022)**.** "A comprehensive temporal patterning gene network in *Drosophila* medulla neuroblasts revealed by single-cell RNA sequencing." ***Nature Communications*.** 13, 1247 (2022). https://doi.org/10.1038/s41467-022-28915-3. ^ Corresponding author.

* Alokananda Ray and **Xin Li^** (2022)**.** "A Notch-dependent transcriptional mechanism controls expression of temporal patterning factors in *Drosophila* medulla". ***eLife***. 11:e75879. https://doi.org/10.7554/eLife.75879. ^Corresponding author.

* Yu Zhang, Scott Lowe, Andrew Z. Ding and **Xin Li^** (2023)**.** "Notch-dependent binary fate choice regulates the Netrin pathway to control axon guidance of *Drosophila* visual projection neurons." ***Cell Reports.*** 42 (3): 112143, https://doi.org/10.1016/j.celrep.2023.112143. ^Corresponding author.,

* Yu Zhang, Scott Lowe, Andrew Z. Ding and **Xin Li^** (2023)**.** "Axon targeting of Drosophila medulla projection neurons requires diffusible Netrin and is coordinated with neuroblast temporal patterning". ***Cell Reports.*** 42(3):112144. doi: 10.1016/j.celrep.2023.112144. ^Corresponding author.

Invited review: +* Alokananda Ray, Hailun Zhu, Andrew Ding, and **Xin Li**^ (2022). "Transcriptional and Epigenetic Regulation of Temporal Patterning in Neural Progenitors." ***Developmental Biology.*** 481:116-128. In Special Issue on "Transcriptional and epigenetic control of cell fate specification". doi: 10.1016/j.ydbio.2021.10.006. Epub 2021 Oct 16. ^Corresponding author.

Invited Book chapter: + Yu Zhang and **Xin Li**^. "Immunostaining of Drosophila brains to study optic lobe development." 2nd edition of Drosophila Neurobiology: A Laboratory Manual. Cold Spring Harbor Laboratory Press. Accepted.

Editorial: + **Xin Li**^ and Mubarak Hussain Syed^ (2022). "Time, Space, and Diversity". for Special Issue on "Temporal Patterning in the CNS", ***Seminars in Cell & Developmental Biology.*** Sep10;S1084-9521(22)00264-6, doi: 10.1016/j.semcdb.2022.09.002. ^Corresponding author.

Conference Oral Presentation and Invited talks:

2005, Cold Spring Harbor RNAi Meeting, Cold Spring Harbor, NY, "A microRNA mediates EGF receptor signaling and promotes photoreceptor differentiation in the *Drosophila* eye.".

2011, Neurobiology of *Drosophila* meeting, Cold Spring Harbor, NY, "Generating neuronal diversity in the *Drosophila* medulla.".

2011, New York Area Fly Eye Meeting, NY, "Generating neuronal diversity in the *Drosophila* medulla."

2012, SPINES (Seminars by Postdocs In Neuroscience: Extramural Series), NYU medical center, NY, "Generating neuronal diversity in the *Drosophila* medulla.".

2015, Midwest Drosophila Conference, "Generation of neural diversity in the *Drosophila* medulla",

2016, Invited Departmental seminar at the Department of Molecular, Cellular, & Developmental Biology, University of Michigan, "Generation of neural diversity in the *Drosophila* medulla."

2017, Invited talk at Janelia Conference on Control of Neuronal Identity, Howard Hughes Medical Institute, Janelia Research Campus, "The sharp transition between two temporal stages in *Drosophila* medulla neurogenesis relies on Notch signaling pathway and cell cycle".

2019, Invited talk at Conference on Quantitative Approaches in Biology, Northwestern University, Evanston, IL, "Computational Reconstruction of Gene-Gene Dynamics in Temporal Patterning of *Drosophila* Medulla Neuroblasts from Single-Cell RNA-Seq".

2022, Invited Departmental seminar at the Department of Biology, University of New Mexico, "Decoding the molecular clock controlling neural diversity generation in the visual center of *Drosophila*".

2022, Invited talk at Gordon Research Conference on Visual System Development, "Temporal patterning of *Drosophila* medulla neuroblasts at single-cell resolution."

2022, Invited Departmental seminar at the Department of Molecular BioSciences, Northwestern University, "Temporal Patterning of *Drosophila* Medulla Neuroblasts to Generate Neural Diversity".

Other meeting abstracts:

Justin J. Cassidy, Xin Li and Richard Carthew (2009) "microRNA-7 mediates robust developmental processes during environmental fluctuation." The 50th Annual Drosophila Research Conference, Chicago, IL. Conference Oral Presentation (presented by Cassidy).

Xin Li, Javier Morante, Arzu Celik, and Claude Desplan (2009) "A genetic screen for genes involved in neuronal specification and connectivity in the *Drosophila* medulla". The 50th Annual Drosophila Research Conference, Chicago, IL. Conference Poster.

Xin Li, Claire Bertet and Claude Desplan (2010) "A genetic screen for genes involved in neuronal specification and connectivity in the *Drosophila* medulla." Francis Crick Neuroscience Symposium, Cold Spring Harbor Asia, Suzhou, China. Conference Poster.

Ted Erclik, Xin Li, Claire Bertet, June Ng and Claude Desplan (2012) "Combinatorial input from two spatial axes generates neuronal diversity in the Drosophila medulla." 53rd Annual Drosophila Research Conference, Chicago, IL. Conference Oral Presentation (Presented by Erclik).

Claire Bertet, Ted Erclik, Xin Li, and Claude Desplan (2012) "Different strategies to generate neuronal diversity in the optic lobes." NeuroFly, Padua, Italy. Conference Poster.

Xin Li, Ted Erclik, Claire Bertet, Alberto del Valle Rodríguez, Natalie Neric, Dominic Didiano and Claude Desplan (2012) "Generating neuronal diversity in the *Drosophila* optic lobes." NeuroFly, Padua, Italy. Conference Oral Presentation (Presented by Desplan).

Alokananda Ray and Xin Li, (2015) "Cell cycle control of temporal transcription factor cascade in *Drosophila* medullary neuroblasts." 2015 Midwest Drosophila Conference, Conference Poster by Alokananda Ray.

Alokananda Ray and Xin Li, (2016) "Generation of neural diversity in the Drosophila medulla by intrinsic timing mechanism in neuroblasts", 2016 Gordon Research Conference on Visual System Development, Conference Poster by Alokananda Ray.

Yu Zhang, Shihao Liu and Xin Li (2018) “Regulation of Axon Targeting in the Drosophila visual system”, 2018 Gordon Research Conference on Neural Development, Conference Poster by Yu Zhang.

Alokananda Ray and Xin Li (2018) “The Notch pathway regulates expression of temporal patterning transcription factor Slp in Drosophila optic lobe medulla”, 2018 Gordon Research Conference on Neural Development, Conference Poster by Alokananda Ray.

Alokananda Ray, Hailun Zhu and Xin Li (2019) Sequential transcription of temporal transcription factors in Drosophila medulla neuroblasts is dependent on cell cycle, Notch signaling and super elongation complex”, Cold Spring Harbor conference on Mechanisms of Eukaryotic Transcription, Conference Poster by Alokananda Ray.

Yu Zhang, Scott Lowe, and Xin Li, (2021) “Netrins and receptors control Drosophila optic lobe organization and transmedullary neuron axon targeting”. Drosophila Research Conference. Conference Poster by Yu Zhang.

Hailun Zhu, Sihai Dave Zhao, Alokananda Ray, Yu Zhang, and Xin Li, (2022) “A comprehensive temporal patterning gene network controls developmental timing in Drosophila medulla neuroblasts”. Drosophila Research Conference. Conference Poster presented by Hailun Zhu.

Yu Zhang, Scott Lowe, and Xin Li, (2022) “Notch-dependent regulation of Netrin pathway controls Drosophila transmedullary neuron axon targeting and optic lobe organization”. Drosophila Research Conference. Oral presentation by Yu Zhang.

Grants received:

Active Support:

2 R01 EY026965-06A0
PI: Xin Li
Granting agency: NIH/NEI
Project title: Temporal patterning of neural progenitors to generate neural diversity
Funding period: 09/01/2022 to 05/31/2027
Award: amount/year: $250,000 /per year

Past Support:

1 R01 EY026965-01A1
PI: Xin Li
Granting agency: NIH/NEI
Project title: Temporal patterning of neural progenitors to generate neural diversity
Funding period: 09/01/2017 to 06/30/2022
Award: amount/year: $225,000/per year

Pilot grant from the NSF-Simons Center
PI: Xin Li
Co-PI: Sihai Dave Zhao,
Granting agency: NSF-Simons Center for Quantitative Biology at Northwestern University
Project title: Computational Reconstruction of Gene-Gene Dynamics in Temporal Patterning of Drosophila Medulla Neuroblasts from Single-Cell RNA-Seq
Funding period: 12/1/2018 – 11/30/2019
Award: amount/year: $40,000/per year.

Haiting Ma, PhD

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Cambridge, MA, 02142, United States

Email: hma@wi.mit.edu
Phone: 615-525-4066

Current position

Whitehead Institute for Biomedical Research — Cambridge, MA, United States
Postdoctoral fellow — 2014-present
Advisor: Prof. Rudolf Jaenisch

Education

Washington University in St. Louis — St. Louis, MO, United States
PhD in Developmental, Regenerative, and Stem Cell Biology — 2010-2013
Advisors: Prof. Robert J. Coffey, Jr., and Prof. Lilianna Solnica-Krezel

Vanderbilt University — Nashville, TN, United States
PhD candidate in Biological Sciences — 2007-2010
Advisors: Prof. Robert J. Coffey, Jr., and Prof. Lilianna Solnica-Krezel

University of Western Ontario — London, ON, Canada
M.Sc. in Biochemistry — 2004-2007
Advisor: Prof. Shawn S.C. Li

Nankai University — Tianjin, China
B.Sc. in Biotechnology — 2000-2004
Advisor: Prof. Laijun Xing

Research experience

Postdoctoral research with Prof. Rudolf Jaenisch — 2014 – present
Whitehead Institute for Biomedical Research

- Used transcriptomic, epigenomic, bioinformatic approaches, and a newly developed three-dimensional (3D) differentiation system to identify a nuclear receptor signaling pathway that facilitated differentiation of human pluripotent stem cells (hPSCs) to more mature hepatocytes, and established hPSC-hepatocytes in the mouse liver for 6 months without causing tumors.
- Differentiation of hPSC into liver resident macrophages (Kupffer cells).
- Established humanized mice with hPSC differentiated pancreatic beta cells engrafted in the mouse pancreas.
- Developed Ca^{2+} integrating reporter CaMPARI and insulin:CD19 double reporter hPSC to dissect mechanisms regulating beta cell maturation at the single-cell level.
- Established a tractable human autoimmune diabetes model *in vitro* and *in vivo*, and obtained evidence for beta cell pyroptosis during T-cell-mediated immune response against beta cells.
- Developed CRISPR-activation knockin mice for activation screens and for the identification of enhancer elements *in vivo*.

Postdoctoral Research with Prof. Robert J. Coffey. Jr — 2013 – 2014
Department of Medicine, Vanderbilt University Medical Center, Vanderbilt University

- Investigated mechanisms conferring colorectal cancer cells resistance to epithelial growth

factor receptor (EGFR) inhibitory antibody Cetuximab.
- Developed Egfr-Emerald knockin mice to study Egfr biology *in vivo*.

Graduate research with Profs. Robert J. Coffey, Jr., Lilianna Solnica-Krezel 2007 - 2013
First at the Department of Biological Sciences, Vanderbilt University, then at the Department of Developmental, Regenerative, and Stem Cell Biology, Washington University in St. Louis

- Characterizing oncoprotein PLAC8 (a protein associated with increased colorectal cancer invasion and metastasis) by using 3D culture system of colorectal cancer cells and zebrafish developmental genetics.
- Established loss-of-function zebrafish models of *placenta-specific 8.1* (*plac8.1*) by morpholino oligonucleotides and transcription activator-like effector nucleases (TALEN)-mediated mutagenesis, and linked zebrafish Plac8.1 and ubiquitination regulating protein Cops4 to motile cilia morphogenesis and function during zebrafish embryogenesis.
- Mechanistic studies of Nkd1 mediated antagonism of Wnt-beta-catenin signaling with biochemistry approaches.

Master research in biochemistry with Prof. Shawn S.C. Li 2004 - 2007
University of Western Ontario

- Systematic Screening of PLCγ1 SH3 domain mediated interactions followed by functional characterization of the interaction with HPK1 and PI3K P85.

Undergraduate research with Prof. Laijun Xing 2002 - 2004
Nankai University

- Cloning and characterization of a novel Δ6-fatty acid desaturase gene from *Rhizopus arrhizus*.
- Express *Rhizopus arrhizus* Δ6-fatty acid desaturase gene in the yeast, and in oilseed crops to test production of potentially healthier oil with less saturated fat.

Selected publications and manuscripts

1. **Haiting Ma**, Esmée de Zwaan, Yang Eric Guo, Paloma Cejas, Prathapan Thiru, Martijn van de Bunt, Jacob F. Jeppesen, Sudeepa Syamala, Alessandra Dall'Agnese, Brian J. Abraham, Dongdong Fu, Carrie Garrett-Engele, Tony Lee, Henry W Long, Linda G. Griffith, Richard A. Young, Rudolf Jaenisch. The nuclear receptor THRB facilitates differentiation of human PSCs into more mature hepatocytes. **Cell Stem Cell, 29 (2022): 1-15**.

2. **Haiting Ma**, Jacob Jeppesen, Rudolf Jaenisch. Human T-cells expressing a CD19 CAR-T receptor provide insights into mechanisms of human CD19 positive β-like cell destruction. **Cell Reports Medicine** 1 **(2020)**, **100097**.

3. **Haiting Ma**, Katherine J. Wert, Dmitry Shvartsman, Douglas A. Melton, and Rudolf Jaenisch. Establishment of human pluripotent stem cell derived pancreatic β-like cells in the mouse pancreas. **Proc Natl Acad Sci U S A 115 (2018): 3924-3929.**

4. **Haiting Ma**, Rudolf Jaenisch. Multiplex genome editing of human pluripotent stem cells using Cpf1 (**https://www.biorxiv.org/content/10.1101/2022.04.13.488123v1**).

5. **Haiting Ma**, Rudolf Jaenisch. Epigenetic insights obtained by locus specific editing of chromatin accessibility (manuscript in preparation).

6. Malkiel A. Cohen, Shupei Zhang, Satyaki Sengupta, **Haiting Ma**, Brendan Horton, George Bell, Rani E. George, Stefani Spranger, and Rudolf Jaenisch. Formation of Human Neuroblastoma in Mouse-Human Neural Crest Chimeras. **Cell Stem Cell 26 (2020): 579-592**.

7. Yu-Ping Yang*, **Haiting Ma***, Alina Starchenko, Won Jae Huh, Wei Li, F. Edward Hickman, Qin Zhang, Jeffrey L. Franklin, Douglas P. Mortlock, Sabine Fuhrmann, Bruce D. Carter, Rebecca A. Ihrie, and Robert J. Coffey. A Chimeric Egfr Protein Reporter Mouse Reveals Egfr Localization and Trafficking In Vivo. **Cell Reports 19 (2017): 1257-1267** (* equal contributions).

8. Cunxi Li, Bhuminder Singh, Ramona Graves-Deala, **Haiting Ma**, Alina Starchenko, William H. Fry, Yuanyuan Lu, Yang Wang, Galina Bogatchevaa, Mohseen P. Khanh, Ginger L. Milnei, Shilin Zhao, Gregory Daniel Ayers, Nenggan Li, Huaying Hu, Mary Kay Washington, Timothy J. Yeatman, Oliver G. McDonald, Qi Liu, and Robert J. Coffey. Three-dimensional culture system identifies a new mode of cetuximab resistance and disease-relevant genes in colorectal cancer. **Proc Natl Acad Sci U S A 114 (2017): E2852-E2861.**

9. Cunxi Li*, **Haiting Ma***, Zheng Cao, Yang Wang, Alina Starchenko, Anne Powell, Ramona Graves-Deal, Gregory D Ayers, Mary Kay Washington, Michael Gerdes, Lila Solnica-Krezel and Robert J. Coffey. Excess PLAC8 promotes an unconventional ERK2-dependent EMT in colon cancer. **J Clin Invest 124 (2014): 2172–2187** (* equal contributions).

10. Terence J. Van Raay, Nicholas J. Fortino, Bryan W. Miller, **Haiting Ma**, Garnet Lau, Cunxi Li, Jeffery L. Franklin, Liliana Attisano, Lilianna Solnica-Krezel, Robert J. Coffey. Naked1 antagonizes Wnt signaling by preventing nuclear accumulation of β−catenin. **PLoS One 6 (2011): e18650.**

11. Chenggang Wu*, **Haiting Ma***, Kevin R. Brown, Matt Geisler, Lei Li, Eve Tzeng, Christina Y. H. Jia, Igor Jurisica and Shawn S.-C. Li. Systematic identification of SH3 domain-mediated human protein-protein interactions by peptide array target screening. **Proteomics 7 (2007): 1775-1785** (* equal contributions).

12. Qi Zhang, Mingchun Li, **Haiting Ma**, Ying Sun, Laijun Xing. Identification and characterization of a novel Δ6-fatty acid desaturase gene from *Rhizopus arrhizus*. **FEBS Letters 556 (2004): 81-85.**

Scholarships and awards

1. Best talk at the inBio forum for Cold Spring Harbor Laboratory conference on Gene Expression and Signaling in the Immune System (2018).

2. Whitehead Institute for Biomedical Research (WIBR) Education Award (2018).

3. Victor Hamburger award for best student talk. Washington University in St. Louis Program of Developmental Biology retreat (2011).

4. Mosig Award, Department of Biological Sciences, Vanderbilt University (2009).

5. Western Graduate Research Scholarship, University of Western Ontario (2005).

6. International Graduate Student Scholarship (IGSS) and Special University Scholarship (SUS), University of Western Ontario (2004).

7. The First-Class Scholarship of Nankai University; Baosteel Scholarship (2003).

8. National Scholarship (the First-Class) (2002).

Selected presentations

1. **Haiting Ma**, Esmée de Zwaan, Yang Eric Guo, Paloma Cejas, Prathapan Thiru, Martijn van de Bunt, Jacob F. Jeppesen, Sudeepa Syamala, Alessandra Dall'Agnese, Brian J. Abraham, Dongdong Fu, Carrie Garrett-Engele, Tony Lee, Henry W Long, Linda G. Griffith, Richard A. Young, Rudolf Jaenisch. A nuclear receptor facilitates differentiation of human pluripotent stem cells into more mature hepatocytes. **Invited talk**: The 30th Annual Irwin M. Arias, M.D. Symposium of the American Liver Foundation (2021).

2. **Haiting Ma**, Esmée de Zwaan, Yang Eric Guo, Paloma Cejas, Prathapan Thiru, Martijn van de Bunt, Jacob F. Jeppesen, Sudeepa Syamala, Alessandra Dall'Agnese, Brian J. Abraham, Dongdong Fu, Carrie Garrett-Engele, Tony Lee, Henry W Long, Linda G. Griffith, Richard A. Young, Rudolf Jaenisch. *In vitro* generation of hPSC-differentiated hepatocyte-like cells with advanced maturity by modulating a nuclear receptor-mediated gene regulatory network. **Poster presentation**: Epigenetics and chromatin virtual meeting organized by Cold Spring Harbor Laboratory (2020).

3. **Haiting Ma**, and Rudolf Jaenisch. A synthetic immunology approach to study human type 1 diabetes. **Poster presentation**: Gene Expression and Signaling in the Immune System annual meeting at the Cold Spring Harbor Laboratory (2018).

4. **Haiting Ma**, and Rudolf Jaenisch. Dissecting T1D mechanisms with engineered human pluripotent stem cells and humanized mouse models. **Selected talk**. Whitehead Institute postdoc retreat (2018).

5. **Haiting Ma**, Katherine J. Wert, Dmitry Shvartsman, Douglas A. Melton, and Rudolf Jaenisch. Disease modeling and mechanism dissection with human pluripotent stem cells and humanized mice. **Poster presentation**, International Society for Stem Cell Research annual meeting, Boston, MA (2017).

6. **Haiting Ma**, Cunxi Li, Robert J Coffey, Lilianna Solnica-Krezel. Zebrafish *placenta-specific 8.1* (*plac8.1*) links ubiquitination regulating protein Cops4 to motile cilia morphogenesis and function. **Selected talk**, Society for Developmental Biology 71st Annual Meeting. Montreal, QC, Canada (2012).

7. **Haiting Ma**. Zebrafish *placenta-specific 8.1* (*plac8.1*) is required for motile cilia morphogenesis and function. 2011, 19th Annual Developmental Biology Retreat, **Viktor Hamburger Award for the best oral presentation by students.** Washington University in St. Louis (2011).

8. **Haiting Ma**, Cunxi Li, Robert J Coffey, Lilianna Solnica-Krezel. Zebrafish *placenta-specific 8* (*plac8*) homolog is required for motile cilia activity, and its overexpression results in gastrulation defects. **Selected talk**. The 9th international meeting on zebrafish development and genetics. Madison, WI (2010).

Mentoring experience

1. Esmée de Zwaan, Master student (Leiden University). Career after graduation: PhD student in the Departments of Mass Spectrometry Imaging (MSI) and Pathology, Leiden University Medical Center.

2. Zoe Glasser Breeding, undergraduate student (Wellesley College). Career after graduation: commercial development analyst at Ginkgo Bioworks.

3. Natasha Joglekar, undergraduate student (MIT). Career after graduation: N/A.

4. Skyler Kaufman, undergraduate student (MIT). Career after graduation: data science engineer.

5. Hannah Knoll, undergraduate student (Wellesley College). Career after graduation: commercial development analyst at Ginkgo Bioworks.

6. Elan Ness-Cohn, undergraduate student (MIT). Career after graduation: PhD student in the laboratory of Prof. Rosemary Braun, Northwestern University.

Teaching experience

2018 **Instructor**
Department of Biological Sciences, MIT
Course: 7.342. A Double-Edged Sword: Cellular Immunity in Health and Disease (https://ocw.mit.edu/courses/biology/7-342-a-double-edged-sword-cellular-immunity-in-health-and-disease-fall-2018/)
Responsibilities: designing the course, selecting course materials, writing the syllabus, recruiting students, teaching the course, grading student' papers, and organizing the class field trip.

2009 **Teaching assistant**
Department of Biological Sciences, Vanderbilt University
Course: Introduction to Biological Science Lab (111A and 111B)
Responsibilities: giving lectures, organizing discussion sessions, preparing equipment and experiment demonstrations during class, holding office hours after class to answer students' questions, grading students' papers and the exams of accompanying lectures.

Pending grants

1. Multi-omics research grant (Diagenode)
2. Co-creation Greenhous grant (Bio Innovation Hub of Novo Nordisk)

Services

Manuscript reviewing services for *Frontiers in Cell and Developmental Biology*, *PLOS ONE*, *Stem cell international*, *International Journal of Biological Sciences*, and *Molecular and Cellular Biochemistry*.

Curriculum Vitae

Kannanganattu, V. Prasanth Ph.D.

(*aka*: Prasanth K. V. Kannanganattu)

Contact Information
Kannanganattu, V. Prasanth Ph.D.
Professor of Cell and Developmental Biology
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Research Scholar, American Cancer Society
C426, Chemical and Life Sciences Laboratory
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Urbana, IL 61801
Phone: 217-244-7832 (office)
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Education

Bachelor of Science (Hons.) Zoology, Mahatma Gandhi University, Kerala, INDIA, with distinction in Zoology, Botany and Chemistry, 1992.

Masters of Science, Medical Entomology, Vector Control Research Center, Pondicherry University, INDIA, with distinction in Medical Entomology, 1994. Dissertation title: Longevity and infectivity of infective stage larvae of *Brugia malayi* in *Aedes aegypti*: Biological and Biochemical correlates, Advisor: Dr. Subhash. L. Hoti.

Ph.D., Banaras Hindu University, Varanasi, INDIA, Cytogenetics laboratory, Department of Zoology, 2001. Thesis title: Studies on the regulation of intracellular localization and turnover of the heat shock gene products in different cell types of *Drosophila,* Advisor: Dr. Subhash C. Lakhotia

Positions and Honors.

Positions and Employment:

1992-1994:	Masters in Medical Entomology, Vector Control Research Center, Pondicherry University, India, *Advisor: S. L. Hoti, Ph.D.*
1995-2000:	Ph. D. student, Cytogenetics Laboratory, Department of Zoology, Banaras Hindu University, Varanasi, India, *Advisor: S. C. Lakhotia, Ph.D.*
2001-2007:	Postdoctoral Fellow, Cold Spring Harbor Laboratory, USA, *Advisor: David L. Spector, Ph.D.*
2007-2013:	Assistant Professor, Department of Cell and Developmental Biology University of Illinois at Urbana-Champaign (UIUC).
2013-2020	Associate Professor, Department of Cell and Developmental Biology University of Illinois at Urbana-Champaign (UIUC).
2020-present	Professor, Department of Cell and Developmental Biology University of Illinois at Urbana-Champaign (UIUC).

Honors:

1995-1997:	Junior Research Fellowship from the Council for Scientific and Industrial Research (CSIR), New Delhi, Govt. of India.
1998-2000:	Senior Research Fellowship from CSIR, New Delhi, Govt. of India.
2001:	Cold Spring Harbor Laboratory Association Post doctoral fellowship
2002-2004:	Principal investigator (Post-doctoral award), Breast Cancer Research Program grant, Department of Defense, USA.
2011:	Research Scholar, American Cancer Society

2017: NSF-EAGER grant recipient
2022: Named Horwitz scholar in Cell and Developmental Biology

Editorial board member:
Frontiers in cancer Genetics (http://www.frontiersin.org/Cancer_Genetics/editorialboard)
Molecular and Cellular Biology (MCB) (Untill-2018)
Associate Editor, RNA Biology
Associate Editor, Nucleic Acids Research Cancer

Ad hoc Reviewer of more than 50 peer-review journals. Key examples include, *Cancer Research, Cell, Cell Metabolism, Cell Reports, Elife, EMBO J., EMBO Rep., Genome Biology (GB), Genome Research, iScience, Journal of Cell Biology (JCB), Journal of Cell Science (JCS), J. Molecular Cellular Biology (JMCB), Molecular Biology of the Cell (MBoC), Molecular Cell, Molecular and Cellular Biology (MCB), Nature, Nature Cell Biology, Nature Genetics, Nature Structural and Molecular Biology (NSMB), Nature Communications, Nature Rev. in Molecular and Cellular Biology, Nucleic Acids Research (NAR), PloS Biology, PLOS Genetics, PNAS, RNA, Science, Science Advances, Trends in Biochemical Sciences (TiBs), Trends in Genetics (TIGs).*

Review panel/reviewer funding agencies:
American Cancer Society (permanent member).
BBSRC, UK
MG/NIH: Ad hoc.
GRIC/NIH: Ad hoc.
NIBLB/NIH: Ad hoc.
NIGMS/SPORE: Adhoc
National Science Foundation (NSF), USA.
Schroedinger Fellowship (Austrian Science Fund), Austria,
IASys-Wellcome Trust
Wellcome Trust, UK
Sheikh Hamdan Bin Rashid Al Maktoum Medical Research Grant (United Arab Emirates)
Medical Research Council, UK
United Arab Emirates University, Sultan Qaboos University, Deanship of research, Research Proposal, UAE
Health and Medical Research Fund, Food and Health Bureau, The Government of the Hong Kong, SAR
Association of International Cancer Research (AICR), UK.
Global Research Network Program Grant, National Research Foundation of Korea.
Terry Fox Foundation, Canada.
INSERM, France.
Virtual National Cancer Institute (VNCI), Department of Biotechnology, Govt. of India, INDIA.
UIUC Research Board
Department of Biotechnology, Government of India.
Breast cancer now, UK.
India Alliances, DBT-WELLCOME Trust.

Other Experience and Professional Memberships:
I. Invited talks in scientific meetings (in chronological order)
1. All India Cell Biology Conference, Kerala, INDIA (1999).
2. Dynamic Organization of Nuclear Function meeting, CSHL, USA (2002).
3. CSHL inhouse seminar series, CSHL, USA (2004).
4. Dynamic Organization of Nuclear Function meeting, CSHL, USA (2004).
5. Eykaryotic mRNA processing meeting, CSHL, USA (2005).
6. EMBO/FEBS meeting on Nuclear Structure and Dynamics, La Grande Motte, FRANCE (2005).
7. Dynamic Organization of Nuclear Function meeting, CSHL, USA (2006).
8. Center of Advanced studies in Zoology, Banaras Hindu University, Varanasi, INDIA (2006).
9. XII Annual RNA Society meeting, Madison, Wisconsin, USA (2007).

10. Department of Biology, Wright State University, OH, USA (2007).
11. Donnelly CCBR/MaRS symposium on Regulatory RNA, Toronto, CANADA (2008).
12. 31st annual meeting of the Molecular Biology society of Japan (BMB2008), Kobe, JAPAN (2008)
13. Keio University School of Medicine, Tokyo, JAPAN (2008)
14. Rustbelt RNA meeting (RRM), Ohio, USA. (October 16, 2009).
15. Department of Genetics and Developmental Biology, University of Connecticut Health Center, Connecticut, USA (April 8, 2010).
16. Biology of post-transcriptional gene regulation, Gordon Research Conferences, Salve Regina University, Newport RI, USA (July 18-23, 2010).
17. ISIS Pharmaceuticals, Carlsbad, CA, USA (January 5th, 2011).
18. Workshop on "Modulators of RNA fate and function" MFPL, University of Vienna, AUSTRIA (January 2011).
19. Institute of Stem cell Biology and regenerative medicine (InStem), National Center Biological Sciences, Bangalore, INDIA (Feb 2011).
20. Chromatin and Nuclear organization mini symposium, Feinberg School of Medicine, Northwestern University, Chicago IL, USA (May, 2011).
21. 12th Young scientist meeting of the German Society for Cell Biology (DGZ) "RNA & Disease, Jena, Germany (09-08-2011 to 09-09-2011).
22. Organizer and chair of the Mini symposium on "Cell biology and regulatory RNAs", Experimental Biology 2012, Annual meeting of the American Association of Anatomists and Experimental Biologists (AAAE), San Diego, USA (04-21-2012 to 04-25-2012).
23. 17th Annual RNA Society meeting, University of Michigan, Ann Arbor, MI, USA (June, 2012).
24. 32nd Annual convention of Indian Association for Cancer Research (IACR), Paintal Memorial Golden Jubilee Auditorium, Vallabhbhai Patel Chest Institute (VPCI), University of Delhi, North Campus, Delhi, India (February 13th-16th, 2013).
25. Department of Biochemistry and Molecular Genetics, Cancer Cell signaling seminar series, University of Illinois, Chicago, IL, USA (April, 4th 2013).
26. RNA, Cell and Gravity, Human Frontier Science Program Meeting, Department of Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, USA (October 19, 2013).
27. Department of Cell and molecular biology, Northwestern University Feinberg School of Medicine, Chicago, IL, USA (November 15th 2013).
28. National Institute of Immunology, New Delhi, INDIA (December 16th, 2013).
29. XXXVIII All India Cell Biology Conference on Cell Dynamics and Cell Fate, Indian Institute of Science, Bangalore, India (December 22nd-24th, 2013).
30. Nuclear RNA in Gene regulation and Chromatin Structure, IMB conference, Mainz, Germany (October 9th-12th, 2014).
31. School of Medicine, Southern Illinois University (SIU), Springfield, IL, USA (December 8th, 2014).
32. UMass Medical School, Worcestor, MA, USA (June 17th 2015).
33. International symposium on Chromatin Structure, Dynamics, and Function, Awaji, Japan (August 23-26, 2015.
34. International symposium on Nuclear Structure and Epigenetics, Institute of Molecular Embryology and Genetics, Kumamoto University, Kumamoto, Japan (August 27th, 2015).
35. Department of Genetics, Cell Biology and Development, University of Minnesota, MN, USA (March 3rd, 2016).
36. National Cancer Institute, NIH, USA (April, 5th 2016).
37. Biological Fall seminar series, University of Texas at Dallas, USA (Dec 8th, 2016).
38. Keynote speaker, Cancer Epigenetics and Nuclear Dynamics Mini-symposium on the topic "The roles of non-coding RNAs in Tumorigenesis". Northwestern University, USA (Dec 19th, 2016).
39. Medical Sciences Seminar in Cancer Biology, School of Medicine, Indiana University, Bloomington (March 6th, 2017).
40. ASBMB, Undergraduate UIUC chapter, ASBMB Professor seminar, UIUC (March 29th, 2017).
41. ResearcHStart symposia, Cancer Center, UIUC
42. ASBMB special symposia series, Emerging roles for the nucleolus, Stowers Institute, Kansas City, (October 26-29, 2017).

43. Center for Computational Biology and Bioinformatics, IU school of Medicine, Indianapolis (Dec 11th 2017).
44. UIUC Cancer Center, faculty seminar series (May, 3rd, 2018).
45. Keystone meeting on Long Noncoding RNAs, Whitsler, Vancouver, Canada (Feb, 2019).
46. Southern Illinois University, (March 22, 2019).
47. Loyola University, Chicago, Dept. Cancer Biology, (April 25th 2019).
48. Aegean Conference, Short and Long Noncoding RNAs, Crete, Greece, (June 18-22nd, 2019).
49. Keystone meeting on noncoding RNAs, Whitsler, Vancouver, Canada (12th-17th January 2020).
50. CSHL Genome Organization and Nuclear Function, (April 28th-May 1st) (online meeting).
51. Nucleic Acids 2020 Annual meeting (Nov, 6th 2020) (online meeting).
52. MACFAST invited talk, Kerala, INDIA (Nov. 16th, 2020) (online meeting).
53. Cancer survivors meeting, UIUC cancer center, (Dec. 2nd 2020) (online meeting).
54. Cancer center, Annual retreat, UIUC, (Dec. 8th 2020) (online meeting).
55. NIH/NHLBI long non-coding RNA symposium, March11th-12th, 2021.
56. Co-Chair, Keystone Symposia: Non-coding RNAs: Biology and applications, May 11-14, 2021.
57. MicroRNA symposium: Decoding microRNA mysteries in health and disease, University of Illinois, Chicago, September, 23rd, 2021.
58. ASBMB special symposia series, Emerging roles for the nucleolus, October 6-9, 2021.
59. Co-Chair, Genome Organization and Nucleus function, CSHL meeting, May 3rd-6th, 2022.
60. The nuclear bodies conference: Hubs of genomic activity. FASEB meeting, Nova Scotia, Canada, July 24-28th 2022.
61. The nucleolus as a diverse gene expression hub: sub-group meeting: ASCB/EMBO 2022 meeting, Washington DC. Dec., 3-7th 2022.
62. Cytogenetics laboratory, Dept of Zoology, BHU, India. April 27th, 2023.

II. Invited Organizer, Chairperson, etc. of scientific meeting or meeting session

1. Chair of a session in the 'Rustbelt RNA meeting', Dayton Ohio, October 21st-22nd, 2011.
2. Organizer and chair of the Mini symposium on "Cell biology and regulatory RNAs", Experimental Biology 2012, Annual meeting of the American Association of Anatomists and Experimental Biologists (AAAE), San Diego, USA (04-21-2012 to 04-25-2012).
3. Keynote speaker, Cancer Epigenetics and Nuclear Dynamics Mini-symposium on the topic "The roles of non-coding RNAs in Tumorigenesis". Northwestern University, USA (Dec 19th, 2016).
4. Chair of a session in the 'Rustbelt RNA meeting', Indianapolis, October, 2017.
5. chair of a session: Centenary celebration, Department of Zoology, BHU, India
6. chair of a session: Keystone symposium on ncRNAs, 2021.
7. chair of a session: CSHL meeting of Genome organization, May 2022.

Peer-reviewed Publications

1. Lin YC, Liu D, Chakraborty A, Macias V, Brister E, Sonalkar J, Shen L, Mitra J, Ha T, Kajdacsy-Balla A, **Prasanth KV**, Prasanth SG. (**2023**) DNA Damage-Induced, S-Phase Specific Phosphorylation of Orc6 is Critical for the Maintenance of Genome Stability. ***Mol Cell Biol.*** 2023;43(4):143-156. doi: 10.1080/10985549.2023.2196204.
2. Arif W, Mathur B, Saikali MF, Chembazhi UV, Toohill K, Song YJ, Hao Q, Karimi S, Blue SM, Yee BA, Van Nostrand EL, Bangru S, Guzman G, Yeo GW, **Prasanth KV**, Anakk S, Cummins CL, Kalsotra A. (2023) Splicing factor SRSF1 deficiency in the liver triggers NASH-like pathology and cell death. ***Nat Commun.*** 2023 Feb 9;14(1):551. doi: 10.1038/s41467-023-35932-3. PMID: 36759613.
3. Hsieh PH, Phal Y, **Prasanth KV**, Bhargava R. (2023) Cell phase identification in a three-dimensional engineered tumor model by infrared spectroscopic imaging. ***Anal Chem.*** 2023 Feb 14;95(6):3349-3357. doi: 10.1021/acs.analchem.2c04554. Epub 2022 Dec 27. PMID: 36574385.
4. Kenkel S, Gryka M, Chen L, Confer MP, Rao A, Robinson S, **Prasanth KV**, Bhargava R. (2022) Chemical imaging of cellular ultrastructure by null-deflection infrared spectroscopic measurements. ***Proc Natl Acad***

Sci U S A. 2022 Nov 22;119(47): e2210516119. doi: 10.1073/pnas.2210516119. Epub 2022 Nov 14. PMID: 36375054.

5. Lin YC, … **Prasanth KV**, Prasanth SG. (2022) Orc6 is a component of the replication fork and enables efficient mismatch repair. ***Proc Natl Acad Sci U S A.*** 2022 Mar 31;119(22):e2121406119. doi: 10.1073/pnas.2121406119. Epub 2022 May 27. PMID: 35622890.
6. Kurniawan F, Chetlangia N, Kamran M, Redon CE, Pongor L, Sun Q, Lin YC, Mohan V, Shaqildi O, Asoudegi D, Hao Q, Khan A, Aladjem MI, Prasanth KV, Prasanth SG. **(2022)** BEND3 safeguards pluripotency by repressing differentiation-associated genes. ***Proc Natl Acad Sci U S A.*** 2022 Mar 1;119(9):e2107406119. doi: 10.1073/pnas.2107406119. PMID: 35217604.
7. Cable J, Heard E, Hirose T, Prasanth KV, Chen LL, Henninger JE, Quinodoz SA, Spector DL, Diermeier SD, Porman AM, Kumar D, Feinberg MW, Shen X, Unfried JP, Johnson R, Chen CK, Wilusz JE, Lempradl A, McGeary SE, Wahba L, Pyle AM, Hargrove AE, Simon MD, Marcia M, Przanowska RK, Chang HY, Jaffrey SR, Contreras LM, Chen Q, Shi J, Mendell JT, He L, Song E, Rinn JL, Lalwani MK, Kalem MC, Chuong EB, Maquat LE, Liu X. (**2021**) Noncoding RNAs: biology and applications-a keystone symposia report. ***Ann N Y Acad Sci.*** 2021 Dec;1506(1):118-141. doi: 10.1111/nyas.14713. Epub 2021 Nov 17. PMID: 34791665.
8. Hao Q, Prasanth KV. (**2021**) Regulatory roles of nucleolus organizer region-derived long non-coding RNAs. ***Mamm Genome***. 2021 Aug 26. doi: 10.1007/s00335-021-09906-z. Online ahead of print. PMID: 34436664.
9. Han YJ, Zhang J, …..Prasanth KV, Gack MU, Olopade OI. (**2021**) The BRCA1 pseudogene negatively regulates anti-tumor response through inhibition of innate immune defense mechanisms. ***Cancer Res.*** 2021 Jan 20:canres.1959.2020. doi: 10.1158/0008-5472.CAN-20-1959.
10. Muys BR, ……Prasanth KV, Aladjem MI, Lal A, Hafner M. (**2021**) The p53-induced RNA-binding protein ZMAT3 is a splicing regulator that inhibits the splicing of oncogenic CD44 variants in colorectal carcinoma. ***Genes Dev.*** 2021 Jan 1;35(1-2):102-116. doi: 10.1101/gad.342634.120.
11. Li XL, Pongor L, …….. Prasanth KV, Aladjem MI, Andresson T, Lal A. (**2020**) A small protein encoded by a putative lncRNA regulates apoptosis and tumorigenicity in human colorectal cancer cells. ***Elife.*** 2020 Oct 28;9:e53734. doi: 10.7554/eLife.53734.
12. Hao Q, Zong X, …… Prasanth KV. (**2020**) The S-phase-induced lncRNA SUNO1 promotes cell proliferation by controlling YAP1/Hippo signaling pathway. ***Elife.*** 2020 Oct 27;9:e55102. doi: 10.7554/eLife.55102.
13. Hsu RYC, Giri S, ……. Prasanth KV, Prasanth SG. (**2020**) The E3 ligase RFWD3 stabilizes ORC in a p53-independent manner. ***Cell Cycle***. 2020 Nov;19(21):2927-2938. doi: 10.1080/15384101.2020.1829823.
14. Sun Q, Song YJ, Prasanth KV. (**2020**) One locus with two roles: microRNA-independent functions of microRNA-host-gene locus-encoded long noncoding RNAs. ***Wiley Interdiscip Rev RNA***. 2020 Sep 17:e1625. doi: 10.1002/wrna.1625.
15. Sun Q, Hao Q, …… Prasanth KV. (**2020**) Antagonism between splicing and microprocessor complex dictates the serum-induced processing of lnc-MIRHG for efficient cell cycle reentry. ***RNA***. 2020 Nov;26(11):1603-1620. doi: 10.1261/rna.075309.120.
16. Tariq A, Hao Q, …… Prasanth KV. (**2020**) LncRNA-mediated regulation of SOX9 expression in basal subtype breast cancer cells. ***RNA.*** 2020 Feb;26(2):175-185. doi: 10.1261/rna.073254.119. Epub 2019 Nov 5.
17. Rosaline Y.C. Hsu, Yo-Chuen Lin[1], ……..Kannanganattu V. Prasanth[1] and Supriya G. Prasanth (**2020**) ORCA/LRWD1 regulates homologous recombination at ALT-telomeres by modulating heterochromatin organization. ***iScience*** 23(5): 101038. doi: 10.1016/j.isci.2020.101038.
18. Gast M, …….. Prasanth KV, Meder B, Kuss A, Landmesser U, Poller W. (**2019**) Immune system-mediated atherosclerosis caused by deficiency of long non-coding RNA MALAT1 in ApoE-/- mice. ***Cardiovasc Res.*** 2019 Feb 1;115(2):302-314.
19. Mahdieh Jadaliha[1], Omid Gholamalamdari[1], ……. and Kannanganattu V. Prasanth[1#] (**2018**) A natural antisense lncRNA controls breast cancer progression by promoting tumor suppressor gene mRNA stability. ***Plos Genetics,*** Nov 29; 14(11):e1007802. Doi: 10.1371/journal.pgen.1007802.
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Issue highlight: A long hard look at non-coding RNAs ***J Cell Sci.*** 2010 123:e2105.
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Preview: Henikoff S. (2004) Visualizing gene expression: an unfolding story. ***Cell,*** Mar 5; 116(5): 633-634.
This article was recommended in the 'must read category' (F1000 factor of 6.5) by Faculty of 1000, Biology (http://f1000biology.com/article/id/1018099/evaluation).
69. K. V. Prasanth, P. A. Sacco-Bubulya, S. G. Prasanth and D. L. Spector (**2003**) Sequential entry of components of the gene expression machinery into daughter nuclei**.** ***Mol. Biol. Cell*** **14(3):** 1043-1057 (PMCID: PMC151578).

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This article cited in the 'recommended category' (F1000 factor of 3.2) by Faculty of 1000, Biology (http://f1000biology.com/article/id/1008718/evaluation)

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Manuscript under review/revision/in preparation

1. Shayan Tabe-Bordbar, You Jin Song, Kannanganattu V. Prasanth, Saurabh Sinha. Mechanistic analysis of enhancer sequences in the Estrogen Receptor transcriptional program (manuscript under review).
2. Hao Q, Liu, Minxue …….Kannanganattu V. Prasanth. Monoallelically-expressed Noncoding RNAs form nucleolar territories on NOR-containing chromosomes and regulate rRNA expression (manuscript under revision).
3. Singh D, Cong, Z et al., Prasanth KV. MANCR lncRNA controls cell-cycle progression by regulating the level of NET1A via sponging hnRNP-L. (manuscript in preparation).

Research Support

I. Current Research Support

a. Active

1. Title: Characterization of nuclear-retained RNA-mediated gene regulatory mechanisms
Funding source: NIH RO1 (NIGMS)
Date of proposed project: 9/2020-6/30/2024
Total cost: $2,150,305.00 (total)/ 4 years (direct: ~200,000/year).
Position: PI
Co-PI/collaborators: Dr. Erik Nelson, Dr. Auinash Kalsotra, Dr. Andrew Belmont.

2. Title: Monoallelic autosomal spreading of a novel family of nucleolus-localized ncRNAs
Funding source: NIH/R21
Date of proposed project: 2/2020-12/2023
Total cost: $410,150.00 (total)/ 2 years (proposal in NCE).
Position: PI
Co-PI/collaborators: Dr. Sarath C. Janga (IUPUI, Indiana).

3 Title: Establishment of a spatially resolved noncoding RNA-mRNA interactome map for breast cancer progression
Funding source: UIUC, Cancer Center at Illinois
Date of proposed research: 8/1/2020-8/15/2023
Total cost: $250,000 (total)/ 2 years
Position: co-PI ($29,000/year for 2 years)
PI: Dr. Hee-Sun Han, UIUC

4. Title: Post-transcriptional mechanisms of gene regulation in cardiac cell growth and development
Funding source: NIH RO1 (NHLBI)
Date of proposed project: 2020-2024

Position: co-I (0.5 summer month, and 25% student RAship).
PI: Dr. Auinash Kalsotra, UIUC

5. Title: FORce control of Cancer tumor micro Environment (FORCE)
Funding source: UIUC, Cancer Center at Illinois
Date of proposed research: 8/1/2021-8/15/2023
Total cost: $250,000 (total)/ 2 years
Position: co-I (~$30,000/year for 2 years)
PI: Dr. Taher Saif, UIUC

b. Pending grants

NONE

II. Completed research support

RSG (11-174-01-RMC) Prasanth Kannanganattu (PI) 7/2/2011-6/30/2015
Funding source: American Cancer Society
Title: Role of noncoding RNA in pre-mRNA splicing: Implications in breast cancer.
Goal: The goal of this research proposal is to understand the role of MALAT1 lncRNA in cellular transformation and breast cancer progression. We demonstrated that depletion of *MALAT1* reduced tumorigenic and metastatic properties of breast cancer cells, whereas its overexpression dramatically enhanced lung colonization in mouse xenograft models. We demonstrated that MALAT1 regulates alternative splicing of pre-mRNA, and influences the phosphorylation and speckle localization of SRSFs.

UIUC seed grant Prasanth Kannanganattu (co-PI) 5/1/2014-4/30/2016
Funding source: Beckman Institute seed grant, UIUC
Title: Engineered 3D breast tumors: from basic Science to biomedical use.
Goal: The goal of this project is to develop a manufacturing approach to making 3D tumor models of the human breast and to demonstrate their use in biomarker development driving tumor progression.

R01 Prasanth Kannanganattu (PI) 7/5/2011-2/29/2018
Funding source: NIH (NIGMS)
Title: Characterization of nuclear retained RNA-mediated gene regulatory mechanism.
Goal: The goal of this study is to characterize the factors that mediate the stress-induced post-transcriptional cleavage of nuclear-retained RNA. In addition, we also investigate the involvement of A to I editing in the nuclear retention and/or cleavage of nuclear-restricted RNA.

Research Board grant Prasanth Kannanganattu (PI) 7/1/2017-12/31/2019
Funding source: Research Board, UIUC
Title: Determine the role of Malat1 lncRNA in hypoxia response
support: $26,000

Seed grant Prasanth Kannanganattu (PI) 8/1/2019-8/15/2022
Funding source: CCIL, UIUC
Title: Characterization of oncogenic noncoding RNAs in breast cancer progression and metastasis.
Total cost: $250,000 (total)/ 2 years (~125,000/year)
Co-PI/collaborators: Dr. Erik Nelson, Dr. Auinash Kalsotra, Dr. Dobrucki W.

EAGER Prasanth Kannanganattu (PI) 5/1/2017-4/30/2022
Funding source: NSF (EAGER proposal and supplement)

Title: Developing TSA-RNA-seq for subcellular transcriptomics.
Date of proposed project: 5/1/2017-4/30/2022
Total cost: $ 300,000
Co-PI: Andrew Belmont (CDB).

Teaching

Spring 2008	MCB529 Advanced Cell Biology (2 guest lectures in the core course for departmental graduate students)
Fall 2008	MCB252 Cells, Tissues and Development (½ of the undergraduate core course) MCB252 Honors section, primary literature discussion with Honors students
Spring 2009	MCB529 Advanced Cell Biology (guest lectures in the core course for departmental graduate students)
Fall 2009	MCB252 Cells, Tissues and Development (½ of the undergraduate core course) MCB252 Honors section
Spring 2010	MCB529 Advanced Cell Biology (2 guest lectures in the core course for departmental graduate students)
Fall 2010	MCB252 Cells, Tissues and Development (½ of the undergraduate core course) MCB297 Honors section
Fall 2011	MCB252 Cell, Tissues and Development (½ of the undergraduate core course) MCB297 Honors section
Spring 2012	MCB529 Special topic course 'Advances in RNA biology and Disease'. Primary literature-based course for graduate students (full course)
Since-fall 2012	MCB252 Cell, Tissues and Development (½ of the undergraduate core course)

Service and Administrative Activities

Academic Service
Member, CDB Graduate recruitment committee: 2007-2012; since-2020
Co-chair, CDB Graduate recruitment committee, since-2021
Member, CDB equipment committee: 2007-2008, since-2020
Member, CDB Distinction committee: 2008-2012
Member, CDB Prelim. Exam committee: 2012-2020
Member, CDB seminar committee: 2012-2021
Chair, CDB seminar committee: 2015-2016
Member, MCB seminar committee: 2015-2016
Member, MCB school, strategic advisory committee (SAC): since-2020
Coordinator, CDB student-invited seminar committee: 2015-2016
Member, CDB graduate program and fellowship committee: 2012-2016
Member, Campus Institutional Biosafety Committee (IBC): 2015-2021
Chair, faculty hire search committee: Cancer Biology search (2021)
Chair, faculty hire search committee: RNA Biology (2022)
Member, LAS college, Honors council, since-2021

Trainees

Doctoral Students

1. 2011-2017 Dr. Xinying Zhong (Scientist: Abbvie, Immunology & Oncology discovery, CA)
2. 2014-2018 Dr. Mahdieh Jadaliha (awarded Toonji Toojan graduate student research excellence award: UIUC cancer center_Carle C* award, UIUC campus thesis completion award) (current position: Assistant Professor: University of Tehran, Iran).
3. 2013-2020 Dr. Qinyu Sun (Bioinformatics Scientist, Tempus Labs, Inc. Chicago).
4. 2013-2021 Dr. Qinyu Hao (Scientist, Alamar Biosciences Inc)
5. 2020-present Ms. You Jin Song

6. 2020-present Ms. Minxue Liu
7. 2021-present Ms. Anurupa Moitra
8. 2021-present Mr. Zhangmin Cong

Masters student
2008-2010 Ruiping Zheng (current position: school teacher, China)
2013-2018 Mr. Omid Gholmalamdari (Graduate student: Prof. Andrew Belmont, UIUC)

Postdoctoral Researchers
2009-2015 Dr. Vidisha Tripathi
Current status: Assistant Professor, NCCS, Pune, India
2012-2016 Dr. Aparna Anantharaman
Current status: Research fellow, Contreas lab, UT Austin
2013-2018 Dr. Deepak Kr. Singh,
current status: Instructor, Aguirre-Ghiso lab, Albert Einstein college of Medicine, NY
2015-2016 Dr. Aamira Tariq (Fullbright fellow)
current status: Assistant Professor, Comsats University, Islamabad, Pakistan)
2021 Dr. Qinyu Hao (Scientist, Alamar Biosciences Inc.)

Undergraduate researchers: More than 16 UIUC undergraduate students have done research projects in my laboratory. Several of them have received awards such as MCB distinction awards and summer research fellowships.
List of undergraduate students with achievement:
2009-2011 David Song (MCB 290, distinction in senior thesis research; published co-first author and middle author papers from my laboratory)
2015-2016 Tina Moazezi (MCB 290, Summer undergraduate research fellowship recipient, summer 2016: MCB distinction)
2015-2016 Ana Petracovici (MCB290; published middle author paper from my laboratory)
2016-2018 Tae Kyoon Kim (MCB290, MCB492; published middle author paper from my laboratory)
2016-2018 SriSai Kondabattula (MCB 290, distinction in senior thesis research, CDB research achievement award)
2017-2020 Santosh Sudhakar (MCB 290, senior thesis research, Summer undergraduate research fellowship recipient, summer 2018, 2019)
2020-present Shivang Bhaskar (MCB290, Recipient of the prestigious Jenner family summer (2022) research fellowship).
2022-present Miriam Aknoukh (MCB290).
2022-present Samuel Jeon (MCB290).

Community or K-12 instructional activity

A. Training of community college students: I provide research training opportunities from the local community college (Parkland college) undergraduate students

1. Ms. Alexis Kriska (2015-2016)
2. Mr. Ahmad (2016-2017)
3. Ms. Allie Robelly (2017-2018)
4. Ms. Emma Gray (2018-2019)

B. Indo-US Khorana undergraduate summer research program
Khorana program is an Indo-US research exchange program that provide research opportunities to undergraduate students from India and USA to perform summer month research in US and Indian labs. I provide opportunity to Khorana students to perform summer research in my laboratory for several years.

1. Ms. Babukrishna (summer-2013)
2. Ms. Anu Thomas (summer 2014: Middle author in a ms published from our laboratory).
3. Ms. Bhanupriya Somasekhar (summer-2015)

C. Training of High school students

1. Ms. Baily Maxey from Champaign central high school trained as an American Cancer Society summer research student in the summer of 2013.
2. Mr. Jaron Roy from Monticello high school trained as a ResearchStart student by UIUC cancer center in the summer of 2017.
3. Mr. Josh Sanford from Central high school trained as a ResearchStart student by UIUC cancer center in the summer of 2018.
4. Mr. Martin Dalling from University high school trained in my laboratory in the fall semester of 2018

Curriculum Vitae
Supriya Gangadharan Prasanth Ph.D.

Contact Information

Supriya G. Prasanth Ph.D.
Professor and Head
Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign
C422, Chemical and Life Sciences Laboratory
601 S. Goodwin Avenue
Urbana, IL 61801
Phone: 217-244-8076 (office)
217-244-7895 (lab)
FAX: 217-265-0927
Email: supriyap@illinois.edu

Education

1995 Delhi University, New Delhi, India, B.Sc. (Hons.) Botany
1997 Delhi University, New Delhi, India, M.Sc. Genetics
Dissertation title: "Status of SRY gene in patients with sex chromosome anomalies." Advisor: B.K. Thelma
2001 National Institute of Immunology, Jawaharlal Nehru University, New Delhi, India, Ph.D. Life Sciences/Genetics
Thesis title: "Organizational and transcriptional assessment of protooncogene *c-kit* receptor in somatic and germline tissues of rat, *Rattus norvegicus.*" Advisor: Sher Ali

Positions and Honors

Professional Experience:

1995-1997: M. Sc. in Genetics, Delhi University, New Delhi, INDIA, Advisor: B. K. Thelma, Ph.D. Dissertation title: "Status of SRY gene in patients with sex chromosome anomalies."
1997-2000: Ph. D. student, National Institute of Immunology, New Delhi, INDIA Advisor: Sher Ali, Ph.D. Thesis title "Organizational and transcriptional assessment of protooncogene *c-kit* receptor in somatic and germline tissues of rat, *Rattus norvegicus.*"
2001-2007: Postdoctoral Fellow, Cold Spring Harbor Laboratory, USA Advisor: Bruce Stillman, Ph.D.
2005-Jan 2007 Special Fellow (Leukemia and Lymphoma Society), Cold Spring Harbor Laboratory, USA.
2007-2013 Assistant Professor, Department of Cell and Developmental Biology University of Illinois at Urbana-Champaign.
2013-2019 Associate Professor, Department of Cell and Developmental Biology, University of Illinois
Since 2019 Professor, Department of Cell and Developmental Biology, University of Illinois
Since Jan 2020 Head, Department of Cell and Developmental Biology, University of Illinois

Honors and Awards:

1990: Merit scholar of Central Board of Secondary Education (CBSE), Govt. of India.
1992-1995: National Scholarship holder, University of Delhi, Delhi.
1995: University Gold medalist for achieving maximum marks in BSc Botany, University of Delhi, Delhi.
1995: Sita Narayanan Memorial Gold Medal for achieving highest marks in University examinations, University of Delhi, Delhi.
1996-1997: National scholarship, University of Delhi, Delhi.

1997:	University Gold medallist for achieving maximum marks in MSc Genetics, University of Delhi, Delhi.
1997-1999:	Junior Research Fellowship from the Council for Scientific and Industrial Research (CSIR), New Delhi, Govt. of India.
1999-2000:	Senior Research Fellowship from CSIR, New Delhi, Govt. of India.
1998:	Best Poster Award for paper entitled "Do multiple *c-kit* mRNA transcripts involve reshuffling of its exon/intron sequences?" presented in Society of Biological Chemists (India), JNU, New Delhi, December 19-21, 1998.
2002-2003:	Cold Spring Harbor Laboratory Association funding awarded from 5/1/02-4/30/03.
2005-2008:	Leukemia and Lymphoma Society, Special Fellow award.
2009-12	List of excellent rated teachers, UIUC
2013	NSF career award
2014-16	List of excellent rated teachers, UIUC
2015	NIH, MGA Study section member 2015-19
2017	Lynn M. Martin award for distinguished women teachers
2018	MCB research excellence award
2018	MGA Co-Chair
2018-19	List of excellent rated teachers, UIUC
2019	Campus Distinguished Promotions Award, UIUC
2021	NIH, CSRS Study section member 2021-2025
2021	LAS IMPACT award
2021-2022	University Scholar, UIUC
2021-2022	ALP fellow

Other Experience and Professional Memberships

I. Invited talks in scientific meetings (in chronological order)

2001 Eukaryotic DNA replication meeting, CSHL, USA.
2002 The Cell Cycle meeting, CSHL, USA.
2002 42nd Annual meeting of American Society for Cell Biology, San Franscisco, USA.
2003 CSHL inhouse seminar series, CSHL, USA.
2004 Wide Bioscience Seminar series, State University of New York, Farmingdale, USA.
2005 Eukaryotic DNA replication meeting, CSHL, USA.
2007 Eukaryotic DNA replication and Genome Maintenance, CSHL, USA.
2008 Salk meeting on DNA replication and genome integrity, La Jolla, USA
2008 Seminar series, National Institute of Immunology, New Delhi, India
2010 Wright State University, Dayton, Ohio, USA
2010 The cell cycle meeting, CSHL, USA
2011 InStem, Bangalore, India
2011 Dept. of Genetics, University of Delhi, India
2012 Minisymposium on chromatin and nuclear organization, Northwestern University, Chicago, USA
2012 The cell cycle meeting, CSHL, USA
2012 Dept. of Biochemistry and Molecular Biology, Michigan State University, USA
2013 School of Medicine, Southern Illinois University, Springfiled, Illinois, USA
2013 Special symposium, CSHL, NY
2013 Japanese Biochemical society, Yokohama, Japan
2013 Tokyo Medical center, Tokyo, Japan
2013 Kyushu University, Fukaoka, Japan
2013 All India cell biology conference, Bangalore, India
2014 Jawaharlal Nehru University, New Delhi, India
2014 Illinois State University, Normal, IL
2014 The cell cycle meeting, Cold Spring Harbor Laboratory, USA
2015 University of North Carolina, Chapel Hill
2015 University of Massachusetts, Worcester
2015 ASBMB: Evolution and core processes in gene regulation (declined)

2016 Center for Cancer Research, NCI, NIH, Bethesda
2018 Indo US Conference on Transcription, Chromatin Structure DNA repair, IISc, India (declined)
2018 Southern Illinois University, Carbondale, IL
2019 Loyola University Chicago, IL
2019 Boston University, Boston, MA
2019 University of Patras, Greece
2019 Univ of Wisconsin- Madison Epigenetics Symposium, Keynote Speaker, October 2019
2019 4th International conference on Molecular Biology and Nucleic Acids, Chicago, Session Chair, October 2019
2019 University of Illinois, Chicago, October 2019
2020 Invited webinar lecture in Govt. of India affiliated Science Club, MACFAST, Thiruvalla
2020 Nucleic Acids webinar, Scientific Meditech, November, 2020
2021 Sharda University, invitation for virtual presentation, Science day
2021 National Institutes of Health, NCI/CCR
2021 Session chair and speaker, Eukaryotic DNA replication and genome maintenance, CSHL
2022 University of Alabama, Albama, March 2022
2022 University of Michigan, Graduate student training program, Ann Arbor, MI, March 2022
2022 Case Western, Ohio, May 2022
2022 OSF Radio show, 7am Friday talks for clinicians, May 2022
2022 Alumni Seminar Speaker, Department of Genetics, Delhi University, June 2022
2022 ASBMB/BSC symposium on Epigenetics and Genome stability, Seattle, invited speaker, Oct 2022
2022 CCIL, Nov 2022
2023 University of Delhi, Miranda House (50 years of foundation), Keynote speaker, Fem for STEM, Feb 2023 (virtual)

Professional Activities

Editorial Board: *Chromosoma, Hereditary Genetics: Current Research*

Ad hoc reviewer, journals: *Cancers, Cancer Research, Cell, Cell discovery, Cell reports, Cell research, Cells, Cell cycle, Cell, Host & Microbe, Cellular and Molecular Biology Letters, Chromosoma, Disease Markers, European Journal of Obstetrics & Gynecology and Reproductive Biology, FASEB J, Functional and Integrative Genomics, Genes, Genes & Development, Hereditary Genetics, Genome Biology, International Journal of Andrology, Journal of Bacteriology, Journal of Cell Biology, Journal of Cell Science, Journal of Genetics and Development, Journal of Molecular Biology, Journal of Visualized Experiments, Molecular Biology of the Cell, Molecular Cell, Molecular and Cellular Biology, Molecular microbiology, Nature communications, Nature Structural and Molecular Biology, Nucleic Acids Research, Oncogene, Oncotarget, Plos Genetics, Proceedings of the Indian National Science Academy, Proceedings of the National Academy of Sciences (USA), Science Advances, Scientific Reports, Structure, Trends in Genetics*

Review Panel/reviewer funding agencies
Wellcome Trust, Regular Grant application, September 2007
National Science Foundation: Mechanisms of Inheritance Spring Panel, April 14-16, 2009
National Science Foundation: Ad hoc reviewer of Grant application, October 2009
National Science Foundation: Gene regulation Spring Panel, April 13-15, 2010
National Science Foundation: Ad hoc reviewer of Grant application, September 2010
BBSRC, UK, Regular Grant Application, October, 2012
Research Grant Council, Hongkong, March 2013
Campus Research board, UIUC, 2013
National Science Foundation: Mechanisms of Inheritance Panel, May 1-3, 2013

National Institutes of Health: MGA study section, June 19-21, 2013
National Institutes of Health: MGA, Feb 26-28, 2014
National Science Foundation: Ad hoc reviewer of Grant application, Feb 2014
National Institutes of Health: ZRG1 GGG-F(81)A Special emphasis panel, Nov 3, 2014
National Science Foundation: Mechanisms of Inheritance Panel, Feb 9-11, 2015
National Science Foundation: Ad hoc reviewer of Grant application, August 2015
National Institutes of Health: MGA study section, October 18-20, 2015
Hercules Call 2015, Belgium: reviewer of Grant application, Dec 2015
National Science Foundation: Ad hoc reviewer of Grant application, February, 2016
National Institutes of Health: MGA study section, June 15-17, 2016
National Institutes of Health: MGA study section, Oct 12-14, 2016
National Institutes of Health: MGA study section, Feb 5-7, 2017
National Science Foundation: Ad hoc reviewer of Grant application, March, 2017
ANR: AAP Generique evaluation, France: Reviewer of grant application, May 2017
National Institutes of Health: MGA study section, June 14-16, 2017
National Science Foundation: Career Panel, Sep 20-22, 2017
Research Grant Council, Hongkong, February, 2018
National Institutes of Health: MGA study section, Feb 6, 2018
National Institutes of Health: MGA study section, June 7, 2018
National Science Center, Poland: As hoc reviewer of Grant Application, September 2018
National Institutes of Health: MGA study section, Sep 24-25, 2018
National Institutes of Health: MGA study section, Feb 7-8, 2019
National Science Foundation: Epigenetics Panel, April 1-3, 2019
National Institutes of Health: MGA study section, June, 2019
National Science Foundation: Ad hoc reviewer of Grant application, September 2019
National Institutes of Health: ZRG1 F08M 2020/05, March 3-4, 2020
National Science Foundation: Ad hoc reviewer of Grant application, April 2020
National Institutes of Health: ZRG1 F08-M (20), June 24-25, 2020
National Institutes of Health: CSRS, Sep 24-25, 2020
National Science Foundation: NSF panel October 19-21, 2020
National Institutes of Health, MIRA panel, March 30-31, 2021
National Institutes of Health, CSRS, June 27-28, 2022
National Science Foundation: Ad hoc reviewer of Grant application, Oct 2022
National Institutes of Health, CSRS, Jan 26-27, 2023
National Science Foundation: Ad hoc reviewer of Grant application, Feb 2023
National Institutes of Health, CSRS, June 1-2, 2023
National Institutes of Health, CSRS, Sep 27-28, 2023 (scheduled)

Promotion and Tenure Letters
CUNY
Oakland University
Yale
University of Michigan
Delhi University (Indian Government teaching award)

Career choice panels for trainees
CSHL
Gordon
ASBMB

Society Membership

American society of cell biology, American society of microbiology

Academic Service

2007-2008
Member, Graduate recruitment committee, Department of Cell and Developmental Biology
Member, Distinction committee, Department of Cell and Developmental Biology

2008-2009
Member, Graduate recruitment committee, Department of Cell and Developmental Biology
Member, Graduate program committee, Department of Cell and Developmental Biology

2009-2010
Member, Graduate recruitment committee, Department of Cell and Developmental Biology
Member, Graduate program and fellowship committee, Department of Cell and Developmental Biology

2010-2011
Member, Graduate recruitment committee, Department of Cell and Developmental Biology
Member, Graduate program and fellowship committee, Department of Cell and Developmental Biology

2011-2012
Member, Graduate recruitment committee, Department of Cell and Developmental Biology
Member, Graduate program and fellowship committee, Department of Cell and Developmental Biology

2012-2013
Member, MCB faculty hiring committee, MIP-CDB joint search committee, School of Molecular and Cellular Biology

2013-2014
Chair, Distinction committee, Department of Cell and Developmental Biology.
Member, Graduate recruitment committee, Department of Cell and Developmental Biology.
Member. Courses and curriculum committee, Department of Cell and Developmental Biology
Member, MCB faculty hiring committee, MIP-CDB joint search committee, School of Molecular and Cellular Biology
Member, Courses and curriculum committee, School of Molecular and Cellular Biology
Member, Faculty Development Program Committee, Division of Biomedical Sciences.
Student thesis committee: Edwin Arauz (CDB)
Binhui Zhao (CDB)
Xiang Deng (CDB)
Frank Echtenkamp (CDB)
Elise Anne Corbin (CMMB-IGERT fellow, Micro/nanoscience and engineering)
Mustafa Mir (Electrical and Computer engineering and bioengineering)

2014-2015
Chair: Distinction committee, Department of Cell and Developmental Biology.
Chair: Courses and Curriculum committee, Department of Cell and Developmental Biology.
Chair: Graduate recruitment committee, Department of Cell and Developmental Biology.
Chair: Distinction committee, School of Molecular and Cellular Biology.

Member. Courses and curriculum committee, School of Molecular and Cellular biology
Member: Graduate recruitment committee, Department of Cell and Developmental Biology.
Member, Postdoctoral Affairs Office Advisory Committee, The Graduate College
Student thesis committee: Edwin Arauz (CDB)
Binhui Zhao (CDB)
Xiang Deng (CDB)
Frank Echtenkamp (CDB)
Student Prelim committee: John Li (CDB)

2015-2016
Distinction committee, Department of Cell and Developmental Biology.
Courses and Curriculum committee, Department of Cell and Developmental Biology.
Chair: Graduate recruitment committee, Department of Cell and Developmental Biology.
Grant mentoring committee, Department of Cell and Developmental Biology.

Member. Courses and curriculum committee, School of Molecular and Cellular biology
Member: Graduate recruitment committee, Department of Cell and Developmental Biology.
Member, Postdoctoral Affairs Office Advisory Committee, The Graduate College
Student thesis committee:
Edwin Arauz (CDB)
Xiang Deng (CDB)
Qinyu Hao (CDB-Chair)
Nilmani Singh (CDB-Chair)
Kook Son (CDB-Chair)
Qinyu Sun (CDB-Chair)
Binhui Zhao (CDB)
Rosaline Hsu (my graduate student)
Yating Wang (my graduate student)
Yo-Chuen Lin (my graduate student)

Student Prelim committee: Mohd. Tayyab Adil (CDB)

2016-2017
Courses and Curriculum committee, Department of Cell and Developmental Biology.
Chair: Graduate recruitment committee, Department of Cell and Developmental Biology.
Adhoc Chair: Distinction committee, Department of Cell and Developmental Biology.
Grant mentoring committee, Department of Cell and Developmental Biology.
Member. Courses and curriculum committee, School of Molecular and Cellular biology.
Member: Graduate recruitment committee, School of Molecular and Cellular biology.
Member: MCB Director search committee, College of Liberal Arts and Sciences.
Student thesis committee:
Xiang Deng (CDB)
Qinyu Hao (CDB-Chair)
Nilmani Singh (CDB-Chair)
Kook Son (CDB-Chair)
Qinyu Sun (CDB-Chair)
Binhui Zhao (CDB)
Rosaline Hsu (my graduate student)

Yating Wang (my graduate student)
Yo-Chuen Lin (my graduate student)

2017-2018
Fall 2017: Sabbatical
Spring 2018:
Distinction committee, Department of Cell and Developmental Biology.
Grant mentoring committee, Department of Cell and Developmental Biology.

Student thesis committee:

Qinyu Hao (CDB-Chair)
Nilmani Singh (CDB-Chair)
Kook Son (CDB-Chair)
Qinyu Sun (CDB-Chair)
Binhui Zhao (CDB)
Rosaline Hsu (my graduate student)
Yo-Chuen Lin (my graduate student)

2018-2019
Chair: Grant mentoring committee, Department of Cell and Developmental Biology.
Advisory Committee, Department of Cell and Developmental Biology.
Distinction committee, Department of Cell and Developmental Biology.
Graduate recruitment committee, Department of Cell and Developmental Biology.
Student thesis committee:

Qinyu Hao (CDB-Chair)
Nilmani Singh (CDB-Chair)
Qinyu Sun (CDB-Chair)
Rosaline Hsu (my graduate student)
Yo-Chuen Lin (my graduate student)

2019-2020
College of Liberal Arts and Sciences, Executive Committee (until Jan 15, 2020)
Chair: Grant mentoring committee, Department of Cell and Developmental Biology.
Graduate recruitment committee, Department of Cell and Developmental Biology.
Tenure and Promotions sub-committee, Department of Cell and Developmental Biology.
Student thesis committee:

Qinyu Hao (CDB-Chair)
Nilmani Singh (CDB-Chair)
Qinyu Sun (CDB-Chair)
Rosaline Hsu (my graduate student)
Yo-Chuen Lin (my graduate student)
Neha Chetlangia (my graduate student)

Summer-Fall 2020: LAS implementation group (Research and professional development)

2020-2021
Student thesis committee:

Qinyu Hao (CDB-Chair)
Nilmani Singh (CDB-Chair)
Yo-Chuen Lin (my graduate student)
Neha Chetlangia (my graduate student)

2021-2022
2021-2022: LAS Scholar awards committee
2021-2022: Campus Nalbandov committee
2021-2024: Uni High School Advisory Board
Student thesis committee:
Anna Mankovich (CDB-prelim committee)
Neha Chetlangia (my graduate student)
Dazhen Liu (my graduate student)

2022-2023
2022-2023: Campus Nalbandov committee
2022-2023: LAS Budget committee
2022-2023: LAS Scholar awards committee
Student thesis committee:
Purnam Ghosh (CDB-prelim committee)
Ruiying Cheng (CDB-prelim committee)
Sihang Zhou (CDB-prelim committee)
Neha Chetlangia (my graduate student)
Dazhen Liu (my graduate student)
Fredy Kurniawan (my graduate student)
Humayra Oishi (my graduate student)

2023-2024
2023-2024: Campus Nalbandov committee
2022-2023: LAS Budget committee
Student thesis committee:
Neha Chetlangia (my graduate student)
Dazhen Liu (my graduate student)
Fredy Kurniawan (my graduate student)
Humayra Oishi (my graduate student)
CDB grant mentoring committee
CDB graduate program committee (Spring 2024)

Teaching

Spring 2008	MCB529 Advanced Cell Biology (guest lectures in the core course for graduate students)
Fall 2008	MCB400 Cell structure and function
Spring 2009	MCB529 Advanced Cell Biology (guest lectures in the core course for graduate students)
Fall 2009	MCB400 Cancer Cell Biology

Spring 2010	MCB529 Advanced Cell Biology (guest lectures in the core course for graduate students)
Fall 2010	MCB400 Cancer Cell Biology
Fall 2011	MCB400 Cancer Cell Biology
Fall 2012	MCB400 Cancer Cell Biology
Fall 2013	MCB400 Cancer Cell Biology
Fall 2014	MCB400 Cancer Cell Biology
Fall 2015	MCB400 Cancer Cell Biology
Fall 2016	MCB400 Cancer Cell Biology
Fall 2018	MCB400 Cancer Cell Biology
Fall 2019	MCB400 Cancer Cell Biology
Fall 2021	MCB400 Cancer Cell Biology
Fall 2023	MCB400 Cancer Cell Biology (ongoing)

Trainees

Doctoral Students

2007-2012	Zhen Shen (Endodontics Resident, Houston, Texas)
2010-2016	Sumanprava Giri (Next Generation sequencing scientist, Inari Agriculture, Cambridge, MA)
2013-2020	Rosaline Hsu (postdoctoral fellow at Harvard Medical School, Dr. Lee Zou lab)
2014-2017	Yating Wang (Research Scientist, Broad institute of MIT)
2014-2020	Yo-Chuen Lin (Research investigator, BeiGene, Taiwan)
2018-present	Neha Chetlangia (6th year student)
2019-present	Fredy Kurniawan (5th year student)
2019-present	Dazhen Liu (5th year student)
2021-present	Humayra Oishi (3rd year student)
2022-present	Oraya Zinder (2nd year student)

Masters Students

2012	Casey Dyck (MS in Mechanical Engineering, co-advisor)
2011-2013	Katrina Keller (Bioengineering student, co-advisor)

Postdoctoral Researchers

2009-2011	Dr. Kizhakke M. Sathyan Current status: Assistant Professor, U Conn Health
2010-2016	Dr. Arindam Chakraborty, Principal Scientist (M5), Cell Line engineering department, Biologics division (Enzene Biosciences Ltd) of Pharma R&D Alkem Laboratories Ltd. Pune, India
2012-2015	Dr. Abid Khan, Postdoctoral Fellow, Dr. Brian Strahl, UNC Chapel Hill
2015-2018	Dr. Mohammad Kamran, Postdoctoral associate, Weil Cornell Medical College
2019-2020	Dr. Vijay Mohan, Assistant Professor, Galgotias University, Delhi, India
2021	Dr. Yo-Chuen Lin, Research investigator, BeiGene, Taiwan
2023-present	Mohit Mishra

Undergraduate researchers

2008-2009	Yuan-Yuan Wang (MCB 290)
2008-2009	Beverly Franek (MCB 290)
2009-2010	Mayur Patel (MCB 290)

2009-2011	Batul Kagadwala (MCB 290, MCB 492)
2009-2010	Bharath Raju (volunteer)
2010-2011	Harshvardhan Singhania (MCB 290, MCB 492)
2011-2013	Marall Abbaszadeh (MCB 290)
2011-2013	Varun Pillai (MCB 290)
2011-2013	Archit Ghosh (MCB 290)
2012-2013	Mithin Mathew (MCB 290)
2013-2014	Theja Kudravalli (MCB 290)
2013-2014	Susan Wopat (MCB 492, highest distinction, MCB SROP)
2013-2016	Abhijith Matur (MCB 290, 492, highest distinction, CDB outstanding thesis award, Jenner award, MCB SROP)
2014-2015	Rahul Panchal (MCB 290)
2014-2016	Katrina Dovalovsky (MCB 290, 492, Distinction, CDB undergraduate research achievement award, Jenner award, MCB SROP)
2015-2017	Constandina Kalouris (MCB 290, MCB SROP)
2015-2018	Sneha Adusimili (MCB 492, Jenner award, MCB SROP, highest distinction, CDB undergraduate achievement award)
2016	Sai Sushmita Ravi (MCB 290)
2016-2019	Aneesha Galla (MCB 290)
2016-2020	Samrudhi Joshi (MCB 290, MCB SROP, Dawn Carlson award, MCB492, high distinction award)
2016-2019	Oways Shaqildi (MCB 290, MCB SROP)
2018-2020	Mariam Arif (MCB 290, MCB 492, Jenner award, highest distinction award)
2019-2022	Darya Asoudegi (MCB 290, MCB 492,Jenner award, Cycyota award, highest distinction)
2019-2022	David Yen Chen (MCB 290, MCB 492, Spudich award, high distinction, Rod McLeod award); returned to the lab 2022-2023 as an academic hourly
2020-present	Jay Sonalkar (MCB 290, Jenner award, MCB 492, Cycyota award)
2020-2022	Victoria DiFranco (MCB 290, MCB SURF award)
2021-present	Aneek Mirza (MCB 290, MCB SURF award, Cycyota award)
2021-2022	Ashley Blackwood (MCB 290, Abbvie BBN summer award, declined)
Summer 2022	Romaisa Aamer (volunteer)
2023-present	Godwin Olalaye (MCB 290, MCB SURF award)
2023-present	Iman Fatimah Mohajir (MCB 290)
2023-present	Romaisa Aamer (MCB 290)

Publications (in chronological order)

1. Pritha Ray, **Supriya Gangadharan**, Munmun Chattopadhyay, Anu Bashamboo, Sunita Bhatnagar, Pradeep Kumar Malik and Sher Ali (1999) A bubaline derived satellite DNA probe uncovers generic affinities of Gaur with other bovids. *J. Biosci.* 24: 295-299.

2. Sher Ali and **Supriya Gangadharan** (2000) Differential evolution of coding and non-coding sequences in related vertebrates: implications in probe design. *Proc. Indian. Natl. Sci. Acad. (PINSA-B)* 66: 49-68.

3. Sher Ali, **Supriya Gangadharan**, Munmun Chattopadhyay, Suminder Kaur, Md. Asim Azfer and Mary John Mattapallil (2001) Molecular mining of bubaline genome through repetitive DNA. *Proc. Natl. Acad. Sci. (INDIA*). 71(B).

4. Munmun Chattopadhyay, **Supriya Gangadharan**, Vipra Kapur, Md. Asim Azfer, Brahm Prakash and Sher Ali (2001) Satellite tagged transcribing sequences in *Bubalus bubalis* genome undergo programmed modulation in the meiocytes: possible implications in transcriptional inactivation. *DNA and Cell. Biol.* 20(9): 587-593.

5. **Supriya Gangadharan**, Vipra Kapur and Sher Ali (2001) GATA/GACA repeat sequences are transcribed in the normal fertile rat *Rattus norvegicus,* but not in the infertile ones. *Curr. Science* 81(10): 1320-1324.

6. **Supriya G. Prasanth**, Kannanganattu V. Prasanth and Bruce Stillman (2002) Orc6 involved in DNA replication, chromosome segregation and cytokinesis. *Science* 297(5583): 1026-1031.

   Issue Highlights: Jack of all Cell division. *Science* 297(5583): 893. Faculty of 1000

7. Vipra Kapur, **Supriya G. Prasanth**, Colleen O'Ryan C, Mohd. A. Azfer and Sher Ali. (2003) Development of a DNA marker by minisatellite associated sequence amplification (MASA) from the endangered Indian rhino (*Rhinoceros unicornis*). *Mol Cell Probes*. 17(1): 1-4.

8. Kannanganattu V. Prasanth, Paula A. Sacco-Bubulya, **Supriya G. Prasanth** and David L. Spector (2003) Sequential entry of components of the gene expression machinery into daughter nuclei. *Mol. Biol. Cell* 14(3): 1043-1057.

9. **Supriya G. Prasanth** and Sher Ali (2003). Expression of protooncogene c-kit receptor in rats *Rattus norvegicus* and identification of mutant mRNA transcript implicated in spermatogenesis. *DNA Cell Biol.* 22(7): 447-456. (Cover page).

10. Sunita Bhatnagar, Anu Bashamboo, Munmun Chattopadhyay, **Supriya Gangadharan** and Sher Ali (2004) A 1.3 kb satellite DNA from Bubalus bubalis not conserved evolutionarily is transcribed. *Z Naturforsch [C].* 59(11-12):874-9.

11. **Supriya G. Prasanth**, Munmun Chattopadhyay, Kangila V. Bhat And Sher Ali (2004) Expression of Protooncogene *c-kit* Receptor in Rat Testis and Uniqueness of Extracellular Domain Across the Species with Potential in Molecular Phylogeny. *DNA Cell Biol* 23(1):35-43.

12. **Supriya G. Prasanth**, Juan Méndez, Kannanganattu V. Prasanth and Bruce Stillman (2004) Dynamics of pre-replication complex proteins during the cell division cycle. *Phil. Trans. Biol. Sci.* 359, 7-19 (Discussion meeting issue 'Replicating and reshaping DNA: celebration of the jubilee of the double helix).

13. **Supriya G. Prasanth**, Harleen Mangat Giran and Sher Ali (2004) Biology of Protooncogene c-kit receptor and spermatogenesis. *Current Pharmacogenomics* 2: 47-60.

14. **Supriya G. Prasanth**, Kannanganattu V. Prasanth, Khalid Siddiqui, David L. Spector and Bruce Stillman (2004) Human Orc2 localizes to centrosomes, centromeres and heterochromatin during chromosome inheritance. *EMBO J.* 23(13): 2651-6.

15. Kannanganattu V. Prasanth, **Supriya G. Prasanth**, Zhenyu Xuan, Stephen Hearn, Susan M. Freier, Frank C. Bennett, Micheal Q. Zhang and David L. Spector (2005). Regulating gene expression through RNA nuclear retention. *Cell* 123(2): 249-63.

Preview: (2005). A Nuclear RNA is Cut Out for Translation. *Cell*, 123(2): 181-183. Research Highlights and News & Views: Quick-release RNA. *Science*, 2005, Vol 310: 408; RNA in reserve. *Nature* 2005, Vol. 437: 1211; Unleash the messenger. *Nature Cell Biology,* 2005, Vol. 7: 1054-1055; Something for a stressful day. *Nature reviews Mol. Cell Biology,* 2005, Vol. 6: 900 and *Nature reviews Genetics,* 2005, Vol. 6: 876. Faculty of 1000

16. Adriana Hemerly, **Supriya G. Prasanth**, Khalid Siddiqui and Bruce Stillman (2009). Orc1 Controls Centriole and Centrosome Copy Number in Human Cells. *Science* 323: 789-793.

    Editor's choice: Cell Biology Counting Centrosomes, Sci. Signal, 2009, Vol. 2, Issue 57, p. ec52. Research Highlights: This Week in Science Volume 323, Number 5915, 2009. Faculty of 1000

17. **Supriya G. Prasanth***, Zhen Shen, Kannanganattu V. Prasanth and Bruce Stillman*. Human ORCs are essential for HP1 binding to chromatin and heterochromatin organization. *PNAS (USA).* 107 (34): 15093-98. (***Co-corresponding author**)

18. Vidisha Tripathi, Jonathan D. Ellis, Zhen Shen, David Y. Song, Qun Pa, Andrew T. Watt, Susan M. Freier, C. Frank Bennett, Alok Sharma, P. A. Bubulya, Benjamin J. Blencowe, **Supriya G. Prasanth** and K.V Prasanth (2010) The Nuclear-retained Non-coding RNA MALAT1 Regulates Alternative Splicing by Modulating SR Splicing Factor Phosphorylation. *Molecular Cell* 39(6): 925-938.

    Preview: (2012) Long noncoding RNAs add another layer to pre-mRNA splicing regulation. *Mol. Cell* 39(6): 833-4. Faculty of 1000

19. Zhen Shen, Kizhakke M. Sathyan, Yijie Geng, Ruiping Zheng, Arindam Chakraborty, Brian Freeman, Fei Wang, Kannanganattu V. Prasanth and **Supriya G. Prasanth** (2010) A novel WD-repeat protein stabilizes ORC binding to chromatin. *Molecular Cell* 40(1): 99-111.
    (Top 20 downloaded paper in Molecular Cell, October 2010).

20. Ruiping Zheng, Zhen Shen, Vidisha Tripathi, Zhenyu Xuan, Susan M. Freier, C. Frank Bennett, **Supriya G. Prasanth** and Kannanganattu V. Prasanth (2010) Poly-purine repeat-containing RNAs: A novel class of long non-coding RNAs in mammalian cells. *Journal of Cell Science* 123(21): 3734-44.

    Issue highlight.

21. Arindam Chakraborty, Zhen Shen and **Supriya G. Prasanth** (2011) "ORCanization" on heterochromatin: linking DNA replication initiation to chromatin organization. *Epigenetics* 6(6): 665-670 (invited point of view).

22. Mustafa Mir, Zhou Wang, Zhen Shen, Michael Bednarz, Rashid Bashir, Ido Golding, **Supriya G. Prasanth,** Gabriel Popescu. (2011) Optical measurement of cycle-dependent cell growth. *PNAS (USA)* 108(32): 13124-9.

23. Kizhakke M. Sathyan, Zhen Shen, Vidisha Tripathy, Kannanganattu V. Prasanth and **Supriya G. Prasanth** (2011) A BEN domain containing protein, associates with heterochromatin and represses transcription. *J Cell Sci.* 124(18): 3149-63.

    Issue highlight, Cover page.

24. Zhuo Wang , Daniel L. Marks, Scott P. Carney, Larry J Millet, Martha U Gillette, Agustin Mihi, Paul V Braun, Zhen Shen, **Supriya G. Prasanth**, Gabriel Popescu. (2011) Spatial light interference tomography (SLIT). *Opt Express* 19(21): 19907-18.

25. Sumanprava Giri and **Supriya G. Prasanth** (2012) Replicating and transcribing on twisted roads of chromatin. *Brief Funct Genomics* 11(3): 188-204.

26. Zhen Shen, Arindam Chakraborty, Ankur Jain, Sumanprava Giri, Taekjip Ha, Kannanganattu V. Prasanth and **Supriya G. Prasanth** (2012) Dynamic association of ORCA with preRC components regulates DNA replication initiation. *Mol Cell Biol.* 32(15): 3107-3120, (Cover Page).

27. Zhen Shen & **Supriya G. Prasanth** (2012) Orc2 protects ORCA from ubiquitin-mediated degradation. *Cell Cycle* 11(19): October 1: 3578-3589 (also featured News and Views).

28. Zhen Shen and **Supriya G. Prasanth** (2012) Emerging players in the initiation of eukaryotic DNA replication. ***Cell Division*** 7(1): 22 (PMCID: PMC3520825).

29. Vidisha Tripathi, Zhen Shen, Arindam Chakraborty, Sumanprava Giri, Sue M. Freier, Xiaolin Wu, Yongqing Zhang, Myriam Gorospe, **Supriya G. Prasanth**, Ashish Lal and Kannanganattu V. Prasanth (2013) Long Noncoding RNA MALAT1 Controls Cell Cycle Progression by Regulating the Expression of Oncogenic Transcription Factor B- MYB. *PLoS Genet.* Mar;9(3):e1003368. doi: 10.1371/journal.pgen.1003368. (PMCID: PMC3605280)

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31. Yan Sun, Dong Li, Sumanprava Giri, **Supriya G. Prasanth** and Dongwan Yoo (2014) Differential host cell gene expression and regulation of cell cycle progression by nonstructural protein 11 of porcine reproductive and respiratory syndrome virus. *Biomed research international.* 2014:430508. Doi: 10.1155/2014/430508. PMCID: PMC3955671

32. Arindam Chakraborty and **Supriya G. Prasanth** (2014) Phosphorylation-dephosphorylation cycle of HP1a governs accurate mitotic progression. *Cell cycle* Jun 1; 13(11):1663-70 PMC4111712

33. Nihan Kara, Manzar Hossain, **Supriya G. Prasanth** and Bruce Stillman (2015) Orc1 binding to mitotic chromosomes precedes spatial patterning during G1 phase and assembly of the Origin Recognition Complex in human cells. *J. Biol. Chem.* pii.jbc.M114.625012 PMID: 25784553. PMC 4424365

34. Sumanprava Giri, Vasudha Aggarwal, Julien Pontis, Zhen Shen, Arindam Chakraborty, Abid Khan, Craig Mizzen, Kannanganattu V. Prasanth, Slimane Ait-Si-Ali, Taekjip Ha and **Supriya G. Prasanth** (2015) ORCA/LRWD1 organizes heterochromatin by assembling histone H3lysine 9 methyltransferases on chromatin. *eLIFE* Apr 29;4. doi: 10.7554/eLife.06496. PMC4442312

35. Abid Khan, Sumanprava Giri, Yating Wang, Arindam Chakraborty, Archit K. Ghosh, Aparna Anantharaman, Vasudha Aggarwal, Kizhakke M. Sathyan, Taekjip Ha, Kannanganattu V Prasanth and **Supriya G Prasanth** (2015) BEND3 represses rDNA transcription by stabilizing a

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37. Giri S, Chakraborty A, Sathyan KM, Prasanth KV, **Prasanth SG**. (2016) Orc5 induces large-scale chromatin decondensation in a GCN5-dependent manner. *Journal of Cell Science* Jan 15; 129(2): 417-29. doi: 10.1242/jcs.178889. PMC4732289

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breast cancer cells by promoting the transcription of cell cycle genes. *Carcinogenesis.* Oct 1;38(10):966-975. doi: 10.1093/carcin/bgx062. .PMC6410955

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54. Rosaline Hsu, Sumanprava Giri, Yating Wang, Yo-Chuen Lin, Dazhen Liu, Susan Wopat, Arindam Chakraborty, Kannanganattu V. Prasanth, and **Supriya G. Prasanth.** The E3 ligase RFWD3 associates with ORC and stabilizes ORC in a p53-dependent manner. 2020 Cell cycle Nov;19(21):2927-2938. doi: 10.1080/15384101.2020.1829823. Epub 2020 Oct 12.

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Jenkins L, Johansson H, Zhu Y, Diederichs S, Bagchi A, Kim T, Janga SC, Lal A, **Prasanth SG** and Prasanth KV (2020) The S phase-induced lncRNA *SUNO1* promotes cell proliferation by controlling YAP1/Hippo signaling pathway**.** eLife Oct 27;9:e55102. doi: 10.7554/eLife.55102.

56. Yo-Chuen Lin and. Supriya G. Prasanth (2021): Replication initiation: implications in genome integrity. DNA repair Jul;103:103131. doi: 10.1016/j.dnarep.2021.103131.

57. Luqian Zheng, JIngjing Liu, Lijie Niu, Mohammad Kamran, Ally WH Yang, Arttu Jolma, Qi Dai, Timothy R Hughes, Dinshaw J Patel, Long Zhang, **Supriya G Prasanth**, Yang Yu, Aiming Ren, and Eric C Lai (2022) Distinct structural bases for sequence-specific DNA binding by mammalian BEN domain proteins. Genes Dev. 2022 Feb 1;36(3-4):225-240. doi: 10.1101/gad.348993.121. Epub 2022 Feb 10. PMID: 35144965

58. Fredy Kurniawan[+], Neha Chetlangia[+], Mohammad Kamran[+], Christophe E. Redon[$], Lorinc Pongor[$], Qinyu Sun, Yo-Chuen Lin, Vijay Mohan, Oways Shaqildi, Darya Asoudegi, Qinyu Hao, Abid Khan, Mirit Aladjem, Kannanganattu V. Prasanth and **Supriya G. Prasanth** (2022) BEND3 safeguards pluripotency by repressing differentiation-associated genes. *Proc Natl Acad Sci USA* March 1, 2022 119 (9) e2107406119; https://doi.org/10.1073/pnas.2107406119 PMC8892337

59. Yo Chuen Lin, Dazhen Liu, Arindam Chakraborty, Lyudmila Y Kadyrova, You Jin Song, Qinyu Hao, Jaba Mitr, Rosaline Y.C. Hsu, Mariam K. Arif, Sneha Adusumilli, Ting-Wei Liao, Taekjip Ha, Farid A Kadyrov, Kannanganattu V. Prasanth, and **Supriya G. Prasanth** (2022) Orc6 is a component of the replication fork and enables efficient mismatch repair. *Proc Natl Acad Sci USA* May 31;119(22):e2121406119. doi: 10.1073/pnas.2121406119 PMC9295755

60. Kurniawan F and Prasanth SG (2022) A BEN-domain protein and polycomb complex work coordinately to regulate transcription. *Transcription* Feb-Jun;13(1-3):82-87. doi: 10.1080/21541264.2022.2105128. Epub 2022 Jul 29.

61. Liu D, Sonalkar J, Prasanth SG (2023). ORChestra coordinates the replication and repair music. *Bioessays* Apr;45(4):e2200229. doi: 10.1002/bies.202200229. Epub 2023 Feb 22.

62. Lin Y-C[+], Liu D[+], Chakraborty A, Macias V, Brister E, Sonalkar J, Shen Y, Ha, TJ, Kajdacsy-Balla A, Prasanth KV and **Prasanth SG** (2023) DNA damage-induced, S-phase specific phosphorylation of Orc6 is critical for the maintenance of genome stability. *Molecular & Cellular Biology* 10.1080/10985549.2023.2196204; 43(4):143-156. Epub 2023 Apr 25.

63. Abid Khan and **Supriya G. Prasanth**. BENDing with polycomb in pluripotency and cancer *Bioessays,* Volume 45, Issue 8, August 2023:e2300046. Doi:10.1002/bies.20230046. Epub 2023 May 17

Submitted/under preparation

1. Qinyu. Hao, Minxue Liu, Hong Jin, Saurabh Sinha, Sharad Chandra Janga, **Supriya G. Prasanth** and Kannanganattu V. Prasanth: Nucleous-localized and monoallelically expressed ncRNA plays a critical role in rRNA biogenesis (under revision)

2. Arindam Chakraborty[+], Fredy Kurniawan[+], David Chen, Humayra Oishi, Yo-Chuen Lin, Mariam K. Arif, Dazhen Liu, Kannanganattu V. Prasanth, and **Supriya G. Prasanth**[*] Mitotic phosphorylation of Orc6 is essential for cell cycle progression (Manuscript in preparation).

3. Neha Chetlangia, Oraya Zinder, Lorinc Pongor, Christophe E Redon, Christopher Fields, You-Jin Song, Mirit I. Aladjem, Kannanganattu V Prasanth and **Supriya G Prasanth**. ORCA/LRWD1 organizes heterochromatin through PRC2. (Manuscript under preparation)

Research Support

Ongoing Research Support

1) National Science Foundation
MCB-2225464 (PI: Supriya Prasanth) 08/15/2022-07/31/2026
Total costs: $867,196
$140,500/yr direct costs
Title: Linking DNA replication to chromatin organization
The goal is to study how LRWD1/ORCA regulates heterochromatin organization

2) NIH/NIGMS
R01 GM125196-01 (PI: Supriya Prasanth) 8/1/2018-5/31/2022 **(NCE 5/31/2024)**
$1,202,615 Total Costs for Entire Project Period (including Indirect Costs)
$200,000/yr annual direct costs
Equipment supplement $125,000
Total: $1,237,615
Regulation of Genomic Stability by ORC
The goal of this research proposal is to understand the role of Orc6 in DNA damage response.

3) National Science Foundation
MCB-1818286 (PI: Supriya Prasanth) 8/1/2018-7/31/2021 **(NCE 7/31/2024)**
$714,000 Total Costs for Entire Project Period (including Indirect Costs)
$156,000/yr annual direct costs
Role of BEN-domain proteins in chromatin organization and gene expression
The goal of this study is to how BEND3 regulates transcription repression

4. Cancer Center at Illinois seed grant: 7/1/2021-6/30/2023 **(NCE 6/30/2024)**
Lead Investigator: Supriya Prasanth
Co-I: Satish Nair
Total cost $200,000

Pending Support:

NIH/NIGMS
R35 (PI-Supriya Prasanth) 12/1/2023-11/30/2028
$2,069,563 Total Costs for Entire Project Period (including Indirect Costs)
$275,000 direct per year.
Regulation of Genomic Stability

NIH/NIGMS
R01 GM125196-05-A1 (PI-Supriya Prasanth) 4/1/2024-3/31/2029
$1,859,587 Total Costs for Entire Project Period (including Indirect Costs)

$250,000 direct per year.
Regulation of Genomic Stability by ORC

NIH (under preparation: submitting in October 2023)
Title: Transcriptional regulation of differentiation
Role: PI
Total costs: $1,800,000
Funding period: 6/2024-5/2029

Completed Support:

Source of Support: National Science Foundation
Title: Establishment of replication timing and patterning in mammalian cells 1243372 (Career)
Role: PI
Total costs $875,073
Funding Period: 7/1/2013-6/30/2018 (ended on 1/31/2023)
Graduate student preparedness supplement award $21,805
The goal of this study is to characterize how Orc1 dictates replication initiation, timing and spatio-temporal patterning of DNA replication.
Additional SUPPLEMENT awarded during NCE period $53,000
Graduate student preparedness supplement award

Source of Support: National Institutes of Health
Project Title: Role of ORCA in DNA replication
Role: PI
Grant Number: RO1GM099669-01A1
Funding Period: 8/1/2012-7/31/2019
Award: $1,311,280

Source of Support: National Science Foundation
Project Title: Investigating the role of ORCs in chromatin organization and in mitotic progression.
Role: PI
Grant Number: 0843604
Funding Period: 9/1/2009-8/30/2013
Award: $800,000

Source of Support: Leukemia and Lymphoma Society
Project Title: Origin Recognition Complex: links between DNA replication, cell proliferation and cancer.
Role: Special Fellow, PI
Grant Number: 3432-06
Funding Period: 3/1/2007-06/30/2008
Award: $82,500

Source of Support: Leukemia and Lymphoma Society
Project Title: Origin Recognition Complex: links between DNA replication, cell proliferation and cancer.
Role: Special Fellow, PI
Grant Number: 3432-06

Funding Period: 7/1/2005-02/28/2007
Award: $82,500

Source of Support: Cold Spring Harbor Laboratory, New York, USA
Project Title: Role of multitalented Origin Recognition Complex proteins
Role: Cold Spring Harbor Laboratory Association post-doctoral funding award, PI
Funding Period: 5/1/02-4/30/03
Source of Support: Center for Scientific and Industrial Research, National Institute of Immunology, New Delhi, India
Project Title: Organizational and transcriptional assessment of protooncogene *c- kit* receptor in somatic and germline tissues of rat, *Rattus norvegicus.*
Role: Senior research fellow, PI
Funding Period: 1999-2000

Source of Support: Center for Scientific and Industrial Research, National Institute of Immunology, New Delhi, India
Project Title: Organizational and transcriptional assessment of protooncogene *c- kit* receptor in somatic and germline tissues of rat, *Rattus norvegicus.*
Role: Junior research fellow, PI
Funding Period: 1997-1999

David H. Rivier
University of Illinois
Department of Cell and Structural Biology
Urbana-Champaign, IL 61801
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email: rivier@illinois.edu

Education

University of California Berkeley, CA	Postdoctoral Training Advisor: Jasper Rine
University of Oregon Eugene, OR	Ph.D., 1988 Advisor: Karen Sprague
University of the Pacific Stockton, CA	B.S., 1982

Appointments

University of Illinois, Associate Professor, Cell & Developmental Biology, 1999- present

University of Illinois, Assistant Professor, Cell & Structural Biology, 1993-1999

University of Illinois, Assistant Professor, zero-time appointment, Department of Microbiology, 1993-1999

Awards

2020 UIUC Campus Award for Excellence in Undergraduate Teaching

2020 Chancellors Senior Survey: 1 of 38 UIUC faculty and staff who were identified by 10 or more students as having a positive impact on their experience at Illinois.

2019 School of MCB Teaching Excellence Award

2016 LAS Dean's Award for Excellence in Undergraduate Teaching

University of Illinois List of Teachers Ranked as Excellent by Their Students:

Summer 2021 MCB 252 Online
Fall 2020 MCB 252
Summer 2020 MCB 252 Online
Spring 2020 MCB 317

Spring 2020 MCB 252
Fall 2019 MCB 252
Spring 2019 MCB 317
Spring 2018 MCB 317
Fall 2017 MCB 252
Summer 2017 MCB 252
Spring 2017 MCB 317
Spring 2017 MCB 252
Summer 2016 MCB 252
Spring 2016 MCB 317
Summer 2015 MCB 252
Spring 2015 MCB 252
Spring 2013 MCB 317
Summer 2012 MCB 150
Spring 2012 MCB 317
Spring 2010 MCB 297
Spring 2010 MCB 405
Spring 2008 MCB 405
Spring 2007 MCB 405

NCSA Faculty Fellow, 2003-2004
Charles M. Goodenberger Fund, 1998-1999
Basil O'Connor Starter Researcher Award,
March of Dimes Birth Defects Foundation, 1995-1998
Charles M. Goodenberger Fund, 1996-1997
Charles M. Goodenberger Fund, 1995-1996
Lucille P. Markey Charitable Trust, 1992-1993
American Cancer Society Fellow, 1989-1992
Environmental Health Sciences Training Grant, 1988-1989
National Institutes of Health Training Grant, 1983-1987
Mortar Board Senior Honor Society, 1981-1982
Alpha Lambda Delta Honor Society, 1978-1979
Bausch and Lomb Honorary Science Award, 1978

Publications

Vandre, C.L., Kamakaka, R.T., and D.H. Rivier, (2008) The DNA end-binding protein Ku regulates silencing at the internal *HML* and *HMR* loci in *Saccharomyces cerevisiae*. Genetics 180: 1704-1718.

Rivier, D. H., J. L. Ekena, et al. (1999). "*HMR-I* is an origin of replication and a silencer in Saccharomyces cerevisiae." *Genetics* 151(2): 521-9.

Xu, E. Y., S. Kim, et al. (1999). "*SAS4* and *SAS5* are locus-specific regulators of silencing in Saccharomyces cerevisiae." *Genetics* 153(1): 25-33.

Xu, E. Y., S. Kim, et al. (1999). "Identification of *SAS4* and *SAS5*, two genes that regulate silencing in Saccharomyces cerevisiae." *Genetics* 153(1): 13-23.

Replogle, K., Hovland, L.L. and Rivier, D.H. (1999) "Designer deletion and prototrophic strains derived from Saccharomyces cerevisiae strain W303-1a." *Yeast* 15(11): 1141-9.

Hurst, S.T. and Rivier D.H. (1999) Identification of a Compound Origin of Replication at the *HMR-E* Locus in *S. cerevisiae. Journal of Biological Chemistry* 274:4155-4159.

Rivier, D.H. †, Ekena, J.L. and Rine, J. (1999) *HMR-I* is an Origin of Replication and a Silencer in *S. cerevisiae. Genetics* 151:521-529.
† First author and senior author

Ehrenhofer-Murray, A. E., Rivier, D.H. and Rine, J. (1997) The Role of Sas2, an Acetyltransferase Homologue of *Saccharomyces cerevisiae*, in Silencing and ORC Function. *Genetics* 145: 923-934.

Rivier, D. H., and L. Pillus (1994) Silencing Speaks Up. *Cell* 76: 963-966.

* co-first authorship: Fox*, C. A., Loo*, S., Rivier*, D.H., Foss, M.A. and Rine, J. (1993) A Transcriptional Silencer as a Specialized Origin of Replication that Establishes Functional Domains of Chromatin. *Cold Spring Harb Symp Quant Biol* 58: 443-455.

Rivier, D.H., and Rine, J. (1992) Silencing: the Establishment and Inheritance of Stable, Repressed Transcription States. *Current Opinion in Genetics and Development* 2: 286-292.

Rivier, D.H., and Rine, J. (1992) An Origin of Replication and a Transcription Silencer Require a Common Element. *Science* 256: 659-663.

Young, L.S., Rivier, D.H., Sprague, K.U. (1991), Sequences Far Downstream from the Classical tRNA Promoter Elements Bind RNA Polymerase III Transcription Factors. *Molecular and Cellular Biology* 11(3):1382-1392

Sprague, K.U., Ottonello, S.O., Rivier, D.H., Young, L.S. (1987), Control of tRNA Gene Transcription. In RNA Polymerase and the Regulation of Transcription, Reznikoff, W.S., Burgess, R.R., Dahlberg, J.E., Gross, C.A., Record, M.T.,Jr., editors, (Elsevier Science Publishing Co.) pp. 195-207

* co-first authorship: Ottonello*, S.O., Rivier*,D.H., Doolittle, G.M., Young, L.S., and Sprague, K.U. (1987), The Properties of a New Polymerase III Transcription Factor Reveal that Transcription Complexes Can Assemble By More Than One Pathway. *EMBO Journal* 6:1921-1927.

Grant Support

Coordinate Regulation of Replication and Transcription National Institutes of Health (R01) 1/95-12/00	Direct cost Total award	$519,809 $835,401
Charles M. Goodenberger Fund 9/98-8/99	Direct cost	$20,000
Coordinate Regulation of Replication and Transcription Basil O' Connor Starter Researcher Award, March of Dimes 2/95-1/98	Total award	$80,000
Charles M. Goodenberger Fund 9/96-8/97	Direct cost	$20,114
Charles M. Goodenberger Fund 9/95-8/96	Direct cost	$19,981
UIUC Research Board 5/02-5/03	Direct cost	$22,000
UIUC Research Board 5/03-5/04	Direct cost	$17,114
NCSA Faculty Fellows Award 5/03-8/04	Direct cost	$25,000
Research Board 2005	Direct cost	$7,000

Special Support

Wellcome Visiting Professorship for Dr. Leland Hartwell to visit University of Illinois, Urbana-Champaign 4/96	Direct cost	$5,000

Grants to Support Undergraduate, Graduate or Professional Training

NIH Cell and Molecular Biology Training Grant
Competitive award to Simi Hurst

NIH Cell and Molecular Biology Training Grant
Competitive award to Joanne Ekena

NIH Cell and Molecular Biology Training Grant
Competitive award to Laura Hovland

NIH Cell and Molecular Biology Training Grant
Competitive award to Susan Kim

Monsanto Undergraduate Research Award (for Mylynda Schlesinger) Total award $3,500

Teaching

Classroom Instruction

Spring 2022
MCB 252 Cells, Tissues and Development (21 contact hours)
MCB 317 Genetics and Genomics (40 contact hours)

Fall 2021
MCB 252 Cells, Tissues and Development (21 contact hours)

Summer 2021
MCB 317 Genetics and Genomics ONLINE (40 contact hours)
MCB 252 Cells, Tissues and Development ONLINE (40 contact hours)

Spring 2021
MCB 252 Cells, Tissues and Development (21 contact hours)
MCB 317 Genetics and Genomics (40 contact hours)

Fall 2020
MCB 252 Cells, Tissues and Development (21 contact hours)

Summer 2020
MCB 317 Genetics and Genomics ONLINE (40 contact hours)
MCB 252 Cells, Tissues and Development ONLINE (40 contact hours)

Spring 2020
MCB 252 Cells, Tissues and Development (21 contact hours)
MCB 317 Genetics and Genomics (40 contact hours)

Fall 2019
MCB 252 Cells, Tissues and Development (21 contact hours)

Summer 2019

Developed and Taught MCB 317 Genetics and Genomics ONLINE (equivalent of 40 contact hours)
MCB 252 Online

Spring 2019
MCB 252 Cells, Tissues and Development (21 contact hours)
MCB 317 Genetics and Genomics (40 contact hours)

Fall 2019
MCB 252 Cells, Tissues and Development (21 contact hours)

Summer 2018
Developed and Taught MCB 252 Cells, Tissues and Development ONLINE (equivalent of 40 contact hours)

Spring 2018
MCB 252 Cells, Tissues and Development (21 contact hours)
MCB 317 Genetics and Genomics (40 contact hours)

Summer 2017
MCB 252 Cells, Tissues and Development (38 contact hours)

Fall 2017
MCB 252 Cells, Tissues and Development (42 contact hours)

Spring 2017
MCB 252 Cells, Tissues and Development (40 contact hours)
MCB 317 Genetics and Genomics (40 contact hours)

Fall 2016
MCB 252 Cells, Tissues and Development (20 contact hours)

Summer 2016
MCB 252 Cells, Tissues and Development (38 contact hours)

Spring 2016
MCB 252 Cells, Tissues and Development (42 contact hours)
MCB 317 Genetics and Genomics (41 contact hours).

Summer 2015
MCB 252 Cells, Tissues and Development (38 contact hours)

Spring 2015
MCB 252 Cells, Tissues and Development (42 contact hours)
MCB 317 Genetics and Genomics (41 contact hours).

Summer 2014
MCB 252 Cells, Tissues and Development (38 contact hours)

Fall 2014
MCB 252 Cells, Tissues and Development (5 contact hours)
Spring 2014
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)
MCB 252 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 317 Genetics and Genomics (43 contact hours).
MCB 493 Genetic and Genomic Analysis (11 contact hours, team taught with Rachel Smith-Bolton and Lisa Stubbs)

Fall 2013
MCB 252 Cells, Tissues and Development (1 contact hour)

Summer 2013
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2013
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)
MCB 252 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 317 Genetics and Genomics (40 contact hours).
MCB 493 Genetic and Genomic Analysis (10 contact hours, team taught with Rachel Smith-Bolton and Lisa Stubbs)

Summer 2012
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2012
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)
MCB297 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 317 Genetics and Genomics (40 contact hours).

Summer 2011
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2011
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)
MCB 252 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 317 Genetics and Genomics (40 contact hours).

Summer 2010
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2010
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)

MCB 252 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 405 Genetics and Genomics (40 contact hours).

Summer 2009
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2009
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)
MCB 252 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 405 Genetics and Genomics (40 contact hours).

Summer 2008
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2008
MCB 252 Cells, Tissues and Development (21 contact hours, team taught with Michel Bellini)
MCB 252 Honors Discussion Section (6 contact hours, team taught with Michel Bellini)
MCB 405 Genetics and Genomics (40 contact hours).

Summer 2007
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2007
MCB 405 Genetics and Genomics (40 contact hours).

Summer 2006
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Spring 2006
MCB 405 Genetics and Genomics (40 contact hours).

Summer 2005
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Fall 2005
MCB 405 Genetics and Genomics (40 contact hours).
Dr. Rod MacLeod presented two lectures.

Summer 2004
MCB150 Molecular and Cellular Basis of Life (40 contact hours)

Fall 2004
MCB 405 Genetics and Genomics (40 contact hours). I developed and taught this new course.
Dr. Rod MacLeod presented two lectures.

Fall 2003

CSB 300, Cell Biology (20 contact hours) I was responsible for organizing this course and for teaching half of it. Akira Chibe and Stephen Kaufman each taught one-fourth of this course.

Spring 2001
CSB 216 Molecular Genetics of Animal Cells (40 contact hours) I was solely responsible teaching this course in molecular and genetic analysis of development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours. Dr. Rod MacLeod presented two lectures.

CSB 410, First Year Graduate Student Course, 4.5 Hours

Fall 2000
Bioch490B, First Year Graduate Student Course, 1.5 Hours

Spring 2000
CSB 216 Molecular Genetics of Animal Cells (40 contact hours) I was solely responsible teaching this course in molecular and genetic analysis of development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours. Dr. Rod MacLeod presented two lectures.

Spring 1999
CSB 216 Molecular Genetics of Animal Cells (42 contact hours) I was solely responsible teaching this course in molecular and genetic analysis of development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours.

Spring 1998
CSB 216 Molecular Genetics of Animal Cells (42 contact hours) I was solely responsible teaching this course in molecular and genetic analysis of development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours.

Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Fall 1997
Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Spring 1997
CSB 216 Molecular Genetics of Animal Cells (42 contact hours) I was solely responsible teaching this course in molecular and genetic analysis of development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours.

Fall 1996
Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Cell and Structural Biology 300- Cell Biology I, upper division/graduate level lecture course, guest lecturer (2.5 contact hours)

Spring 1996
CSB 216 Molecular Genetics of Animal Cells (42 contact hours) I was solely responsible teaching this course in molecular and genetic analysis of development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours.

Fall 1995
Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Spring 1995
CSB 216 Molecular Genetics of Animal Cells (42 contact hours) I was solely responsible for the development and implementation of this new course in molecular and genetic analysis of development. From the beginning, this course has been one of the highest rated undergraduate courses in the department and has double in size since I was charged with its development. My responsibilities included presentation of lectures, preparation of overheads and class notes, design and grading of exams, preparation of problem sets, distribution of answers and weekly office hours.

Cell and Structural Biology 410- Special Topics in Cell and Structural Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Fall 1994
Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Cell and Structural Biology 410- Special Topics in Cell and Structural Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Fall 1993
Microbiology 485- Topics in Microbiology and Molecular Biology, Graduate student literature/lecture course, guest lecturer (1.5 contact hours)

Individual Instruction

Former Trainees

Undergraduate	**Dates**	**Current Position**
Vasantha Samala	1/97-5/98	Physician
Marcia Burns	5/96-8/96	Primary Education
Mylynda Schlessinger	5/94-8/95	Physician
Masters Students		
Laura Hovland	5/95-12/99	Retired
Joanne Ekena	1/94-12/99	Research Assoc. Monsanto
Eric Eisen	5/93-8/94	Dentist
Ph.D. Students		
Catherine Vandre	1/02-12/09	Faculty Rock Valley College Rockford, IL
Susan Kim Training Grant Awardee	5/96-12/99	Finished Ph.D. in Chiba Lab
Simi Hurst Training Grant Awardee	5/94-12/02	Biotechnology Industry
Eugenia Xie (Xu)	5/93-2/98	Research Associate Princeton University

Departmental Student Training: Rotation students
13 Cell and Structural Biology Students
4 Microbiology Students

Invited Lectures and Presentations

2015-2016
Rivier, David H. University of Illinois Faculty Technology Summit, Lecture Video Capture and Analytics on Illinois Media Space (along with comments from Drew MacGregor and Robert Baird)

Rivier, David H. University of Illinois, LAS Teaching Academy, How to Improve Learning Outcomes Using Lecture Video Capture (along with comments from Drew MacGregor and Robert Baird)

2005-2006
Department of Molecular and Cell Biology, Division of Genetics, Genomics and Development, University of California, Berkeley, California (informal seminar)

1998-1999
Cold Spring Harbor Meeting on Telomeres and Telomerase, Cold Spring Harbor, NY
Epigentics Gordon Conference
Sangamo Biosciences, Point Richmond, California
Lawrence Livermore National Laboratory, Livermore, California

1997-1998
West Coast Chromatin and Chromosomes Conference, Asilomar, CA
Midwest Yeast Meeting, Chicago Illinois
FASEB Transcriptional Regulation During Development, Snowmass, CO
FASEB Yeast Chromosome Structure, Segregation and Replication, Snowmass, CO

1996-1997
Department of Biochemistry, Michigan State University, East Lansing, MI
Midwest Yeast Meeting (declined)

1995-1996
Gordon Research Conference on Epigenetics, Tilton, NH
Keystone Symposium on Transcriptional Regulation, Taos, NM
Southern Illinois University, Carbondale, IL

1994-1995
Midwest Yeast Meeting, Chicago Illinois
Department of Biochemistry, University of Indiana, Indianapolis, IN

Meeting Abstracts and Posters

1997
Xu, E.Y. and Rivier, D.H.
American Society of Cell Biology Annual Meeting, Washington, DC

Thomas, S. and Rivier, D.H.
Cold Spring Harbor Meeting on Eukaryotic DNA Replication, Cold Spring Harbor, NY

1996
Xie, E.Y. and Rivier, D.H.
Yeast Genetics and Molecular Biology Meeting, Madison, WI

Ekena, J. and Rivier, D.H.
Yeast Genetics and Molecular Biology Meeting, Madison, WI

Hovland, L. and Rivier, D.H.
Yeast Genetics and Molecular Biology Meeting, Madison, WI

1995
Rivier, D.H.
Cold Spring Harbor Meeting on Eukaryotic DNA Replication, Cold Spring Harbor, NY (no abstract).

SERVICE

Professional Service

Nova Education Advisory Board, 2015-2020
Nova Education Content Reviewer, 2015-2020

NSF Grant Reviewer

Editorial Reviewer, *Genes and Development*
Editorial Reviewer, *Genetics*
Editorial Reviewer, *Molecular and Cellular Biology*
Editorial Reviewer, *Proceedings of the National Academy of Sciences*
Editorial Reviewer, *Molecular biology of the Cell*
Textbook Reviewer, *Introduction to Genetic Analysis*, Griffiths, et. al.

University Service

Education Policy Committee of the UIUC Sentate 2019-2022
LAS Online Advisory Committee 2016-2022
Faculty Advisor Illini Fighting Alzheimer's, Registered Student Organization, 2015-2019
Faculty Advisor Illini Fighting ALS, Registered Student Organization, 2015-2017
University of Illinois Senate 2011-2013, 2015, 2020-21
Research Board Reviewer, 1994-2003

School Service

MCB Courses and Curriculum Committee, 2008-2022
MCB Distinction Committee 1999-2012, 2017-2021
Human Genetics and Cell Biology Search Committees, 2000-2001

Departmental Service

Associate Department Head, 2014-2020

Department Advisory Committee 2014-2020
Courses and Curriculum Committee, 1994-1999, Chair 2008-2014, 2016-2022
Distinction Committee, 2013-2016, Chair, 1999-2012, Chair 2017-2021, 2022
Equipment Committee, 2014-2016 Chair, 2012-2014
Faculty Awards Committee, Chair, 2015-2016
Undergraduate Student Advisor, 1993-1999
Seminar Committee, 1994-1999, Chair 1998-1999
Graduate Student Committee, 1993-1996, Co-chair 1994-1996
Development Committee, Chair 1995-1996
Organizer, Junior Faculty Joint Group Meeting, 1993-1995

Consultation

Informal Consultant, Millennium Pharmaceuticals, 2003

Community Service

Elementary School Science Fair Judge, 1999

Yankee Ridge Elementary School, 1997
Science Demonstration and Lecture: Light and Lasers

Yankee Ridge Elementary School, 1996
Science Demonstration and Lecture: Cells and Microscopes

MARY A. SCHULER
Professor, Departments of Cell and Developmental Biology,
Plant Biology, Biochemistry

ADDRESS:
Department of Cell and Developmental Biology
University of Illinois, 190 Edward R. Madigan Lab,
1201 West Gregory Drive, Urbana, Illinois 61801
(217) 333-8784--office; (217) 333-8785--lab; fax (217) 244-1336
Email: maryschu@illinois.edu

DEGREES EARNED:

B.A.	Cornell University, Ithaca, NY	Chemistry and Biology, 1970-1974
Ph.D.	Cornell University, Ithaca, NY	Biochemistry, 1978-1981

RESEARCH AND TEACHING EXPERIENCE:
Professor, Cell and Developmental Biology, University of Illinois, November 1997-
Professor, Plant Biology and Biochemistry, University of Illinois, September 1995-
Professor (Affiliate), Entomology, University of Illinois, February 1996-
Associate Professor, Plant Biology and Biochemistry, University of Illinois, Sept.1989-1995
Assistant Professor, Plant Biology and Biochemistry, University of Illinois, Sept. 1983-1989
Postdoctoral Associate, Biology, Washington University, September 1981-August 1983
Monsanto Research Fellow, Biology, Washington University, May 1981-August 1981
Postdoctoral Associate, Biochemistry, Cornell University, January 1981-May 1981
Graduate Research Assistant, Biochemistry, Cornell University, September 1978-January 1981
Research Technician, Biochemistry, Cornell University, September 1975-August 1978
Instructor, Chemistry, Cornell University, June 1976-August 1976
Teaching Assistant, Chemistry, Cornell Univ., June 1975-May 1976; Sept. 1976-Dec. 1976
Research Assistant, Chemistry, Carnegie-Mellon University, Summers 1972, 1973, 1974

PUBLICATIONS:

127. Flowers, S., B.C. Colon, S.G. Whaley, M.A. Schuler and P.D. Rogers. 2015. Contribution of clinically-derived mutations in ERG11 on azole resistance in *Candida albicans*. Antimicrobial Agents Chemotherapy. 59, 450-460. doi:10.1128/AAC.03470-14 Epub 2014 Nov 10 PMCID: PMC4291385

128. Mao, W., M.A. Schuler and M.R. Berenbaum. 2015. Task-related differential expression of four cytochrome P450 genes in honeybee appendages. Insect Mol. Biol. 24, 582-588. doi:10.111/imb.12183 Epub 2015 Jul 20 PMID: 26190094

129. Mao, W., M.A. Schuler and M.R. Berenbaum. 2015. A dietary phytochemical alters caste-associated gene expression in honey bees. Sci. Advances 1(7):e1500795. doi:10.1126/sciadv.1500795 eCollection 2015. PMCID: PMC4643792

130. Mao, W., M.A. Schuler and M.R. Berenbaum. 2017. Disruption of quercitin metabolism by fungicide affects energy production in honey bees *Apis mellifera*. Proc. Natl. Acad. Sci. USA doi: 10.1073/pnas.1614864114. Epub 2017 Feb 17 PMID: 28193870

131. Calla, B., K. Noble, K.K.O. Walden, H.M. Robertson, M.A. Schuler and M.R. Berenbaum. 2017. CYPome diversification and hostplant utilization patterns in specialist and generalist moths: birth, death and adaptation. Mol. Ecol. 26, 6021-6035. doi:10.1111/mec.14348 PMID: 28921805

132. Petronikolou, N., A.J. Hollatz, M.A. Schuler and S.K. Nair. 2018. Loganic acid methyltransferase: insights into the specificity of methylation on an iridoid glycoside. Chembiochem. 19, 784-788. doi: 10.1002/cbic.201700679 PMID: 29399933

133. Zhang, J. et al. 2018. Allele-defined genome of the autoploid sugarcane *Saccharum spontaneum* L. Nature Genetics 50, 1565-1573. doi: 10.1038/s41588-018-0237-2 PMID: 30297971

134. Calla, B., W.-Y. Wu, C. Dean, M.A. Schuler and M.R. Berenbaum. 2020. Substrate specificity of cytochrome P450-mediated detoxification as an evolutionary strategy for specialization on furanocoumarin-containing hostplants: CYPAE89 in parsnip webworm. Insect Mol. Biol. 29, 112-123. doi: 10.1111/imb.12612. PMID: 31393031

135. Miller, J.C., Hollatz, A.J. and Schuler, M.A. 2021. P450 variations bifurcate the early terpene indole alkaloid pathway in *Catharanthus roseus* and *Camptotheca acuminata*. Phytochemistry 183:112626. doi: 10.1016/j.phytochem.2020.112626. PMID: 33445145

136. Miller, J.C. and Schuler, M.A. 2022. Single mutations toggle the substrate selectivity of multifunctional *Camptotheca* secologanic acid synthases. J. Biol. Chem. 298:102237. doi: 10.1016/j.jbc.2022.102237. PMCID: PMC9424959

137. Miller, J.C., Lee, J.H.Z., Mclean, M.A., Chao, R.R., Stone, I.S.J., Pukala, T.L., Bruning, J.B., De Voss, J.J., Schuler, M.A., Sligar, S.G. and Bell, S.G. Engineering C-C bond cleavage activity into a P450 monooxygenase enzyme. J. Am. Chem. Soc. 145, 9207-9222. doi: 10.1021/jacs.3c01456. PMID: 37042073

138. Rao, P., Yaroslavsky, M.A., Miller, J.C. and Schuler, M.A. 2023. Catalytic site constraints in the P450s mediating loganic acid (7DLH) and secologanic acid (SLAS) synthesis in *Camptotheca*. Biochemistry. doi: 10.1021/acs.biochem.3c00126. PMID: 37656055.

139. Vacchiano, M., Stehlik, K., Miller, J.C. and M.A. Schuler. 2023. Oxogeraniol dehydrogenases in indole alkaloid pathway of *Camptotheca acuminata*. In revision.

INVITED REVIEWS:

6. Schuler, M.A. 2015. P450s in Plants, Insects and their Fungal Pathogens. In: Cytochrome P450: Structure, Mechanism and Biochemistry (4th edition), P. Ortiz de Montellano (ed.). Springer Press, vol. 1, pp. 409-449.

7. Denisov, I.G., M.A. Schuler and S.G. Sligar. 2019. Nanodiscs as a New Tool to Examine Lipid-Protein Interactions. Methods Mol. Biol. 2003, 645-671. doi: 10.1007/978-1-4939-9512-7_25. PMID: 31218635

Rachel Smith-Bolton

C626 Chemical and Life Sciences Laboratory
Department of Cell and Developmental Biology
School of Molecular and Cell Biology
University of Illinois Urbana-Champaign

601 S. Goodwin Ave.
Urbana, IL 61801-3761
(217) 244-4183
rsbolton @ Illinois.edu

ACADEMIC APPOINTMENTS

Assistant Director, Diversity, Equity, and Inclusion 2021-present
School of Molecular and Cellular Biology
University of Illinois at Urbana-Champaign

Associate Head 2020-present
Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign

Associate Professor 2018-present
Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign

Assistant Professor 2011-2018
Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign

Faculty Affiliate 2012-present
Regenerative Biology & Tissue Engineering Theme
Institute for Genomic Biology
University of Illinois at Urbana-Champaign

Faculty Affiliate 2012-present
Gene Networks in Neural & Developmental Plasticity
Institute for Genomic Biology
University of Illinois at Urbana-Champaign

EDUCATION

Stanford University	Ph.D., Department of Biological Sciences	2003
Harvard University	B.A., Magna cum Laude, Biochemical Sciences	1996

RESEARCH EXPERIENCE

Postdoctoral Fellow with Iswar Hariharan MBBS, Ph.D. 2003-2010
U.C. Berkeley and Harvard Medical School/MGH
A novel genetic system to study regeneration in *Drosophila*

Graduate Student with Michael Simon Ph.D. 1996-2003
Stanford University
Thesis: Genetic and biochemical analysis of Corkscrew, MASK, and Sprouty function during receptor tyrosine kinase signaling

Undergraduate Researcher with Richard Losick Ph.D. 1994-1996
Harvard University

Thesis: A search for genes affecting polar septation in *Bacillus subtilis*

AWARDS AND HONORS

Norman P. Jones Professorial Scholar 2022-2025

MCB Teaching Excellence Award 2022

List of Teachers Ranked as Excellent by their Students 2020
Molecular Genetics, University of Illinois at Urbana-Champaign

Arnold O. Beckman Research Award 2020
University of Illinois Campus Research Board

List of Teachers Ranked as Excellent by their Students 2018, 2019, 2021
Scientific Writing, University of Illinois at Urbana-Champaign

I.C. Gunsalus Scholar 2018-2019

The Nancy S. Rafferty Lectureship 2018
Marine Biological Laboratory, Woods Hole, MA

Invited Session Chair 2016
Midwest Regenerative Medicine Conference

Arnold O. Beckman Research Award 2015
University of Illinois Campus Research Board

List of Teachers Ranked as Excellent by their Students 2012
Developmental Biology, University of Illinois Urbana Champaign

Platform Session Co-Chair 2012
Genetics Society of America *Drosophila* Research Conference

Roy J. Carver Charitable Trust Young Investigator Award 2012-2015

Award for Outstanding Talk 2009
West Coast Society for Developmental Biology Meeting

Third Place in Poster Competition 2008
Santa Cruz Developmental Biology Meeting

Travel Award 2008
Santa Cruz Developmental Biology Meeting

Honorable Mention in Poster Competition 2008
Genetics Society of America *Drosophila* Research Conference

American Heart Association Postdoctoral Fellowship Award 2007-2009
Western Division (0725135Y)

Ruth L. Kirschstein National Research Service Award 2004-2007
National Institutes of Health
National Institute for General Medical Sciences (F32 GM072252)

National Science Foundation Graduate Research Fellowship 1997-2000

Howard Hughes Medical Institute Undergraduate Research Fellowship 1995

TALKS

Seminar, University of Michigan Department of Molecular, Cellular, & Developmental Biology 2024

Invited Talk, Tissue Repair and Regeneration Gordon Research Conference, New London NH 2023

Invited Talk, Anatomy Across Scales: From Molecules to Organisms, American Association for Anatomy and the University of Iowa 2022

Invited Lecture, Marine Biological Laboratory Embryology Course, Woods Hole MA (virtual) 2021

Seminar, Gurdon Institute, University of Cambridge, UK (virtual) 2021

Seminar, Centre for Regenerative Therapies, Dresden, Germany (virtual) 2021

Invited Talk, Tissue Repair and Regeneration Gordon Research Conference, New London NH (postponed due to COVID) 2021

Invited Talk, American Society for Cell Biology (virtual) 2020

Invited Lecture, Marine Biological Laboratory Embryology Course, Woods Hole MA (cancelled) 2020

Seminar, University of Washington Department of Biochemistry, Seattle WA 2020

Invited Lecture, Marine Biological Laboratory Embryology Course, Woods Hole MA 2019

Invited Lecture, Marine Biological Laboratory Embryology Course, Woods Hole MA 2018

Seminar, Comparative Biosciences, School of Veterinary Medicine, UIUC 2018

Seminar, Center for Cell Biology and Physiology, NIH, Bethesda MD 2018

Seminar, Mechanobiology Institute 10th Anniversary Conference, Singapore (declined) 2018

Invited speaker, Comparative Biology of Tissue Repair, Regeneration and Aging Symposium, Mount Desert Island Biological laboratory, Bar Harbor ME (declined) 2017

Invited Lecture, Marine Biological Laboratory Embryology Course, Woods Hole MA 2017

Platform Talk, Midwest Drosophila Research Conference, Monticello IL 2016

Symposium Talk, International Congress of Entomology, Orlando FL 2016

Invited Talk, Midwest Regenerative Medicine Conference 2016

Seminar, Department of Molecular Genetics and Cell Biology, University of Chicago 2015

Talk, Tissue Repair and Regeneration Gordon Research Conference, New London NH 2015

Invited Workshop Talk, University of South Bohemia, Ceske Budejovice, Czech Republic (declined) 2015

Invited Talk, American College of Wound Healing and Tissue Regeneration 4th Annual Meeting 2014

Seminar, Department of Cell and Regenerative Biology, University of Wisconsin, Madison WI 2014

Platform Talk, Midwest *Drosophila* Research Conference, Monticello IL 2013

Seminar, Department of Biology, Washington University, St. Louis MO 2013

Seminar, Cells, Development and Cancer Seminar Series, University of Colorado, Aurora CO 2013

Workshop Talk, Genetics Society of America *Drosophila* Research Conference, Washington DC 2013

Seminar, Institute for Genomic Biology, University of Illinois, Urbana-Champaign IL 2013

Seminar, School of Biological Sciences, Illinois State University, Normal IL 2012

Invited Speaker, Illinois Workshop on Regenerative Biology and Tissue Engineering, Urbana IL 2011

Invited Speaker, Tissue Repair and Regeneration Gordon Research Conference, New London NH 2011

Seminar, Department of Biochemistry and Cell Biology, Rice University, Houston TX 2010

Seminar, Cardiovascular Research Institute, UCSF, San Francisco CA 2010

Seminar, Department of Cell and Developmental Biology, University of Illinois Urbana-Champaign 2010

Seminar, Massachusetts General Hospital Center for Regenerative Medicine, Boston MA 2009

Invited Speaker, West Coast Society for Developmental Biology Meeting, Monterey CA 2009

Platform Talk, Genetics Society of America *Drosophila* Research Conference, Chicago IL 2009

Seminar, Tumor Biology Seminar Series, University of California, Berkeley CA 2007

Selected Speaker, 3rd *Drosophila* Cell Division Cycle Workshop, Porto, Portugal 2006

RESEARCH SUPPORT

Current

Project name: Genetic Regulation of Tissue Regeneration
Agency: NIH NIGMS R35 (Grant # R35GM141741)
Project Scope: 4/2021 - 4/2026

Completed

Project name: Gene regulatory networks that control tissue regeneration
Agency: Arnold O. Beckman Research Award (Grant # RB20123)
Project Scope: 6/2020 -1/2023

Project name: Regulation of Cell Fate and Patterning during Regenerative Growth
Agency: NIH NIGMS (Grant # R01GM107140)
Project Scope: 1/2016 -12/2022

Project name: Diversity supplement for NIH NIGMS R01GM107140
Project Scope: 6/2019-8/2020

Project name: Diversity supplement for NIH NIGMS R01GM107140
Project Scope: 7/2018-8/2018

Project name: The regulation of gene expression by Taranis during tissue regeneration
Agency: Arnold O. Beckman Research Award (Grant # RB15153)
Project Scope: 5/2015 -11/2017

Project name: Epigenetic reprogramming and the induction of regeneration
Agency: Roy J. Carver Charitable Trust (Grant # 12-4041)
Project Scope: 5/2012 -4/2015

PUBLICATIONS

Yuan Tian and **Rachel K. Smith-Bolton**. Regulation of growth and cell fate during tissue regeneration by the two SWI/SNF chromatin-remodeling complexes of Drosophila. (2021) Genetics, 217(1). https://doi.org/10.1093/genetics/iyaa028

> In this work we conducted a targeted genetic screen of mutations in chromatin modifiers and remodelers to identify those that regulate regeneration. We identified 33 chromatin regulators that affect regeneration, including many components of the SWI/SNF chromatin-remodeling complexes. We show that the PBAP SWI/SNF complex is required for regenerative growth and damage-induced expression of Myc, and the BAP SWI/SNF complex is required for maintaining

posterior cell fate, regulating expression of the posterior fate gene *engrailed* downstream of JNK signaling and in parallel to the Taranis.

Donald T. Fox, Erez Cohen, and **Rachel Smith-Bolton.** Model systems for regeneration: *Drosophila*. (2020) Development. 147(7).

This article is an invited review in the journal Development, and discusses experimental systems to study tissue regeneration in *Drosophila*, as well as recent findings. It is part of a series of reviews on model organisms used to study tissue regeneration.

Syeda Nayab Fatima Abidi and **Rachel K. Smith-Bolton**. Cell fate changes induced by a Distal-less enhancer-trap transgene in the *Drosophila* antennal imaginal disc. (2018) *Scientific Reports* 8(1): 4950.

This work demonstrates that expression of a specific GAL4 transgene inserted into the *distalless* locus induces antenna-to-eye fate changes, and characterizes the role of cell death, JNK signaling, and Distalless levels in this fate change, which appears to be a combination of transdetermination and homeosis.

Sumbul Jawed Khan, Syeda Nayab Fatima Abidi, Andrea Skinner, Yuan Tian, and **Rachel K. Smith-Bolton.** (2017). The *Drosophila* Duox maturation factor is a key component of a positive feedback loop that sustains regeneration signaling. *PLOS Genetics* 13(7): e1006937.

This work describes the transcriptional profile of regenerating tissue, accomplished using our method of dissociating damaged tissue and isolating regeneration blastema cells. Differentially expressed genes were identified, validated, and tested for a functional role in regeneration. The work further demonstrates that the DUOX-maturation factor encoded by the gene *moladietz* is the lynchpin in a positive feedback loop in which JNK signaling induces high *mol* expression, which sustains ROS production in mid to late regeneration, which in turn sustains JNK signaling to ensure completion of regenerative growth.

Amanda R. Brock, Mabel Seto, and **Rachel K. Smith-Bolton.** (2017). Cap-n-collar promotes tissue regeneration by regulating ROS and JNK signaling in the *Drosophila* wing imaginal disc. *Genetics*, 206(3): 1505-1520.

This work describes a genetic screen of 20% of the *Drosophila* genome for regulators of tissue regeneration. One gene identified through the screen, *cap-n-collar* (*cnc*), encodes a transcription factor that has two important regulatory roles during regeneration: constraining ROS levels to the optimal level for stimulating regenerative signaling, and promoting the JNK-dependent regeneration processes of wound closure, initiation of blastema formation, and coordination of developmental checkpoints with tissue regrowth.

Sumbul Jawed Khan, Keaton J Schuster, and **Rachel K. Smith-Bolton**. (2016). Regeneration in Crustaceans and Insects. In: eLS. John Wiley & Sons, Ltd: Chichester.
DOI: 10.1002/9780470015902.a0001098.pub2
http://onlinelibrary.wiley.com/doi/10.1002/9780470015902.a0001098.pub2/full

This invited, comprehensive review summarizes what is known about the process and underlying molecular mechanisms of regeneration in 11 different crustacean and insect species, covering topics from wound closure to blastema formation and outgrowth, patterning, and systemic signaling.

Sumbul Jawed Khan*, Syeda Nayab Fatima Abidi*, Yuan Tian, Andrea Skinner and **Rachel K. Smith-Bolton**. (2016). A rapid, gentle and scalable method for dissociation and fluorescent sorting of imaginal disc cells for mRNA sequencing. *Fly* 10:2 73-80. DOI: 10.1080/19336934.2016.1173296

This work describes the method we developed to label and rapidly isolate regeneration blastema cells to enable genomic approaches to identifying mechanisms that regulate regeneration. This method will be extremely useful to all other labs that use *Drosophila* imaginal discs as a model system.

Andrea Skinner, Sumbul Jawed Khan, and **Rachel K. Smith-Bolton**. (2015). Trithorax regulates systemic signaling during *Drosophila* imaginal disc regeneration. *Development*. 142: 3500-3511.

This work demonstrates that the chromatin modifier Trithorax is required for proper regulation of JNK signaling via the phosphatase Puckered. Damaged tissue with reduced levels of Trx has reduced JNK signaling, reduced expression of the systemic signaling peptide dILP8, and insufficient time for regeneration prior to metamorphosis.

Keaton J. Schuster and **Rachel K. Smith-Bolton.** (2015). Taranis protects regenerating tissue from fate changes induced by the wound response in Drosophila. *Developmental Cell*. 34(1): 119-128.

This work identified a regeneration-specific protective factor, Taranis, that prevents the wound -healing and regenerative signaling from misregulating expression of cell fate genes and inducing cell fate changes within the regenerated tissue.

Rachel K. Smith-Bolton. (2014). *Drosophila* imaginal discs as a model of epithelial wound repair and regeneration. *Advances in Wound Care* 5(6) 251-261. Peer reviewed. Published online January 2014, and in print June 2016.

This invited, peer-reviewed review was written for an issue of Advances in Wound Care that focuses on *Drosophila* as a model system for studying wounds. Advances in Wound Care is the official journal of the Wound Healing Society.

Rachel K. Smith-Bolton, Melanie Worley, Hiroshi Kanda, and Iswar K. Hariharan. (2009). Regenerative growth in *Drosophila* imaginal discs is regulated by Wingless and Myc. *Developmental Cell.* 16(6): 797-809.

In this work we describe the development of a novel system that allows the study of regenerative growth using the genetic tools of *Drosophila*. We show that regenerating discs seem to adopt a younger state of patterning and cell fate commitment, Wingless and Myc activity regulate regenerative growth, and regenerative capacity diminishes as discs progress developmentally. This work lays the foundation for future genetic studies of regenerative growth.

Leslie A. Jarvis*, Stephanie J. Toering*, Michael A. Simon, Mark A. Krasnow, and **Rachel K. Smith-Bolton*.** (2006). Sprouty proteins are in vivo targets of Corkscrew/SHP-2 tyrosine phosphatases. *Development*. 133(6): 1133-42.
*These authors contributed equally to this work.

This work describes the results of a collaboration I organized in which we sought to understand how the protein tyrosine phosphatase Csw/SHP-2 transduces receptor tyrosine kinase signaling. We demonstrated that Csw/SHP-2 dephosphorylates and thereby inactivates Sprouty proteins, which are negative regulators of receptor tyrosine kinase signaling, in both *Drosophila* and mammalian tissue culture. Thus we identified one of the first known targets of Csw/SHP-2 in RTK signaling.

Rachel K. Smith, Pamela M. Carroll, John D. Allard, and Michael A. Simon. (2002). MASK, a large ankyrin repeat and KH domain-containing protein involved in *Drosophila* receptor tyrosine kinase signaling. *Development*. 129(1): 71-82.

This work describes the cloning and characterization of a novel component of the Receptor Tyrosine Kinase signaling pathway, Multiple Ankyrin repeats Single KH domain (MASK). MASK plays a crucial role in RTK signaling, impacting cell survival and proliferation, as well as photoreceptor differentiation and egg patterning. While essential for proper signaling, MASK is not required for MAPK phosphorylation, suggesting its action falls in a different branch of the pathway.

Publications in progress

Syeda Nayab Fatima Abidi and **Rachel K. Smith-Bolton**. The gene *brain tumor* constrains growth to ensure proper patterning during regeneration in *Drosophila* imaginal discs. BioRxiv 615948.

This work identifies a key constrain on regenerative growth: the RNA-regulator Brat. In Brat mutants, tissue regenerates exceptionally well but is missing portions of the margin of the adult wing. We demonstrate that Brat constrains expression of Ilp8, Wg, and Myc, and that elevated Myc alone is sufficient to cause loss of cell fate in the regenerating tissue. We identified the mechanism behind the loss of cell fate: elevated Myc leads to elevated expression of the Myc target Chinmo, which suppresses expression of the cell fate transcription factor Cut.

Syeda Nayab Fatima Abidi, Le'Mark Russell, Nicholas Griffith, and **Rachel K. Smith-Bolton**. Tissue regeneration in the *Drosophila* antennal imaginal disc.

This work describes the development of a tissue ablation system in the antennal imaginal disc and comparison of regeneration in the antennal and wing imaginal discs.

PROFESSIONAL ACTIVITIES

Grant Reviewer

Invited to serve on NIH NIGMS MRAC study section as permanent member	2024-2028
NIH NIGMS ESI R35 Study Section (MRAC) Ad Hoc	2023
NIH NIGMS ESI R35 Study Section Ad Hoc	2021
NIH Ad Hoc DEV2 Study Section	2019
NIH NIGMS K99 Study Section	2017
Ad Hoc Reviewer for the Research Centers in Minority Institutions, City College of New York	2017
NIH NIGMS K99 Study Section	2016
Ad Hoc Reviewer for the Czech Science Foundation	2016
NIH Early Career Reviewer, DEV2 Study Section	2016
UIUC Campus Research Board	2015
Ad Hoc Reviewer for The Portuguese Foundation for Science and Technology, Portugal	2012
Ad Hoc Reviewer for the Medical Research Council, United Kingdom	2011

Manuscript Reviewer

Advances in Wound Care
American Journal of Physiology – Cell Physiology
Cell Reports
Development
Developmental Biology
Developmental Cell
Genetics
International Journal of Developmental Biology
iScience

Journal of Steroid Biochemistry & Molecular Biology
JoVE
Nature Communications
PLOS Biology
PLOS Genetics
PLOS One

Textbook Reviewer/Consultant
Oxford University Press. Scientific Writing and Communication: Papers, Proposals, and Presentations by Angelika Hoffman (2023)

Tenure letter writer
Arizona State University (2021)
Indiana State University (2021)
Illinois State University (2019)

External Committees
Honors Thesis Committee, Leonardo Romero-Barajas, University of Detroit, Mercy 2021
Masters Thesis Committee, Izan Chalen Paredes, Department of Animal Sciences, UIUC 2021

Service to Professional Organizations
Co-Chair of Equity and Inclusion Plenary Session
Genetics Society of America Drosophila Research Conference, San Diego, CA 2022
Regional Representative, Midwest Region, Fly Board (elected position) 2021-2024
Outreach Award Committee
Workshop Organizer, European Drosophila Research Conference (cancelled due to COVID) 2021
Member, Drosophila Image Award Committee, Genetics Society of America 2020-2022
Poster Judge, Annual Biomedical Research Conference for Minority Students 2018, 2019
Workshop Organizer, Tissue Regeneration and Wound Repair
Genetics Society of America *Drosophila* Research Conference, San Diego, CA 2017
Conference Organizer
Midwest Drosophila Research Conference 2015
Conference Co-Organizer
Midwest *Drosophila* Research Conference 2014
Workshop Organizer, Tissue Regeneration and Wound Repair
Genetics Society of America *Drosophila* Research Conference, San Diego, CA 2014
Session Moderator
Midwest *Drosophila* Research Conference 2013, 2014, 2015, 2016
Workshop Organizer, Tissue Regeneration and Wound Repair
Genetics Society of America *Drosophila* Research Conference, Washington DC 2013
Platform Session Co-Chair, Cell Division and Growth Control
Genetics Society of America *Drosophila* Research Conference, Chicago IL 2012
Poster Judge, Genetics Society of America *Drosophila* Research Conference, Chicago IL 2012

UIUC COMMITTEES AND OTHER SERVICE

MCB Assistant Director for DEI 2021-present

MCB Faculty Search Committee 2022-2023
LAS Diversity Equity and Inclusion Committee 2020-present
MCB Faculty Search Committee 2021
LAS General Education Committee 2020-2022
MCB Diversity, Equity and Inclusion Committee (Chair) 2019-present
Investigation Panel Chair, Research Integrity Investigation 2019
Graduate Admissions and Recruitment Committee (co-chair '14-'17, chair '17-'22) 2011-2022
Production of *Drosophila* media for campus use 2014-2020
Department of Cell and Developmental Biology Seminar Committee 2014-16, 2017-20, 2022-23
Department of Cell and Developmental Biology Advisory Committee 2012-2015, 2017-2023
Management of MCB *Drosophila* media production 2011-2014
Courses and Curriculum Committee 2012-2014
Proctor and Gamble Award Selection Committee 2012-2013
Department of Cell and Developmental Biology Faculty Search Committee 2013-2014
Department of Cell and Developmental Biology Graduate Grievance and Appeal Committee 2014-2017

Community Outreach

Board member, Champaign County Forest Preserve District Friends' Foundation 2021-present
Advocate for the Cystic Fibrosis Foundation, meet with members of Congress regarding research and health care policy 2017-present
Congressional Captain for IL Congressional District 15 2021-present
Greater Illinois Chapter Advocate of the Year 2021
Mahomet-Seymour School District PTO STEM Committee Chair 2015-2018
Adult Mentor for Illinois Promise, UIUC's program for students below poverty level 2012-2021
Workshop on Undergraduate Research for Illinois Promise, UIUC's program for students whose families live below poverty level 2013, 2014, 2015, 2016
Panel Member, Women In Science Panel on Graduate/Professional School 2013
Speaker, Cystic Fibrosis Foundation Great Strides Fundraiser 2013, 2014, 2015, 2017, 2019
Committee Member, STEM Committee, Mahomet-Seymour School District 2013-2018
Job Shadow Day, Effingham High School 2013
Invited Speaker, Chicago Upward Bound workshop at UIUC 2013
Invited Speaker, Alpha Epsilon Delta, a Health Pre-Professional Honor Society 2012, 2013
Workshop Leader, Science Day, Mahomet-Seymour School District 2012
Workshop Leader, Expanding Your Horizons Science Program for Junior High Girls, San Jose State University 2005

Scientific Societies

Genetics Society of America
American Heart Association
American Society for Cell Biology
International Society for Regenerative Biology

TEACHING

University of Illinois Urbana-Champaign

MCB 493 GGA, GGB Spring 2013, 2014

Genetics and Genomics, 10 one-hour lectures
Graduate and upper-level undergraduate course

MCB 529 WRI / MCB 540 Fall 2012, 2013, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022
Scientific Writing, 23 hours lecture and writing workshop, 2 hours mock study section
Graduate course
List of Teachers Ranked as Excellent by their Students, 2018, 2019, 2021

MCB 410 Spring 2012, 2013, 2014, 2015, 2016, 2017
Developmental Biology, 20 one-hour lectures, with 12 hours of section in 2017
Graduate and upper-level undergraduate course
List of Teachers Ranked as Excellent by their Students, 2012

MCB 250 Fall 2017, 2018, 2019, 2020, 2021, 2022
Molecular Genetics, 20 one-hour lectures
Core Undergraduate Course
List of Teachers Ranked as Excellent by their Students, 2020

University of California Berkeley

Supervisor of undergraduate honors thesis research 2006-2008
Alexander Nguyen, recipient of
2008 Chaikoff Award for excellence in undergraduate research

Supervisor of undergraduate honors thesis research 2005-2006
Stephanie Ching, recipient of
2006 Chaikoff Award for excellence in undergraduate research

Stanford University

Teaching Assistant, Genetic Analysis of Biological Processes 1997, 1999
Teaching Assistant, Introductory Biochemistry, Genetics and Molecular Biology 1998

MENTORING

Graduate Students

Keaton Schuster 2011-2018
Current position: Postdoctoral Fellow with Lionel Christaien at NYU
Travel Award, 2017 Society for Developmental Biology Annual Meeting, Minneapolis MN
Oyetunji A. Toogun Memorial Award for Excellence in Research, 2017
Talk, 2016 Midwest Regenerative Medicine Conference, Monticello IL
Poster, 2015 Tissue Repair and Regeneration Gordon Research Conference, New London NH
Talk, 2015 Tissue Repair and Regeneration Gordon Research Seminar, New London NH
Talk, 2014 Midwest *Drosophila* Research Conference, Monticello IL
Poster, 2014 Society for Developmental Biology Conference, Seattle WA
Poster, 2013 Midwest *Drosophila* Research Conference, Monticello IL
Poster, 2013 Annual *Drosophila* Research Conference, Washington DC
Talk, 2012 Midwest *Drosophila* Research Conference, Monticello IL
Poster, 2012 Annual *Drosophila* Research Conference, Chicago IL

Shalaka Chitale 2011-2012

Current position: Postdoctoral Fellow with Michael Green, UMass Medical School
Ph.D. from Holger Richly's lab, IMB Mainz
Poster, 2012 Annual *Drosophila* Research Conference, Chicago IL

Syeda Nayab Fatima Abidi 2012-2019

Current position: Postdoctoral Fellow with Chris Siebel, Genentech
Cell and Developmental Biology Outstanding Student Award, 2019
Cell and Developmental Biology Outstanding Teaching Assistant Award, 2019
Early Career Reviewer for Genetics, 2018-present
Genetics Society of America Early Career Scientist Leadership Program, 2017-2018
Genetics Society of America Peer Review Training Program, 2017-2018
Poster, 2017 Tissue Repair and Regeneration Gordon Research Conference, New London NH
Talk, 2017 Tissue Repair and Regeneration Gordon Research Seminar, New London NH
Best Poster Award, 2016 Midwest Regenerative Medicine Conference, Monticello IL
Poster, 2016 Midwest Regenerative Medicine Conference, Monticello IL
Poster, 2015 Annual *Drosophila* Research Conference, Chicago IL
Poster, 2014 Midwest *Drosophila* Research Conference, Monticello IL
Poster, 2014 Annual *Drosophila* Research Conference, San Diego, CA
Poster, 2013 Midwest *Drosophila* Research Conference, Monticello IL

Yuan Tian 2012-2021

Current position: Humphries Pharmaceutical Consulting, Project Manager and Preclinical Specialist)
Poster, 2017 Tissue Repair and Regeneration Gordon Research Conference, New London NH
Travel Award, 2017 Gordon Research Seminar
Travel Award, 2017 Department of Cell and Developmental Biology
Travel Award, 2017 Graduate College of the University of Illinois
Poster, 2015 Society for Developmental Biology Conference, Salt Lake City, UT
Travel Award, 2015 Society for Developmental Biology
Travel Award, 2015 Cell and Molecular Biology Training Grant
Nominated for Howard Hughes International Graduate Student Fellowship
Outstanding Talk Award, 2014 Midwest *Drosophila* Research Conference, Monticello IL
Talk, 2014 Midwest *Drosophila* Research Conference, Monticello IL
Poster, 2014 Annual *Drosophila* Research Conference, San Diego, CA
Poster, 2013 Midwest *Drosophila* Research Conference, Monticello IL

Felicity Hsu 2019-present

Poster, Midwest *Drosophila* Research Conference 2022
Poster, Annual *Drosophila* Research Conference, San Diego, CA 2022
Poster, Midwest *Drosophila* Research Conference (virtual) 2021

Anish Bose 2019-present

3rd place, lightning talks, CDB retreat 2022
Poster, Midwest *Drosophila* Research Conference 2022
Poster, Annual *Drosophila* Research Conference, San Diego, CA 2022
Poster, Midwest *Drosophila* Research Conference 2021
Poster, Annual *Drosophila* Research Conference (virtual) 2021
Genetics Society of America Presidential Membership 2021

Snigdha Mathure 2020-present
Poster, Annual *Drosophila* Research Conference, Chicago IL 2023

Postdoctoral Fellows

Amanda Brock, Ph.D. MD Anderson Cancer Center, Houston TX 2012-2018
Current position: Assistant Instructional Professor, University of Chicago
Travel Award, 2017 Society for Developmental Biology Annual Meeting, Minneapolis MN
Talk, 2017 Hilde Mangold Postdoctoral Symposium, Society for Developmental Biology Annual Meeting, Minneapolis MN
Poster, 2016 Midwest Regenerative Medicine Conference, Monticello IL
Talk, 2015 Midwest Drosophila Research Conference, Monticello IL
Poster, 2015 Annual *Drosophila* Research Conference, Chicago IL
Poster, 2014 Midwest Society for Developmental Biology Conference, St. Louis MO
Poster, 2014 Annual *Drosophila* Research Conference, San Diego, CA
Poster, 2013 Tissue Repair and Regeneration Gordon Research Conference, New London NH

Sumbul Jawed Khan, Ph.D. Indian Institute of Technology, Kanpur India 2013-2018
Current position: Senior Scientist, Strategic Planning and Management, Dana Farber Cancer Center
Talk, 2016 Midwest Regenerative Medicine Conference, Monticello IL
Session moderator, 2015 Tissue Repair and Regeneration Gordon Research Seminar
Poster, 2015 Tissue Repair and Regeneration Gordon Research Conference, New London NH
Poster, 2014 Midwest Society for Developmental Biology Conference, St. Louis MO
Poster, 2014 Annual *Drosophila* Research Conference, San Diego, CA

Surabhi Sonam, Ph.D. University of Illinois at Urbana-Champaign 2021-present
Poster, 2023 Annual *Drosophila* Research Conference
Poster judge, 2022 Midwest *Drosophila* Research Conference

Undergraduate Students

Brenten Popiel 2011-2013
Current position: Senior Manager, Corporate Strategy, Grainger Consulting
Senior Thesis, 2013, Department of Cell and Developmental Biology
Poster, 2012 Annual *Drosophila* Research Conference, Chicago IL

Peter DeJongh 2011-2013
Current Position: Wildlife Biologist, Bureau of Land Management
MS, Land Management and Conservation, Northwestern University
Poster, 2012 Annual *Drosophila* Research Conference, Chicago IL

Cristina Gratton 2012-2013
Current position: freelance web developer
M.Ed., Education, Washington University
2013 MCB Summer Undergraduate Research Fellowship

Mabel Seto 2013-2015
Current position: Postdoctoral Research Fellow, Harvard Aging Brain Study Consortium, Harvard Medical School

Ph.D. in Pharmacology, Vanderbilt University
Graduated with High Distinction
Outstanding Undergraduate Research Award for Senior Thesis
Poster, 2015 Annual *Drosophila* Research Conference, Chicago IL
2014 MCB Summer Undergraduate Research Fellowship

Amanda Sul 2013-2016
Current position: Ph.D. student at The Scripps Research Institute
Lab tech in the Kalderon lab at Columbia University
Graduated with High Distinction
Outstanding Undergraduate Research Award for Senior Thesis
2015 MCB Summer Undergraduate Research Fellowship
Poster, 2015 Annual *Drosophila* Research Conference, Chicago IL
2014 MCB Summer Undergraduate Research Fellowship

Benjamin Wang 2015-2017
Current position: PhD program, Neurosciences, UChicago
Lab Tech Prabhakur lab, UChicago
Graduated with High Distinction
Outstanding Undergraduate Research Award for Senior Thesis
2016 MCB Summer Undergraduate Research Fellowship
Fall 2015 Preble Award
Spring 2016 Preble Award

Aria Darbandi 2016-2017
Current position: student at California University of Science and Medicine, School of Medicine
Undergraduate Research Achievement Award
Graduated with Distinction
Poster, 2017 Midwest *Drosophila* Research Conference
2017 MCB Summer Undergraduate Research Fellowship

Matthew Contreras 2017-2019
Current position: student, Southern Illinois University Medical School
2019 NIH Diversity Supplement for 14 months of post-baccalaureate research
Graduated with High Distinction
2019 Cell and Developmental Biology Undergraduate Research Achievement Award
Poster, 2018 Midwest *Drosophila* Research Conference
2018 NIH Diversity Supplement for Undergraduate Research
Poster, 2017 Midwest *Drosophila* Research Conference
2017 MCB Summer Undergraduate Research Fellowship

Nicole Sazonov 2017-2019
Current position: student, Physician's Assistant Program, Midwestern University
Poster, 2018 Midwest *Drosophila* Research Conference

Nicholas Griffith 2018-2020
Current position: student, Washington University Medical School
Roderick MacLeod Award for Academic Excellence
Cell and Developmental Biology Undergraduate Research Achievement Award
Graduated with Highest Distinction

Poster, 2019 Midwest *Drosophila* Research Conference
2019 Jenner Family Summer Research Fellow
Poster, 2018 Midwest *Drosophila* Research Conference

Angel Martinez (hourly technician) 2018-2022
Master's program, Animal Sciences, UIUC, entering fall 2023
Current position: NIH PREP postbaccalaureate program, UT Health San Antonio
2021 UIUC Sure Tox Summer program

Ewelina Nowak 2019
Current position: PhD student at Harvard University
Lab Tech in the Dus lab, University of Michigan
Poster, 2019 Midwest *Drosophila* Research Conference

Le'Mark Russell 2020-2022
Current position: PhD student, Washington University
2022 Graduated with Distinction, Biochemistry
2021 Abbvie/Black Business Network Summer Undergraduate Research Fellowship
2020 MCB Summer Undergraduate Research Fellowship

Sophia Khudyk 2022-present
Poster, Midwest *Drosophila* Research Conference 2022

Brian Park 2022-present
Poster, Midwest *Drosophila* Research Conference 2022

Jamie Gonzalez 2022-present

Amy Gomez Lopez (hourly technician) 2022-present

Chandril Sai Kodali 2023-present

Technicians

Matthew Contreras 2019-2020
Current position: student, Southern Illinois University Medical School
Poster, 2020 The Allied Genetics Conference/Annual *Drosophila* Research Conference (online)
Poster, 2019 Midwest *Drosophila* Research Conference
2019 NIH Diversity Supplement for 14 months of postbaccalaureate research

Andrea Skinner, M.S. University of Illinois Urbana-Champaign 2011-2016
Talk, 2015 Annual *Drosophila* Research Conference, Chicago IL
Talk, 2014 Midwest Society for Developmental Biology Conference, St Louis, MO
Poster, 2013 Annual *Drosophila* Research Conference, Washington DC
Poster, 2012 Midwest *Drosophila* Research Conference, Monticello IL
Poster, 2012 Annual *Drosophila* Research Conference, Chicago IL

Le'Mark Russell summer 2022

Nicholas Griffith summer 2020

Summer Students

Cesar Rodriguez 2014
Summer Research Opportunity Program

Student of Universidad del Este, Puerto Rico
Poster, 2014 Annual Biomedical Research Conference for Minority Students
MS in Biotechnology, University of Michigan
Current position: Medical Laboratory Technologist, Nationwide Children's Hospital

Shriya Chennuru 2016
Student Inquiry and Research Program
Student from the Illinois Mathematics and Science Academy (High School)

Rotation Students

Tim Ding	2011
Pritha Rao	2011
Gus Lawrence	2011
Yating Wang	2011
Amanda Adams	2012
Zhen Sun	2012
Shuting Liu	2018
Neha Chetlangia	2018
Lindsey Bendix	2018
Tongyu Anna Zhang	2019
Tejas Mahadevan-Padmanabhan	2019
Anjana Asosakumar	2019
Junyao Zhu	2019
Ivan Sosa Marquez	2019
Amber Wang	2020
Laureen Daniels	2020

Graduate Thesis Committees

Malavika Venu
Hailun Zhang
Surabhi Sonam
Mohd Tayyab Adil
Alokananda Ray
Soumya Negi
C. Chase Bolt
Younguk (Calvin) Sun
Amir Saberi
Harini Iyer
Lisa Moore
Paul Hamilton
Jonathan Rhine

ILLINOIS

CURRICULUM VITAE

Anna Marie Sokac, Ph.D.
Associate Professor
Department of Cell & Developmental Biology
University of Illinois at Urbana Champaign

601 S Goodwin, CLSL, C622
Urbana, IL 61801

asokac@illinois.edu
www.publish.illinois.edu/sokac-lab

PROFESSIONAL PREPARATION:

2003 – 2009
PRINCETON UNIVERSITY, PRINCETON, NJ
Postdoctoral Fellow, Cell and Developmental Biology, with Eric Wieschaus, Ph.D.

2001 – 2003
UNIVERSITY OF WISCONSIN, MADISON, WI
Postdoctoral trainee, Cell Biology, with William Bement, Ph.D.

1994 – 2001
UNIVERSITY OF WISCONSIN, MADISON, WI
Ph.D., Cell and Molecular Biology, with William Bement, Ph.D.
Teaching Assistant for Cell Biology Lecture & Lab, for seven semesters, Department of Zoology

1990 – 1994
CARNEGIE MELLON UNIVERSITY, PITTSBURGH, PA
B.S., Biological Sciences with University Honors

EMPLOYMENT & APPOINTMENTS:

2010-2017	Assistant Professor, Biochemistry & Molecular Biology, Baylor College of Medicine, TX
2017-2019	Associate Professor, Biochemistry & Molecular Biology, Baylor College of Medicine, TX
2019-	Adjunct Faculty, Biochemistry & Molecular Biology, Baylor College of Medicine, TX
2019-	Associate Professor, Cell & Developmental Biology, University of Illinois, Urbana, IL

HONORS, AWARDS AND OTHER PROFESSIONAL ACTIVITIES:

1993	National Science Foundation Summer Scholar, Carnegie Mellon University
1994	National Collegiate Medical Professions Award
1994	Graduation with University Honors, Carnegie Mellon University
1996	Summer Course in Physiology, Woods Hole Marine Biological Laboratories
1997	Short Course in Development of *Xenopus laevis*, Cold Spring Harbor Laboratories
1998-1999	President, Sigma Delta Epsilon Graduate Women in Science-Beta Chapter
2001	Keith Porter, 55th Annual Meeting of the Society of General Physiologists
2004-2007	Ruth L. Kirschstein National Research Service Award Fellowship, NIH/NIGMS
2011	Co-Chair, Cell Biology Platform Session, 52nd Annual Drosophila Research Conference
2009-2011	Visiting Faculty, Caltech Bioengineering Boot Camp
2010-2017	Visiting Faculty, NSF Center for the Physics of Living Cells, University of Illinois-UC
2010-2018	Lecturer, “Cell Division” Course, Baylor College of Medicine
2014-2018	Lecturer, “Organization of the Cell” Courses, Baylor College of Medicine
2013-2018	Developer/Director, “Thinking Like a Scientist” Course, Baylor College of Medicine

2010-2019	Member, Graduate Education Committee, Baylor College of Medicine
2015-2017	Member, Graduate School Admissions Committee, Baylor College of Medicine
2015-	Master Facilitator, National Research Mentoring Network, NIH
2015-2019	Director, Initiative to Improve Mentoring Relationships, Baylor College of Medicine
2015, 2016, 2017	8-Stranded Beta-Barrel Jelly Roll Award for Best Lecturer, Baylor College of Medicine
2016-2019	Mentor Training Consultant, Clinical Sci Training Program, Baylor College of Medicine
2017	Developer, Entering Research Curriculum, 2nd Edition, University of Wisconsin-Madison
2017-2019	Member, NIH Center for Translational Environmental Health Research, TX Medical Center
2017	Vice-Chair, Southwest Regional Society for Developmental Biology Meeting
2017	Norton Rose Fulbright Faculty Excellence Award in Teaching, Baylor College of Medicine
2017-2019	Faculty Director, Houston Cytoskeleton Super Group, Houston, TX
2018-2019	Steering Committee, Initiative to Maximize Student Diversity, Baylor College of Medicine
2018-2021	SCIALOG Fellow, Research Corporation for Science Advancement
2019-2020	Member, Graduate Admissions Committee, CDB, University of Illinois
2019-	Master Consultant, National Research Mentoring Network, NIH
2019-	Master Facilitator & Consultant, CIMER, University of Wisconsin-Madison
2019-2022	Member, Graduate College Fellowship Board, University of Illinois
2020-2021	Member, Graduate Education Committee, CDB, University of Illinois
2021-	Member, Academic Standards Committee, LAS, University of Illinois
2021-	Director of Mentor Training, NIH T32, FM-QB, Fisk University/University of Illinois
2021, 2022	Teacher Ranked as Excellent by Their Students, MCB 529, University of Illinois
2022-	Member, Strategic Advising Committee, School of MCB, University of Illinois
2022-	Chair, Distinction Committee, CDB, University of Illinois
2022-	Permanent Member, DEV2 Study Section, NIH

Editorial board member, *Nat Sci Reports*
Invited Guest Editor, *Special Collection: Cytoskeletal Fibers in Human Disease, Nat Sci Reports (2022-2023); Special Issue on Membrane Trafficking and Morphogenesis, Semin Cell Dev Biol (2021-2022)*
Journal Reviewer, *Nature, Curr Biol, Dev Cell, Nat Cell Biol, Development, Dev Biol, Dev, J of Cell Sci, J of Cell Biol, PNAS, PLOS Biology, PLOS Gen, Mol Biol Cell, eLife, Biophys J, and Sci Rep*
Thesis Committee Member (1 Baylor College of Medicine; 13 University of Illinois, chair of 4)

INVITED TALKS (as a PI)

2010	Caltech
2010	Southwest Regional Meeting, Society for Developmental Biology, University of Texas, Austin
2011	University of Illinois at Urbana-Champaign
2012	University of Texas-Austin
2013	M.D. Anderson Cancer Center, University of Texas
2013	Keck Center for Quantitative Biomedical Sciences, Rice University
2014	St. Jude National Graduate Student Symposium, St. Jude Hospital *(given by student L. Figard)*
2014	University of Illinois at Urbana-Champaign
2015	University of Wisconsin-Madison
2015	Southwest Regional Meeting, Society for Developmental Biology, UT Southwestern, Dallas
2015	Annual Meeting, American Society for Cell Biology, San Diego, CA (*given by student Z. Xue*)
2016	Center for Reproductive Medicine, Baylor College of Medicine
2016	Research Exchange Seminar, M.D. Anderson Cancer Center, University of Texas
2016	NSF Center for Theoretical Biophysics, Rice University
2017	Development and Stem Cell Graduate Program, Duke University
2017	Triangle Syncytia Fest, University of North Carolina-Chapel Hill, NC
2017	Gordon Research Conference, Contractile and Motile Systems, New London, NH
2017	SW Regional Society for Developmental Biology Meeting, Houston, TX
2017	SW Regional Society for Developmental Biology Meeting, Houston, TX *(given by postdoc L. Figard)*

2017 College of Biological Sciences, University of Minnesota, Saint Paul, MN
2017 Houston Cytoskeleton Super Group, Houston, TX
2017 Department of Molecular Biology, Princeton University, Princeton, NJ
2018 Department of Cell and Developmental Biology, University of Illinois, Urbana-Champaign, IL
2018 Department of Human Genetics, Baylor College of Medicine, Houston, TX
2018 Department of Biophysics, MIT, Boston, MA
2018 Mechanics Workshop, Annual *Drosophila* Research Conference, Philadelphia, PA
2019 Mentoring Awards Ceremony, University of North Carolina-Chapel Hill, NC *(Keynote Speaker)*
2019 Pediatric Research Seminar, UT-Health Science Center, Houston, TX
2019 Women's History Month-Women in Leadership Panel, Baylor College of Medicine, Houston TX
2019 School of Molecular & Cellular Biology, Annual Retreat, University of Illinois, Urbana, IL
2019 Department of Biochemistry, Michigan State University, East Lansing, MI
2021 EMBL, Mechanobiology of the Cell Surface Meeting, Heidelberg, Germany
2022 Chicago Quantum SURF Mentoring Workshop, University of Illinois, Urbana, IL
2022 Research Neonatology Conference, Baylor College of Medicine, Houston, TX
2023 NSF NexSTEM Scholarship Program, Wesleyan College/Illinois State University, Bloomington, IL
2023 Department of BioSciences, Dartmouth College, Hanover, NH
2023 Department of Biological Sciences, Oakland University, Rochester, MI

PUBLICATIONS

•Amin SJ, Basu M, Buzinova V, Delgado A, Mahadevan T, Mishra S, Wang X, Zaida S, **Sokac AM**. (*in revision*) Glyoxal is an alternative tissue fixative for *Drosophila* embryos. *STAR Protoc*.

•De Renzis S, **Sokac AM**. (2023) Editorial: Membrane dynamics during tissue morphogenesis and differentiation. *Semin Cell Dev Biol*. 133:1-2. doi: 10.1016/j.semcdb.2022.06.013. PMID 35753907.

•**Sokac AM**, Biel N, De Renzis S. (2022) Membrane-actin interactions in morphogenesis: Lessons learned from *Drosophila* cellularization. *Semin Cell Dev Biol*. 133:107-122. doi: 10.1016/j.semcdb.2022.03.028. PMID 35396167.

•Biel N, Figard LR, **Sokac AM**. (2020) Imaging intranuclear actin rods in live heat stressed *Drosophila* embryos. *J. of Vis. Exp*. 159. pii: 10.3791/61297. doi: 10.3791/61297. PMID 32478727.

•**Sokac AM**. (2019) Mechanical networks have robustness built into their topology, too. *Dev Cell*. 50:527-528. PMID 31505172.

•Figard LR, Zheng L, Biel N, Xue Z, Seede H, Coleman S, Golding I, **Sokac AM**. (2019) Cofilin-mediated Actin Stress Response is maladaptive in heat-stressed embryos. *Cell Reports*. 26:3493-3501. PMID 30917306.

•*contributing author to* Branchaw, J, et al. (2019) Entering Research, 2nd Edition, Macmillan Learning. New York, NY.

•**Sokac AM**. (2017) Seeing a coastline paradox in membrane reservoirs. *Dev Cell*. 43:541-542. PMID 29207254.

•Xue Z, **Sokac AM**. (2016) Back-to-back mechanisms drive actomyosin ring contraction during *Drosophila* embryo cleavage. *J Cell Biol*. 215:335-344. PMID 27799369.

•Xu H, Sepulveda LA, **Sokac AM**, Golding I. (2016) Stochastic kinetics of nascent RNA. *Phys Rev Lett.* 117:pii128101. PMID 27667861.

•Figard LR, Wang M, Zheng L, Golding I, **Sokac AM**. (2016) Membrane supply and demand regulates F-actin in a cell surface reservoir. *Dev Cell.* 37:267-278. PMID 27165556.

•Xu, H, Sepulveda LA, Figard LR, **Sokac AM**, Golding I. (2015) Combining protein and mRNA quantification to decipher transcriptional regulation. *Nat Methods*. 12:739-742. PMID: 26098021.

•Figard LR, **Sokac AM**. (2014) Invited Review – A membrane reservoir at the cell surface: Unfolding the plasma membrane to drive cell shape change. *Bioarchitecture*. 4:39-46. PMID 24844289.

•Iannotti MJ, Figard LR, **Sokac AM**, Sifers RN. (2014) A Golgi-localized mannosidase (MAN1B1) plays a non-enzymatic gatekeeper role in protein biosynthetic quality control. *J Biol Chem*. 289:11844-11858. PMID 24627495.

•Figard L, Xu H, Garcia HG, Golding I, **Sokac AM**. (2013) The plasma membrane flattens out to fuel cell surface growth during *Drosophila* cellularization. *Dev Cell*. 27:648-655. PMID 24316147.

•Zheng L, Sepulveda LA, Lua RC, Lichtarge O, Golding I, **Sokac AM**. (2013) The maternal-to-zygotic transition targets actin to promote robustness during morphogenesis. *PLoS Genet*. 9:e1003901. PMID 24244181.

•Figard LR, **Sokac AM**. (2011) Imaging cell shape change in living *Drosophila* embryos. *J. of Vis. Exp*. 49. pii: 2503 doi: 10.3791/2503. PMID 21490577.

•LeBlanc-Straceski JM, **Sokac AM**, Bement W, Sobrado P, Lemoine L. (2009) Developmental expression of *Xenopus* Myosin 1d and identification of a Myo1d tail homology that overlaps TH1. *Dev Growth Differ*. 51:443-451. PMID: 19382939.

•**Sokac AM**, Wieschaus E. (2008) Local actin-dependent endocytosis is zygotically controlled to initiate *Drosophila* cellularization. *Dev Cell*. 14:775-786. PMID: 18477459; PMCID: PMC2517610.

•**Sokac AM**, Wieschaus E. (2008) Zygotically controlled F-actin establishes cortical compartments to stabilize furrows during *Drosophila* cellularization. *J Cell Sci*. 121:1815-1824. PMID: 18460582; PMCID: PMC2728442.

•**Sokac AM**, Schietroma C, Gundersen CB, Bement WM. (2006) Myosin-1c couples assembling actin to membranes to drive compensatory endocytosis. *Dev Cell*. 11:629-640. PMID: 17084356.

•**Sokac AM**, Bement WM. (2006) Kiss-and-coat and compartment mixing: Coupling exocytosis to signal generation and local actin assembly. *Mol Biol Cell*. 17:1495-1502. Review. PMID: 16436510; PMCID: PMC1415325.

•**Sokac AM**, Bisher M, Wieschaus E. (2005) F-actin/Myosin-2 furrow canals, but not basal junctions are required for *Drosophila* cellularization. *Microsc Microanal*. Suppl 2:950-951. PMID: 24017345.

•Weber KL, **Sokac AM**, Berg JS, Cheney RE, Bement WM. (2004) A microtubule-binding myosin required for nuclear anchoring and spindle assembly. *Nature*. 431:325-329. PMID: 15372037.

•**Sokac AM**, Co C, Taunton J, Bement W. (2003) Cdc42-dependent actin polymerization during compensatory endocytosis in *Xenopus* eggs. *Nat Cell Biol*. 5:727-732. PMID: 12872130.

•Bement WM, **Sokac AM**, Mandato CA. (2003) Four-dimensional imaging of cytoskeletal dynamics in *Xenopus* oocytes and eggs. *Differentiation*. 71:518-527. Review. PMID: 14686949.

•**Sokac AM**, Bement WM. (2000) Regulation and expression of metazoan unconventional myosins. *Int Rev Cytol*. 200:197-304. Review. PMID: 10965469.

•Batterham P, Crew JR, **Sokac AM**, Andrews JR, Pasquini GM, Stocker RF, Pollock JA. (1996) Genetic analysis of the *lozenge* gene complex in *Drosophila melanogaster*: adult visual system. *J Neurogenet.* 104:193-220. PMID: 8923295.

ONGOING RESEARCH SUPPORT:

NIH, NIGMS
Grant #1R35GM139560-01
Anna Marie Sokac, PI
08/15/2021 - 08/14/2025

Actin cytoskeleton: From nucleus to organism
The major goal of this project is to identify mechanisms that act across scales and sub-cellular systems to regulate actin remodeling during morphogenesis.

KEVIN VAN BORTLE, Ph.D.

Department of Cell and Developmental Biology
School of Molecular and Cellular Biology
University of Illinois Urbana-Champaign
Cancer Center at Illinois (CCIL) (affiliate)

Urbana, Illinois
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RESEARCH INTERESTS

Deconstructing the role of RNA polymerase III and small noncoding RNA in cancer. My group leverages functional genomic approaches to investigate Pol III transcription during development and its dysregulation in cancer contexts. We are particularly interested in understanding mechanisms driving aberrant Pol III transcription in cancer, and the downstream molecular activities of Pol III-derived ncRNA and cognate RNA-binding proteins.

EMPLOYMENT

2021-Present **Assistant Professor** — **University of Illinois Urbana-Champaign**
Dept. Cell and Developmental Biology
School of Molecular and Cellular Biology

EDUCATION

2015-2021 Postdoctoral Fellow — **Stanford (Genetics)**
[advisor: Michael Snyder]. Research: Discovered inter-connected 3D chromatin organization of Pol II and Pol III-transcribed genes and coordinate regulation during cell differentiation. Discovered that a developmental switch in Pol III subunit composition restricts the expression of a subrepertoire of Pol III-transcribed genes

2009-2014 Ph.D. in Biochemistry, Cell, and Developmental Biology — **Emory University**
[advisor: Victor Corces]. Research: Identified combinatorial occupancy of Drosophila insulator proteins at the boundaries of H3K27me3 domains and Hi-C TADs. Investigated the role of Pol III transcription factor TFIIIC as a putative architectural protein in Drosophila, as well as the dynamic expression of tRNA genes in response to ecdysone steroid hormone signaling
Dissertation: *The Combinatorial Role of Architectural Proteins in Insulator Function and Dynamics during the Ecdysone Response in Drosophila melanogaster*

2005-2009 B.S. in Biochemistry — **University of Rochester**
[advisor: Jeffrey Hayes]. Undergraduate Research: Established a novel biochemical reactivity assay to probe the stability of reconstituted nucleosome core particles

PUBLICATIONS

Citations and other metrics:
https://scholar.google.com/citations?user=y0MeLYoAAAAJ&hl=en

1. Zhou S., **Van Bortle, K.** The Pol III transcriptome: Basic features, recurrent patterns, and emerging roles in cancer. WIREs RNA. 2023. 8:e1782
2. Cheng, R., **Van Bortle, K.** RNA polymerase III and cancer: A tale of two RPC7 subunits. Frontiers Molecular Biosciences. 2023. 9:1073795

3. **Van Bortle, K.,** Marciano, D.P., Liu, Q., Chou, T., Lipchik, A.M., Gollapudi, S., Geller, B., Monte, E., Kamakaka, R., Snyder, MP. A cancer-associated RNA polymerase III identity drives robust transcription and expression of snaR-A noncoding RNA. Nature Communications. 2022. 13(1):3007

4. Roodgar, M., Suchy, F.P., Nguyen, L.H., Bajpai, V.K., Sinha, R., Vilches-Moure, J.G., **Van Bortle, K.,** Badhury, J., Metwally, A., Jiang, L., Jian, R., Chiang, R., Oikonomopoulos, A., Wu, J.C., Weissman, I.L., Mankowski, J.L., Holmes, S., Loh, K., Nakauchi, H., VandeVoort, C.A., Snyder, MP. Cross-species blastocyst chimerism between nonhuman primates using iPSCs. Cell Reports. 2022. 40(9):111264

5. Liu, Q., **Van Bortle, K.,** Zhang, Y., Zhao, MT., Zhang, JZ., Geller, BS., Gruber, JJ., Chao, J., Wu, JC., Snyder, MP. Disruption of mesoderm formation during cardiac differentiation due to developmental exposure to 13-cis-retinoic acid. Sci Rep. 2018. 8(1):12960

6. **Van Bortle, K.,** Phanstiel, DH., Snyder, MP. Topological organization and dynamic regulation of human tRNA genes during macrophage differentiation. Genome Biol. 2017. 18(1):180

7. Phanstiel, DH.*****, **Van Bortle, K.***, Spacek, D., Hess, GT., Shamim, MS., Machol, I., Love, MI., Aiden, EL., Bassik, MC., Snyder, MP. Static and Dynamic DNA Loops form AP-1-Bound Activation Hubs during Macrophage Development. Mol. Cell. 2017. 67(6):1037-1048

   ***** Authors contributed equally

8. Liu, Q., Jiang, C., Xu, J., Zhao, MT., **Van Bortle, K.,** Cheng, X., Wang, G., Chang, HY., Wu, JC., Snyder, MP. Genome-wide Temporal Profiling of Transcriptome and Open Chromatin of Early Cardiomyocyte Differentiation Derived From hiPSCs and hESCs. Circ. Res. 2017. 121(4):376-391

9. **Van Bortle, K.,** Nichols, M., Ramos, E., Corces, VG. Integrated tRNA, transcript, and protein profiles in response to steroid hormone signaling. RNA. 2015. 21(10)1807-17

10. **Van Bortle, K.,** Peterson, A., O'Connor, M., Corces, VG. CTCF-dependent co-localization of canonical Smad signaling factors at architectural protein binding sites in D. melanogaster. Cell Cycle. 2015. 14(16):2677-87

11. Morchoisne-Bolhy, S., Geoffroy, MC., Bouhlel, IB., Alves, A., Audugé, N., Baudin, X., **Van Bortle, K.,** Powers, MA., Doye, V. Intranuclear Dynamics of the Nup107-160 complex. Mol Biol Cell. 2015. 26(12)2343-56

12. **Van Bortle, K.,** Nichols, M., Li, L., Ong, C.T., Takenaka, N., Qin, ZS., Corces, VG. Insulator function and topological domain border strength scale with architectural protein occupancy. Genome Biol. 2014, 15(6):R82

13. **Van Bortle, K.,** Corces, V. Lost in transition: dynamic enhancer organization across naïve and primed stem cell states. Cell Stem Cell. 2014. 14(6):693-694.

14. Ong, C.T., **Van Bortle, K.,** Ramos, E., Corces, VG. Poly(ADP-ribosyl)ation regulates insulator function and intrachromosomal interactions in Drosophila. Cell. 2013. 155(1):148-159.

15. Kellner, WA., **Van Bortle, K.,** Li, L., Ramos, E., Takenaka, N., Corces, VG. Distinct isoforms of the Drosophila Brd4 homologue are present at enhancers, promoters and insulator sites. Nucleic Acids Res. 2013. 41(20):9274-9283.

16. Gurudatta BV., Yang J., **Van Bortle, K.,** Donlin-Asp, PG., Corces, V. Dynamic changes in the genomic localization of DNA replication-related element binding factor during the cell cycle. Cell Cycle. 2013. 12(10).

17. **Van Bortle, K.,** Corces, V. Spinning the web of cell fate. Cell. 2013. 152(6):1213-1217.

18. **Van Bortle, K.,** Corces, V. The role of chromatin insulators in nuclear architecture and genome function. Curr Opin Genet Dev. 2013. 10.1016/j.gde.2012.11.003.

19. Kellner, WA., Ramos, E., **Van Bortle, K.,** Takenaka, N., Corces, VG. Genome-wide phosphoacetylation of histone H3 at Drosophila enhancers and promoters. Genome Res. 2012. 22(6):1081-1088.

20. **Van Bortle, K.,** Ramos, E., Takenaka, N., Yang, J., Wahi, J., Corces, V. Drosophila CTCF tandemly aligns with other insulator proteins at the borders of H3K27me3 domains. Genome Res. 2012. 22(11)2176-2187.

21. **Van Bortle, K.,** Corces, V. tDNA insulators and the emerging role of TFIIIC in genome organization. Transcription. 2012. 3(6).

22. **Van Bortle, K.,** Corces, V. Nuclear organization and Genome Function. Annu. Rev. Cell Dev. Biol. 2012. 28: 163-187.

23. Wood, A., **Van Bortle, K.,** Ramos, E., Takenaka, N., Rohrbaugh, M., Jones, B., Jones, K., Corces, V. Regulation of chromatin organization and inducible gene expression by a Drosophila insulator. Mol. Cell. 2011. 44(1):29-38

Pre-prints and other submissions:

1. Marciano, D.P., Harper, R.L., Viswanathan, V., **Van Bortle, K.,** Chappel, J., Khan, R.I., Jung, K.O., Wang, L., Otsuki, S., Perrino, J., Melemenidis, S., Li, D., Martin, M., Elliot, K.A., Maydan, D., Chu, A., Li, C.G., Pratx, G., Rabinovitch, M., Snyder, MP. BMPR2 regulates hypoxic exosome signaling to maintain vascular homeostasis. 2021 (under revision)

2. Liu, Q., Wu, H., Luo, Q.J., Chao, J., Duren, Z., Zhu, C., Zhao, B., Liu, J., Zhao, M.T., Narasimha, A., **Van Bortle, K.,** Gruber, J.J., Wei, E., Lipchik, A.M., Li, Y., Marciano, D.P., Lee, B.A., Guo, H., Furihata, T., Tsai, M.S., Watson, N.K., Tian, L., Steinmetz, L.M., Wong, W.H., Kay, M.A., Wu, JC., Snyder, MP. Tyrosine kinase inhibitors induce cardiac dysfunctions through alterations of GATA4-mediated networks and mitochondrial function during cardiomyocyte differentiation. 2020 (pre-print, BioRxiv: https://doi.org/10.1101/2020.05.04.077024)

SCIENTIFIC PRESENTATIONS AND CONFERENCES

2023 School of MCB Graduate Retreat, University of Illinois Urbana-Champaign (Spotlight talk)

2022 Cold Spring Harbor Laboratory (CSHL) Epigenetics & Chromatin Meeting. Cold Spring Harbor, NY.

2022 Albert Einstein College of Medicine. Department of Biochemistry. Bronx, NY. (Invited Talk)

2022 Southern Illinois University School of Medicine. Department of Physiology. Carbondale, IL. (Invited Talk)

2021 OddPols International Conference on Transcription Mechanism and Regulation. Denver, CO. (Abstract-Selected Talk)

2021 University of Nebraska Medical Center. Department of Genetics, Cell Biology, and Anatomy. Omaha, NE. (Invited Talk)

2021 Uniformed Services University of the Health Sciences. Department of Biochemistry and Molecular Biology. Bethesda, MD. (Invited Talk)

2020 Bay Area RNA Club: San Francisco Bay Area RNA Network Conference. San Francisco, CA. (Abstract-Selected Talk)

2020 Current Issues in Genetics (CIG) seminar: Stanford University Department of Genetics, Stanford, CA.

2019 Center of Excellence in Genomic Sciences (CEGS) Genomics of Gene Regulation (GGR) seminar: Stanford University, Stanford, CA.

2018 University of California Santa Cruz (UCSC). Department of Molecular, Cell, and Developmental Biology. (Invited Talk)

2018 Stanford Genetics Department Retreat, Monterey, CA.

2017 Keystone Symposium, Molecular and Cellular Biology: Chromatin Architecture and Chromosome Organization, Whistler, British Columbia, Canada.

2017 1st Stanford Chromosome Dynamics and Genome Maintenance Symposium, Stanford University Department of Chemical and Systems Biology, Stanford, CA.

2016 Stanford Genetics Department Retreat, Monterey, CA.

2014 Janelia Conference, Long-range Genome Organization and Transcription Dynamics, HHMI Janelia Research Campus, Ashburn, VA.

2014 American Society for Cell Biology (ASCB) Annual Meeting, New Orleans, LA. (Abstract-Selected Talk*) *featured in MBoC ASCB annual meeting highlights Mol. Biol. Cell. 2014 25:6 735

2014 Emory Graduate Division of Biological and Biomedical Sciences Symposium, Atlanta, GA. (Abstract-Selected Talk)

RESEARCH FUNDING AND AWARDS

2019-2024 NHGRI NIH Pathway to Independence Award (K99/R00; R00HG010362)
The development and application of tools to characterize the level and function of RNA Polymerase III transcription dynamics during cellular differentiation

2015-2018 NIDDK Ruth L. Kirschstein National Research Service Award (F32DK107112),
Integrated personalized epigenome profiling and the effect of dietary exposure on individuals at risk for type-2-diabetes

2009-2014 Emory Division Scholarship Award (Emory University)

2012 Graduate Program Scholar of the Year Award (Emory University), Biochemistry, Cell and Developmental Biology

2010-2011 NIH Training Grant Award (T32GM836721) Biochemistry, Cell and Molecular Biology (Emory University)

2008-2009 de Kiewiet Undergraduate Research Fellowship Award; Distinction in Undergraduate Research (University of Rochester)

MENTORING

Graduate (PhD) Students:

Sihang Zhou (2021- present) Cell and Developmental Biology (CDB)
Ruiying Cheng (2021- present) Cell and Developmental Biology (CDB)
Rajendra K C (2022- present) Biophysics and Quantitative Biology (CBQB)
Simón Lizarazo (2022- present) Molecular and Integrative Physiology (MIP)

Undergraduate Students:

Grace He (2022) Molecular and Cellular Biology (MCB)
Anshita Jayanth (2022- present) Molecular and Cellular Biology (MCB)
Leela Mouli (2022- present) Molecular and Cellular Biology (MCB)
Jamie Im (2023- present) Chemistry
David Condroski (2023- present) Computer Science

TEACHING

MCB545: Functional Genomics in Principle & Practice (Spring 2023)

Graduate-level course that emphasizes core concepts and methods in functional genomics. Students are introduced to Linux / HPC environments, programming in R, statistical methods (e.g., Poisson probability functions, empirical null distributions). Students are tasked with integrating multiple genomic modalities (shRNA RNA-seq, ChIP-seq, eCLIP)to address questions related to the regulation and function of a specific DNA-RNA-binding protein, with the overall goal of gaining proficiency in computational analysis

SERVICE

University of Illinois Urbana-Champaign
School of MCB RNA faculty search committee (2022-2023)
School of MCB Seminar Committee (2022- present)
Cell and Developmental Biology, Department Seminar Series Committee, Chair (2022- present)
Cell and Developmental Biology, Graduate Recruitment and Admissions Committee (2021- present)
Graduate research poster and presentation judge (October 2022; March 2023)
Graduate student preliminary exam committees (Microbiology 2022; Cell and Dev. Biology, 2022, 2023)

Thesis and Dissertation Committee Membership:
You Jin Song Kannanganattu Prasanth lab (UIUC, Cell and Developmental Biology), 2022-present
Shruti Bendre Erik Nelson lab (UIUC, Molecular and Integrative Physiology), 2023-present

Other Committee Memberships:
Natalia Krawczynska K99/R00 advisory committee (Erik Nelson lab, UIUC, MIP), 2023-present

Journal Peer Review (ad hoc)
Cell Reports, Nature Communications, Journal of Biological Chemistry, Frontiers Systems Biology, Journal of Translational Genetics and Genomics, International Journal of Molecular Sciences, Genes

Editorial contributions
Guest Associate Editor: Frontiers in Molecular Biosciences (2022- present)
Editorial oversight of research topic: *Methods determining Genome Organization, Structure, and Dynamics*

Grant review
DPI-Shield T3 Research Partnership in Personalized Health Diagnostics (2022)

Outreach
CDB Early-Career Inclusive Excellence Seminar Series (Reviewer; Faculty Host. 2022- present)
A platform for talented postdocs from diverse backgrounds to present and connect with UIUC researchers

Boxuan Zhao, Ph.D.

Life Sciences Research Foundation Postdoctoral Fellow

Department of Genetics and Department of Biology, Stanford University

CONTACT

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https://neuroscience.stanford.edu/people/boxuan-zhao bszhao@stanford.edu

CURRENT POSITION

2017.11 – Present **Postdoctoral Research Fellow, Stanford University, USA**

Postdoctoral studies in chemical biology, bioengineering, and neurobiology. Mentor: Dr. Alice Ting and Dr. Ligun Luo

EDUCATION

2013.9 – 2017.10 **Ph.D. in chemistry and epigenetics, The University of Chicago, USA**

HHMI Predoctoral Fellow. Mentor: Dr. Chuan He

2012.9 – 2013.9 **M.S. in organic chemistry, The University of Chicago, USA**

2008.9 – 2012.9 **B.S. in chemistry and chemical biology, Peking University, China**

Highest Distinction (Star of Chemistry Award). Mentor: Dr. Peng R. Chen

RESEARCH GRANTS AND FELLOWSHIPS

2022.8 – 2019.8 LSRF Shurl and Kay Curci Foundation Postdoctoral Fellowship, Life Sciences Research Foundation: Connectome-seq: Mapping Brain Connectivity by High-throughput Sequencing

$191,000 Role: PI, 100% effort

2020.1 – 2018.1 Wu Tsai Neurosciences Institute Interdisciplinary Scholar Award, Stanford University: Transcriptomic analysis of neural circuits activated during encoding of long-term memory

$126,000 Role: PI, 100% effort

2019.8 – 2018.8 Stanford ChEM-H Postdocs at the Interface Seed Grant, Stanford University: Connectome-seq: Unbiased High-throughput Brain Connectome Mapping

$50,000 Role: co-PI, with Dr. Alina Isakova

2017.9 – 2014.9 HHMI International Student Predoctoral Fellowship, Howard Hughes Medical Institute: Selective m^{6}A recognition by hnRNP A2B1 in regulating mRNA retention and transport

$129,000 Role: PI, 100% effort

2017.6 – 2016.9 William Rainey Harper Dissertation Fellowship, University of Chicago: Cross-species and cross-pathway investigation of RNA m^{6}A methylation as a new epigenetic regulatory mechanism

$4,000 Role: PI, 100% effort

2017.3 – 2017.1 Collège de France Science Research Travel Grants, France Chicago Center: Study of m^{6}A functions during X-chromosome inactivation

$6,000 Role: PI, 100% effort

SELECTED HONORS AND AWARDS

2022	Highly Cited Researcher in the field of Molecular Biology and Genetics – 2022, Web of Science
2022	Best Postdoc Presentation Award, 2022 Beijing Brain Conference
2022, 2020	Career Awards at the Scientific Interface Finalist, Burroughs Wellcome Fund
2021	Highly Cited Researcher in the field of Cross-Field – 2021, Web of Science
2019	Sigma Xi Scientific Research Honor Society Associate Member Inductee
2018	Inaugural Schmidt Science Fellow Finalist, Schmidt Futures
2018	LSRF Postdoctoral Fellowship Finalist, Life Sciences Research Foundation
2018	Extraordinary Prize of the 2017 Chinese Government Award for Outstanding Self-Financed Students Abroad, China Scholarship Council (10 awardees worldwide)
2017	Scaringe Graduate Student Career Award, The RNA Society (two awardees worldwide)
2017	Elizabeth R. Norton Prize for Excellence in Research in Chemistry, The University of Chicago
2017	Graduate Council Travel Fund, The University of Chicago
2017	GLCACS Outstanding Student Research Award, Chinese American Chemical Society
2016	Student Leadership Recognition and Access Program Award, The University of Chicago
2016	Joan Shiu Chemistry Department Student Service Award, The University of Chicago
2015	The Albert J. Cross Prize for Excellence in Research, Teaching, and Department Citizenship, The University of Chicago
2012	Silver Prize of 8th "Challenge Cup" National College Students Business Plan Competition, Ministry of Education, China
2012	First Prize of the inaugural “Star of Chemistry” Undergraduate Selection of College of Chemistry, Peking University, China
2011	Grand Prize and Technology Transfer Award of 13th Peking University Business Plan Competition, Peking University, China
2011	Grand Prize of 12th "Challenge Cup" National Science and Technology Academic Competition, Ministry of Education, China
2011	Dow Sustainability Innovation Student Challenge Award, Dow Chemistry Company
2010	First Runner Up and Best Environment Project of iGEM 2010 (with Team Peking), Massachusetts Institute of Technology
2008	Fangzheng Fellowship, Peking University, China

PUBLICATIONS AND PATENTS (*co-authors contributed equally)

Complete List of Published Work in My Bibliography:
https://www.ncbi.nlm.nih.gov/sites/myncbi/1BweWGHWS-Tki/collections/61355840/public/

1. S Lee*, JS Cheah*, **BS Zhao**, C Xu, ND Udeshi, H Roh, C Kim, K Cho, SA Carr, AY Ting. Engineered light-regulated TurboID enables precise control of spatiotemporal proximity labeling in living cells. *Under 2nd review* (2023)
2. C He, **BS Zhao**, P Narkhede, C Liu, X Cui. Method for highly sensitive DNA methylation analysis. US Patent 11,130,991, (2021).
3. S Han*, **BS Zhao***, SA Myers, SA Carr, C He, AY Ting. RNA–protein interaction mapping via MS2- or Cas13-based APEX targeting. *Proc. Natl. Acad. Sci. U.S.A.*, 117(36), 22068-22079 (2020).
4. C Liu*, X Cui*, **BS Zhao***, P Narkhede, Y Gao, J Liu, X Dou, Q Dai, L Zhang, C He. DNA 5-Methylcytosine-Specific Amplification and Sequencing. *J. Am. Chem. Soc.*, 142(10), 4539-4543 (2020).
5. M Lu, Z Zhang, M Xue, **BS Zhao**, O Harder, A Li, X Liang, T Gao, Y Xu, J Zhou, Z Feng, S Niewiesk, M Peeples, C He, J Li. N^6-methyladenosine modification enables viral RNA to escape recognition by RNA sensor RIG-I, *Nat. Microbiol.*, 5, 584–598 (2020)
6. M Xue, **BS Zhao**, M Lu, Z Lu, Y Ma, O Harder, Y Yu, A Li, X Liang, Y Xu, S Niewiesk, M Peeples, C He, J Li. Viral N^6-methyladenosine Promotes Replication of Human Respiratory Syncytial Virus by Enhancing Nucleocapsid-Mediated RNA Encapsidation, *Nat. Comm.*, 10(1), 1-18 (2019).
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12. **BS Zhao**, C He. "Gamete on" for m^6A: YTHDF2 Exerts Essential Functions in Female Fertility, *Mol. Cell*, 67 (6), 903-905 (2017).
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22. K Chen, **BS Zhao**, C He. Nucleic Acid Modifications in Regulation of Gene Expression, *Cell Chem. Biol.*, 23(1), 74-85 (2016).
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24. **BS Zhao**, C He. Fate by RNA Methylation: m^6A Steers Stem Cell Pluripotency, *Genome Biol.*, 16, 43 (2015).
25. X Lu, **BS Zhao**, C He. TET Family Proteins: Oxidation Activity, Interacting Molecules, and Functions in Diseases, *Chem. Rev.*, 115 (6), 2225–2239 (2015).
26. X Lu*, D Han*, **BS Zhao***, CX Song, LS Zhang, LC Doré, C He. Base-Resolution Maps of 5-Formylcytosine and 5-Carboxylcytosine Reveal Genome-Wide DNA Demethylation Dynamics, *Cell Res.*, 25, 386–389 (2015).
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30. **BS Zhao,** G Zhang, S Zeng, C He, PR Chen. Probing Subcellular Organic Hydroperoxide Formation via a Genetically Encoded Ratiometric and Reversible Fluorescent Indicator, *Integr. Biol.*, 5(12), 1485-1489 (2013).
31. Q Ji*, **BS Zhao***, C He. A Highly Sensitive Fluorescent Reporter for Ratiometric Monitoring of Cellular Quinones, *Chem. Comm.*, 49(73), 8027-8029 (2013).
32. J Wang, J Karpus, **BS Zhao**, Z Luo, PR Chen, C He. A Selective Fluorescent Probe for Carbon Monoxide Imaging in Living Cells, *Angew. Chem. Int. Ed.,* 51 (38), 9652–9656 (2012).
33. **BS Zhao**, Y Liang, Y Song, C Zheng, Z Hao, PR Chen. A Highly Selective Fluorescent Probe for Visualization of Organic Hydroperoxides in Living Cells, *J. Am. Chem. Soc.,* 132(48), 17065–17067 (2010).

RESEARCH EXPERIENCE

Ting Lab and Luo Lab, Departments of Genetics and Biology, Stanford University

Wu Tsai Neurosciences Institute Interdisciplinary Scholar and LSRF Postdoctoral Fellow, 2017.11 – Present

- Conducted joint postdoctoral research in a chemical biology / bioengineering laboratory led by Prof. Alice Ting and a systems neuroscience laboratory led by Prof. Liqun Luo.
- Responsible for the development and application of molecular technologies for brain study and beyond, including high-throughput sequencing-based connectomics mapping, RNA-centric proteomic proximity labeling, light-activated proteomic proximity labeling, and transcriptomic proximity labeling methods.
- Work featured in news: Q&A: High-throughput brain mapping – a barcode for every synapse | Wu Tsai Neurosciences Institute (stanford.edu)

He Group, Department of Chemistry, The University of Chicago

HHMI Predoctoral Research Fellow, 2012.9 – 2017.10

- Conducted graduate research in an epigenetics / chemical biology laboratory mentored by Prof. Chuan He.
- Responsible for molecular methods development including small molecule biosensors engineering and novel DNA/RNA modification sequencing technologies.
- Responsible for RNA epigenetics studies including functional profiling of m^6A reader proteins in various organisms, and collaborative characterization of regulatory roles of m^6A in different biological fields including virology, cancer biology, evolution biology, and developmental biology.

Team Heard, Centre de Recherche, Institut Curie and College de France, Paris, France

Visiting Scientist, 2017.1 – 2017.3

- Conducted collaborative research with Prof. Edith Heard's group to study the involvement of RNA m^6A methylation during X chromosome inactivation.

Chen Group, Department of Chemical Biology, Peking University, Beijing, China

Fangzheng Fellow and Undergraduate Researcher, 2009.9 – 2012.8

- Conducted independent undergraduate research in a chemical biology laboratory mentored by Prof. Peng Chen.
- Responsible for chemical biology projects including protein-based biosensors design for small molecules and bio-incorporation of chemically modified unnatural amino acids.

Peking iGEM Team, Peking University, Beijing, China

Subgroup Leader, 2010.5 – 2011.9

- Led the bioabsorbent subgroup in developing a bacteria-based heavy metal decontamination kit.
- Responsible for the design of functional chimeric protein complexes and real-world test of the whole-cell bioabsorbents. (iGEM 2010 First Runner Up and Best Environment Project)

PROFESSIONAL PRESENTATIONS

Invited Lectures:

2023.2	2023 SURPAS Annual Postdoc Symposium, Stanford, CA.
	Mapping the brain with high-throughput sequencing
2022.8	3rd Beijing Brain Conference, Beijing, China. (Virtual)

Connectome-seq: Mapping Brain Connectivity by High-throughput Single-Compartment Sequencing. **(Best presentation award)**

2022.4 Life Sciences Research Foundation Annual Meeting, Philadelphia, PA.

Mapping the brain with high-throughput sequencing

2021.11 2021 Biology Department Postdoc Research Symposium, Stanford, CA.

Mapping the brain with high-throughput sequencing

2018.7 Gordon Research Conference: Post-Transcriptional Gene Regulation, Newry, ME.

Specialized guides of m^6A regulatory pathway: YTHDF reader proteins and their functions.

2018.5 RNA 2018: The 23rd Annual Meeting of the RNA Society, Berkeley, CA.

Specialized guides of m^6A functions: YTHDF reader proteins and their mechanisms. **(Scaringe career award talk)**

2018.4 Janelia Junior Scientist Workshop - Solving Biological Problems with Chemistry, Ashburn, VA.

Post-transcriptional chemical modifications on mRNA regulate gene expression.

2017.5 Chicago RNA Club Meeting, Chicago, IL.

RNA m^6A methylation as a Master Regulator of mRNA Metabolism and Biological Processes.

2017.5 RNA 2017: The 22nd Annual Meeting of the RNA Society, Prague, Czech Republic.

RNA epigenetic marks affect transcriptome switching during early embryonic development. **(Opening talk of the meeting; With travel fellowship)**

2016.5 The 20th Annual Conference of the Chinese American Chemical Society, Abbott Park, IL.

One Modification to Rule Them All - The study of m^6A and its biological functions.

2014.7 Gordon-Merck Research Seminar and Gordon Research Conference: Post-Transcriptional Gene Regulation, Newport, RI.

RNA Methylation in Control: Interplay of Selective m^6A Readers and Their Targets in the Nucleus.

2014.3 The 6th Yao Yuan Biotech-Pharma Symposium, Chicago, IL.

The Fluorescent Toolbox for Visualization of ROS-related Small Molecules in Living Cells. **(Best poster award talk)**

2012.5 Student's Annual Conference on Science, Peking University, Beijing, China.

A Highly Selective Fluorescent Probe for Visualization of Organic Hydroperoxides in Living Cells.

2010.11 International Genetically Engineered Machine competition (iGEM), Boston, MA, 2010.
Developing a Heavy Metal Decontamination Kit.

Poster Presentations:

2022.9 Stanford Genetics Department Retreat, Stanford, CA.

Using next-generation sequencing for an unbiased high-throughput connectome mapping.

2022.5 Wu Tsai Neurosciences Institute Retreat, Santa Cruz, CA

Using next-generation sequencing for an unbiased high-throughput connectome mapping.

2021.9 Stanford Genetics Department Retreat, Stanford, CA.

Connectome-seq: Mapping Brain Connectivity by High-throughput Single-compartment Sequencing.

2019.5 RNA 2019: The 24th Annual Meeting of the RNA Society, Krakow, Poland.

Brain-APEX-seq: spatial proximity-based capture of local transcriptomes in neurons from the mammalian brain. **(With travel fellowship and best poster award)**

2018.9 Stanford Biology Department Retreat, Sausalito, CA.

Connectome-seq: Mapping Brain Connectivity by High-throughput Sequencing. **(With best poster award)**

2018.5 Wu Tsai Neurosciences Institute Retreat, Watsonville, CA.

Using next-generation sequencing for an unbiased high-throughput connectome mapping

2017.6 Keystone Symposia: Single Cell Omics, Stockholm, Sweden.

RNA epigenetic marks affect transcriptome switching during early embryonic development.

2017.1 HHMI Science Meeting, Howard Hughes Medical Institute, Chevy Chase, MD.

N^6-methyladenosine as a Master Regulator of mRNA Metabolism and Biological Processes

2016.7 Gordon Research Seminar and Gordon Research Conference: Post-Transcriptional Gene Regulation, Stowe, VT, 2016.

Fate by RNA methylation code: m^6A governs cell differentiation and embryonic development.

2016.5 RNA 2016: The 21st Annual Meeting of the RNA Society, Kyoto, Japan.

Fate by Epitranscriptome: m^6A Governs Cell Differentiation and Zebrafish Embryonic Development. **(With travel fellowship)**

2015.5 80th CSHL Symposium-21st Century Genetics: Genes at Work, Cold Spring Harbor, NY.

Fate by Epitranscriptome: m^6A Governs Cell Differentiation and Embryonic Development.

2014.2 2014 AAAS Annual Meeting, Chicago, IL, 2014.
m^6A-dependent regulation of messenger RNA stability.

PROFESSIONAL ACTIVITIES

Professional Associations/Society Memberships:

2019 – Associate Member, Sigma Xi Society

2015 – Member, RNA Society

2011 – Member, American Chemical Society

Grant Reviews:

2022.9 National Science Centre Poland OPUS-23 program, NZ3 panel

Peer Reviewer: (complete records at https://www.webofscience.com/wos/author/record/502372)

ACS Chemical Biology, Scientific Reports, Tetrahedron, Tetrahedron Letters, Toxins, Brain Sciences, Journal of Cancer Research and Clinical Oncology, Virus Research, Inflammation Research, Cellular & Molecular Biology Letters, Sensors, Toxicology in Vitro, Analytical Biochemistry, BMC Genomics, Bioanalysis, Biochimica et Biophysica Acta (BBA) - Gene Regulatory Mechanisms, EBioMedicine, Epigenomics, European Journal of Pharmacology, Experimental Cell Research, Journal of Zhejiang University SCIENCE B, Materials, MethodsX, Molecules, Trends in Food Science & Technology, World Neurosurgery, Cancer Cell International.

Conference Organization:

Organizing Chair (with Dr. Daniel I. Dominguez), Gordon Research Seminar: Post-Transcriptional Gene Regulation, Newry, ME, 2018

Session Chair, Gordon Research Seminar: Post-Transcriptional Gene Regulation, Stowe, VT, 2016.

Department/University Service:

Committee Member, Genetics Department Diversity Search Committee Team, Stanford University, 2022

Postdoc Mentor, STEM Mentor Network, Stanford University, 2022

Committee Member, 2020 Neurosciences Talk Series Committee, Stanford University, 2020

Graduate Board Member, International Student Advisory Board, The University of Chicago, 2016 – 2017

Graduate Representative**,** Faculty Board for Campus and Student Life, The University of Chicago, 2016 – 2017

Ombudsperson, Department of Chemistry, The University of Chicago, 2015 – 2016

President**,** Life Sciences Industry Association, Peking University, China, 2011 – 2012

Outreach Work:

Mentor, 1st Generation Mentorship Program, Stanford University, 2023 –

Science Small Group Leader, Community College Outreach Program, Stanford University, 2022 – 2023

Postdoc Representative, Congressional Hill Day, Stanford Science Policy Group, 2022

TEACHING AND MENTORSHIP

Teaching:

2015.9 – 2017.10 Dive Master Candidate and Scuba Diving Instructor, Learn Scuba Chicago

2016.3 – 2016.6 Teaching Assistant, Bioinorganic Chemistry, The University of Chicago

2013.3 – 2013.6 Teaching Assistant, Advanced Organic Chemistry, The University of Chicago

2012.9 – 2013.3 Teaching Assistant, Honors Organic Chemistry, The University of Chicago

Mentorship:

Graduate Students:

2019.6 – 2020.6	Sifei Yin, Graduate Researcher, Ting Lab. Currently pursuing a Ph.D. at Stanford University.
2018.6 – 2018.9	Jarod Rutledge, Graduate Researcher, Ting Lab. Currently pursuing a Ph.D. at Stanford University. (Part of ADVANCE Summer Institute program for incoming Ph.D. students from diverse backgrounds)
2018.1 – 2018.4	Xinzhi Zhou, Graduate Researcher, Ting Lab. Currently pursuing a Ph.D. at Stanford University.
2016.6 – 2017.9	Chang Liu, Graduate Researcher, He Lab. Currently doing postdoc research at UCSD.
2015.6 – 2017.9	Hailing Shi, Graduate Researcher, He Lab. Currently doing postdoc research at MIT-Broad Institute.

Undergraduate Students:

2019.6 – 2019.10	Xin Sui, Undergraduate Summer Intern, Ting Lab. Now pursuing a Ph.D. degree in chemistry at MIT-Broad Institute.
2016.9 – 2017.8	Gloria Wang, Undergraduate Researcher, He Lab. Now completed medical school education and matched to HCA Healthcare in Kansas City for practice.
2015.9 – 2016.8	Pradnya Narkhede, Undergraduate Researcher, He Lab. Now awarded a Marshall Scholarship and pursuing a Ph.D. degree in biochemistry to advance sustainable development in the UK.

Technicians:

2018.5 – 2020.6	Sanjana Rajeev, PostBac Student and Research Technologist, Ting Lab. Now pursuing a Ph.D. degree in molecular biology at the University of Southern California.

REFERENCES

Alice Ting, Ph.D. – Postdoctoral Mentor
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