



RUTGERS-NEW BRUNSWICK

Biochemistry and Microbiology

School of Environmental and Biological Sciences

LIPMAN LOG

2024-2025

Greetings from the Chair



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Distinguished Professor and Chair
Department of Biochemistry
and Microbiology

Greetings from Lipman Hall,

This current issue of the Lipman Log highlights our activities from the 2024-2025 academic year. As in previous years, we have celebrated exciting new research projects and awards, newly minted Ph.D.’s, and major advances and publications in the different areas of our scholarship and teaching.

We are excited to have three new faculty join the department as tenure track Assistant Professors: Jennifer Sun, Zachery Lonergan and Rohan Maddamsetti. You can read more about their work on pages 4-5.

Our undergraduate and graduate students are engaged in a variety of inspiring research projects with our faculty members. You can read more about the latest Ph.D. theses, the awards our students and faculty have received and other activities in the department. Congratulations to all!

The Peer Mentoring in Microbiology course (see page 8) coordinated by Microbiology teaching faculty Drs. Esquilín-Lebrón, Rauschenbach, and Keddis has successfully fostered a sense of community among students within the major and promoted positive connections between students and faculty in the Department of Biochemistry and Microbiology. This program initiated in Spring 2023 with funding by an IDEA Innovation Grant has had a major positive impact on students, with improved retention and graduation rates.

We mourn the passing of two dear faculty colleagues, Alan Antoine (1939-2024) and Stanley Katz (1931–2025). Alan served on the Rutgers faculty for almost 40 years and was Chair of the Department from 2001 until his retirement at the end of 2007. Stan served on the faculty of Rutgers for almost 50 years, and as Chair of the Department of Biochemistry and Microbiology from 1979 to 1990. Both are fondly remembered and dearly missed.

As always, I thank all our donors that make many of our activities possible. The contributions from all our donors fund important student scholarships, awards and travel fellowships, and support our seminars and departmental events. The Eveleigh Graduate Student Travel Awards provide much-needed support for our students to travel to national and international conferences to present their work, network, and learn. The Robison Scholarship Award honors excellence in graduate studies. The Peter Kahn Endowed Biochemistry Scholarship supports biochemistry undergraduate students. We hope that you will continue to show your support for the department and our scholarly programs.

From all of us in the Department of Biochemistry and Microbiology our warm greetings!

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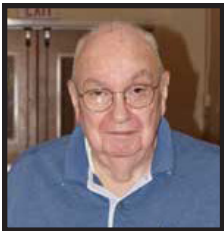
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In Memoriam:



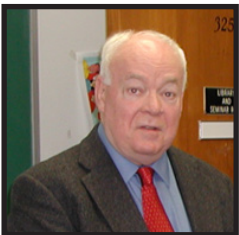
Dr. Stanley Katz (1931–2025)

Dr. Stanley Katz, Professor Emeritus of Biochemistry and Microbiology, passed away June 2, 2025. He was 94.

Stan served on the Rutgers University faculty for almost 50 years. He earned his B.S. at Upsala College in New Jersey and a M.S. in Organic Chemistry (1955) and Ph.D. in Environmental Sciences from Rutgers University (1959). He joined the faculty of Rutgers University in 1958 as an Assistant Research Professor and was promoted to Professor in 1967. Stan served as Chair of the Department of Biochemistry and Microbiology from 1979 to 1990. He retired in 2005 after 47 years on the Rutgers faculty.

Stan’s main research interests were in agricultural and food microbiology, specifically in the development of analytical methods to measure antibiotic residues in feeds, animal tissues and food products. This was a theme that ran through his career. Antibiotic residues in agriculture and spread of antibiotic resistance has since become a major global concern. Over his career Stan mentored several graduate and undergraduate students in his laboratory. Most recently, before his retirement, he taught the undergraduate courses Food Regulations and Emerging Diseases, and a graduate course on applied microbiology.

At the time of Stan’s retirement his former student Mike Salvatore provided this recollection (published in the October 2005 issue of the Lipman Log): “I first met Stan in December of 1973. He was designated as my official advisor. Being a very green freshman and not knowing what to expect, I dress in my best clothes for our first official meeting to discuss my plans for the future. As I climbed the stairs leading to his third floor office, I saw this rather large man with a giant grin on his face dressed in a very clean lab coat. He had sugar on his face and two jelly donuts (one in each hand). Thinking it odd but, then again growing up in New Jersey I have seen worse, I shrugged it off and continued to look for Stan’s office. As I knocked on the door to Stan’s office I hear a voice. ‘Young man, are you Michael Salvatore?’ As I turned, I see this guy with the donuts again. I replied that I was and he said ‘come on in I have been waiting to meet you’. Standing there, Stan, me and the donuts, I didn’t know what to think (the thought did cross my mind that I was way over dressed for this encounter). He then said ‘Could you get the door my hands are full?’. I opened the door and he offered me a seat. He then conveyed the most important information that I will ever remember. He said ‘It is very important to keep you clothes clean, that’s why I wear a lab coat when I eat jelly donuts. Elaine would kill me if I got jelly on my clothes’. I knew right then and there that Stan and I were going to have a lasting relationship. To this day, every time I pass a Dunkin’ Donuts I smile. One other thing, Stan my be retiring but I doubt if he will ever stop shoveling it!”



Dr. Alan Antoine (1939-2024)

Dr. Alan Antoine, Professor Emeritus of Biochemistry and Microbiology, passed away October 20, 2024.

Alan served on the Rutgers faculty for almost 40 years. He earned his Bachelors of Arts from the University of Wisconsin in 1962 and Doctor of Science in Microbiology from Johns Hopkins University in Baltimore, Maryland in 1968, where he researched glycogen and lipid storage materials in mycobacteria. He joined the faculty of Rutgers University in 1969 and was promoted to Associate Professor in 1975. At Rutgers Alan studied cyanobacterial symbionts of the aquatic fern Azolla and the biodegradation of nitroaromatic compounds, among other projects. He taught the graduate courses General Microbiology, Microbial Metabolism and Physiology, and Microbial Biochemistry and Molecular Biology for several years. Alan served Rutgers in many administrative roles, including as Associate Dean of Sciences in the Graduate School-New Brunswick 1977-1987, Director of the Graduate Program in Microbiology and Molecular Genetics 1987-1992, and as Chair of the Department of Biochemistry and Microbiology from 2001 until his retirement at the end of 2007. Alan’s obituary can be found at: obits.nj.com

NEW FACULTY



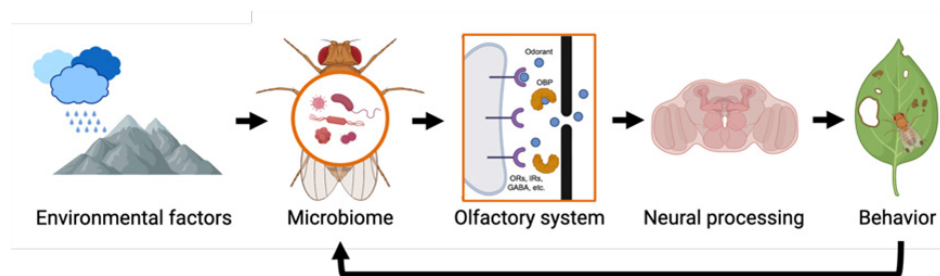
Jennifer Sun

Dr. Jennifer S. Sun joined the Department of Biochemistry and Microbiology at Rutgers University in January 2025 as an Assistant Professor. Her research lies at the intersection of microbiology, neurobiology, and vector biology, with a central question guiding her work: how do microbial communities influence insect sensory perception and behavior? While chemosensation is known to drive much of insect survival and ecology, the role of the microbiome in fine-tuning these systems remains poorly understood – especially in species that transmit disease.



Shreya Gokul, Mia Cacao, Hunter Erntsberger, Jennifer S Sun, and Sammi Russo

Using *Drosophila melanogaster* as a model, her team has developed germ-free (axenic) lines and reintroduced specific microbes to study how changes in microbial composition alter olfactory-guided behaviors. They also examine how these microbes modulate the expression of odorant and ionotropic receptors in the brain, aiming to map the signaling pathways by which bacteria reshape host sensory systems. Building on this foundation, the lab is extending its work to *Aedes albopictus*, an important vector of dengue and West Nile viruses. Dr. Sun's team is characterizing the mosquito microbiome across infected and uninfected populations, with the goal of identifying conserved microbial pathways that affect host-seeking behavior. This research could pave the way for targeted, ecologically sound strategies to disrupt pathogen transmission by altering vector behavior at the sensory level. Prior to her current role, Dr. Sun was a Rutgers Presidential Postdoctoral Fellow and part-time lecturer in the same department. Her academic background spans host-microbe interactions, insect chemosensation, and even algal biofuel development – an interdisciplinary foundation that continues to inform her research approach. Dr. Sun is deeply motivated by the translational potential of her work: understanding how microbes influence behavior could yield new tools for disease prevention that move beyond insecticides. She is equally committed to mentorship, fostering a lab environment where curiosity, rigor, and collaboration thrive. Through her work, Dr. Sun seeks to highlight the surprising power of the microbiome – and to turn that knowledge into practical solutions for global health.



Hypotheses from the Sun lab on microbiome-mediated modulation of insect olfaction and behavior.



Rohan Maddamsetti

Dr. Rohan Maddamsetti joined the Dept of Biochemistry and Microbiology in January 2025, so represents one of our most recent members. Rohan received his Bachelor of Science in Computational Biology from Brown University. He conducted his doctoral studies at Michigan State University where he studied the genomics of microbial evolution in the Lenski long-term evolution experiment (LTEE), which started in 1988 and has been tracking the evolutionary dynamics of 12 replicate populations for more than 80,000 bacterial generations. Among other things, Rohan's work with the LTEE has shed light into the evolution of mutation rates, clonal interference dynamics, and led to new algorithms for inferring positive and purifying selection in time-series of microbial evolution. He conducted his postdoctoral work at Harvard Medical School and Duke University, where his work focused on machine learning and bioinformatics to study the evolution of antibiotic resistance. At the Duke Center

for Quantitative Biodesign, Rohan discovered that duplicated antibiotic resistance genes reveal ongoing natural selection and gene transfer networks in bacteria, and invented an algorithm to infer plasmid copy numbers across thousands of sequenced bacteria and archaea.

Here at Rutgers, Rohan's work is largely focused on how mobile genetic elements accelerate microbial evolution, but also addresses several other research questions related to evolutionary medicine, including the evolution of persistent aging and stress in bacteria, the evolution of antibiotic resistance, and the AI-driven evolutionary design of bacteriophage. Rohan is especially excited about the potential for collaborating with other faculty at SEBS and the Rutgers Microbiome Program on these exciting research directions, and in mentoring the next generation of scientists at Rutgers as they learn to make their own discoveries and inventions.



Zachery Lonergan

Dr. Zachery Lonergan is a new assistant professor in the Department of Biochemistry and Microbiology who arrived at Rutgers in the fall of 2024. Lonergan's educational journey began in his home state of West Virginia, where he obtained his B.S. in Biology from West Virginia Wesleyan College. He then went on to complete his Ph.D. in Microbiology and Immunology at Vanderbilt University in the lab of Dr. Eric Skaar. It was during his Ph.D. that he first became interested in how bacteria navigate the human environment to cause disease. After finishing his Ph.D., Lonergan completed a postdoctoral fellowship as Jane Coffin Childs fellow with Dr. Dianne Newman at the California Institute of Technology. While at Caltech, Lonergan became fascinated with a molecule called nitric oxide and used his time there to connect his interest in bacterial diseases to the role nitric oxide plays in different contexts.

Lonergan's research program at Rutgers is founded on the amazing capacity of microbes to survive in almost any environment. The lab focuses on better understanding how bacteria survive in stressed conditions, particularly in response to exposure to nitric oxide. This occurs within infection contexts but also occurs broadly in many different types of habitats. The incorporation of nitric oxide into many biological contexts is derived from the molecule's intrinsic chemistry and reactivity. A key interest of the lab is understanding molecular mechanisms used by bacteria to sense and respond to nitric oxide that incorporates the molecule's unique chemistry.

The hope is to apply these lessons learned to better define how nitric oxide alters microbial interactions, including host-pathogen interactions.

The Lonergan Lab has been actively growing over its first few months and has included too many cardboard boxes to count. The lab is currently comprised of a Microbial Biology Master's student as well as a couple undergraduates, with more members likely joining in the near future.



Roxanne Jolie, Varnith Bhat, Dr. Zachery Lonergan, and Alexandra Kwasnik

Promotions:



Kyle Murphy

Promoted to Associate Teaching Professor effective July 2025. Dr. Kyle Murphy joined the Rutgers faculty in 2012 as Instructor and was promoted to Assistant Teaching Professor in 2016. Over the many several years in his appointment, he has proven to be an excellent and dedicated instructor and a valuable member of our teaching faculty. He has been at the leading edge of the development of hybrid and online courses at SEBS.

Dr. Murphy has the overall responsibility for the large Introductory Biochemistry service course taken by Biological Science, Nutritional Science, Animal Science and other Life Sciences majors taught in Fall and Spring semester and in Summer Session. In addition to teaching in other courses, he continues to be highly actively involved in teaching undergraduate students in laboratory and research techniques, mentoring undergraduate research students. He is a highly effective teacher who demonstrates depth and breadth of knowledge in his discipline of biochemistry.



Liping Zhao

Promoted to Distinguished Professor effective July 2025. Dr. Liping Zhao joined Rutgers University and the department of Biochemistry and Microbiology in 2017. Prior to Rutgers he was professor of microbiology at Shanghai Jiao Tong University (SJTU) in the School of Life Sciences and Biotechnology since 2001. Prof Zhao is internationally recognized as one of the leading researchers in microbial ecology, in particular the study of the gut microbiome and its effects on host health. The gut is the most densely

colonized microbial community in the human body and is also one of the most diverse. Prof. Zhao's work focuses on elucidating the interactions between nutrition and gut microbiota in onset and progression of chronic diseases such as obesity and diabetes. The worldwide epidemic of obesity and related metabolic diseases is spreading rapidly and has become a serious problem. Prof. Zhao continues to make significant advances to our knowledge about how specific microbes and functional expression patterns are correlated to diet and to lifestyle and is an internationally recognized leader in this research with an impressive record of scholarship, teaching, and service. He is an internationally recognized leader and continues to be an important and influential builder of the interface between microbiology, food, nutrition and health.



Kessler McCoy-Simandle

Promoted to Assistant Teaching Professor effective July 2025. Dr. Kessler McCoy-Simandle joined the department in 2021 as Teaching Instructor. She has applied her excellent experience in active learning to update the General Biochemistry 115:403-404 Course sequence and has proven herself to be a thoughtful and decisive educator. She is an invaluable member of our teaching faculty in the Biochemistry Curriculum. Furthermore,

she is an active participant in educational initiatives offered by the University, clearly demonstrating her commitment to improving Biochemistry education at Rutgers and at SEBS. Her keen focus on improving educational delivery and student outcomes is a key benefit to our students. Dr. McCoy-Simandle is a highly effective teacher who demonstrates depth and breadth of knowledge in her discipline of biochemistry. She is effective in communicating her knowledge to students and has created a positive and inclusive learning environment.



Jeffrey Boyd

Promoted to Professor effective July 2025. Dr. Jeffrey Boyd joined the department of Biochemistry and Microbiology in 2010 and was promoted to Associate Professor with tenure in 2018. He has a superb record of scholarship, teaching, and service over his time at Rutgers and continues a vibrant research program that focuses on understanding how critical cellular components of pathogenic bacteria coordinate to produce a living organism with a robust and responsive metabolism. His overarching goals are to

comprehend the molecular underpinnings of life, with a focus on specific areas of microbial metabolism. His unique approach of combining in vivo and in vitro studies is focused on dissecting how organisms utilize metal ions and how an imbalance of metal ions leads to decreased fitness. Jeff has clearly demonstrated national and international excellence in his field of microbiology. He is an outstanding educator, training the next generation of microbiologists. He is dedicated and passionate in his efforts, providing teaching and student mentoring of the highest quality. Prof. Boyd is a highly regarded investigator in the areas of bacterial pathogenesis and metal ion physiology with an impressive record of scholarship, teaching, and service.

Dr. Gerben Zylstra Appointed SEBS Associate Dean of Graduate Education



On February 15, 2025, Dr. Gerben Zylstra assumed the role of SEBS Associate Dean of Graduate Education. A Distinguished Professor in the Department of Biochemistry and Microbiology, Dr. Zylstra is recognized for his research on bacterial degradation of aromatic compounds and in elucidating the genetic pathways that enable these processes. He has also made a lasting impact in the classroom, teaching microbial genetics and leading the Microbial Biology Graduate Program for 14 years, where he oversaw admissions, advising, curriculum development, and the creation of the 4+1 (BS-MS) program.

In his new position, Dr. Zylstra is focused on strengthening the growth, quality, and visibility of SEBS and NJAES graduate programs. He collaborates closely with the School of Graduate Studies to align policies, support student success, and advance key initiatives, including expanded 4+1 pathways, online master's programs, doctoral training, and TA/GA allocation planning. His leadership reinforces SEBS's commitment to excellence in graduate education.

Grants:



Dr. Maria Gloria Dominguez-Bello is a co-investigator on the NIH-funded "New Jersey ECHO" project, a \$11.8M study that will recruit 500 pregnant individuals and their children from Middlesex County to explore how early-life microbiome disruptions impact respiratory health.



Dr. Jennifer Sun received a Mutual Mentoring Grant from the Rutgers Faculty Diversity Collaborative (2025) and participated in the Course Transformation Summer Institute (2023).



Dr. Kessler McCoy-Simandle has been awarded a \$1,500 IDEA Innovation Grant from Rutgers University for her project titled "The Catalyst Commons: An Inclusive Active Learning Lab for Biochemistry and Beyond."The grant will support the transformation of Room 119 in Lipman Hall into a collaborative space designed to facilitate student work and active learning in biochemistry and related disciplines.

Activities:



Daisy Cifuentes, Julia Moritz, Melissa Flores, Roxanne Jolie, Kristian Bowens, Sammi Russo, Hunter Ernstberger, James Fastenau, Brianna Fisher and Kaylee Grullon (Fall 2023).

Peer Mentoring in Microbiology: Building Connections and Community

Coordinated by Microbiology teaching faculty: Dr. Rauschenbach, Dr. Esquilín-Lebrón, and Dr. Keddis.

The Peer Mentoring in Microbiology course fosters a sense of community among students within the major and promotes positive connections between students and faculty in the Department of Biochemistry and Microbiology. The program began in Spring 2023, funded by an IDEA Innovation Grant, and has since been

transformed into a course where student mentors enhance their leadership skills while mentees experience a supported transition to a new academic setting—all while fostering a sense of community and responsibility.

Over the past five semesters, the program has exceeded our expectations in terms of its impact on students. Transfer students in the program have been able to: interact and socialize with peers in the major, increase their sense of belonging within the department and university, gain access to RU-campus resources and knowledge for navigating them, and improve retention and graduation rates.

For peer mentors, the experience has provided an opportunity to: build and apply mentoring skills, enhance leadership capabilities, and strengthen their own sense of belonging in the major.

William Paterson Undergraduate Research Symposium

New Brunswick, NJ — The Department of Biochemistry and Microbiology at the School of Environmental and Biological Sciences (SEBS) proudly announces the participation of undergraduate researchers from the White Lab in the 17th Annual William Paterson Undergraduate Research Symposium. Their presentations highlighted innovative toxicology research and exemplified the strength of undergraduate scholarship at SEBS.



Victoria Walsh, Jarin Tasnim, Britney Alcantara, Alana Esposito, Matt Dooley and Wilmer Guevara.

Alana Esposito and Britney Alcantara presented their poster, “The Effect of Polyamide Microplastics on MCF-7 Breast Cancer Migration.” Wilmer Guevara and Matt Dooley shared their work entitled, “Cell Migration of Epithelial Breast Cancer Cells Exposed to High Concentrations of Ethanol.” Jarin Tasnim and Victoria Walsh presented, “Effect of Microplastics on Developing Zebrafish Caudal Fin Regeneration.”

These projects reflect the students’ dedication to exploring critical questions in toxicology and advancing our understanding of environmental and biomedical challenges. Their work was conducted under the guidance of Dr. Kyle Murphy and Dr. Lori A. White, whose mentorship has been instrumental in fostering rigorous and impactful undergraduate research.

“We are incredibly proud of our students’ accomplishments,” said Dr. White. “Their creativity, persistence, and scientific insight represent the best of undergraduate research at SEBS.”

The White Lab and the Department of Biochemistry and Microbiology commend these students for their outstanding contributions and for representing SEBS with excellence at this year’s symposium.



Felise Coulon and Dr. Murphy

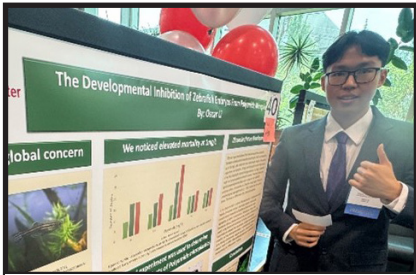
Celebrating Student Summer Research Success!

Congratulations to Felise Coulon and Oscar Li for an outstanding summer of research!

Felise completed the Rutgers Ernest Mario School of Pharmacy Summer Undergraduate Research Fellowship (SURF) and presented her talk, “In Vitro Study of Polyamide on Cancer Cell Migration and Proliferation” at the SURF Symposium on July 18, 2025.

Oscar participated in the Aresty Summer Science Program, presenting his findings at the Aresty Summer Science Poster Session on July 31, 2025.

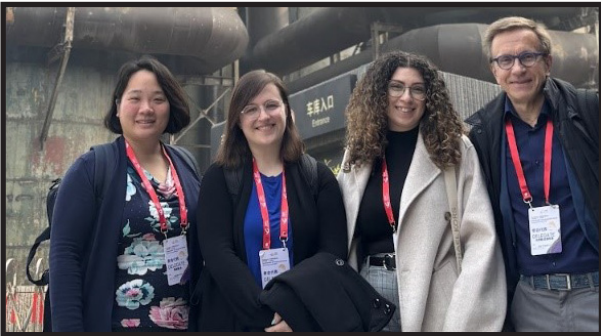
We’re excited to share that both Felise and Oscar will be continuing their research in the lab this year—Felise’s work culminating in a G.H. Cook Honors Thesis. Dr. White and Dr. Murphy are so proud of their accomplishments and can’t wait to see what’s next!



Oscar Li

Sustainable Development Forum, Beijing

Dr. Max Häggblom, Dr. Jennifer Sun, Chloe Costea and Lauren Hall were invited speakers at the Sustainable Development Forum in Beijing Oct 24-25, 2024. The forum, focusing on environmental health and human well-being, was organized by the Chinese Academy of Sciences Research Center for Eco-Environmental Sciences and Institute of Urban Environment. The forum was attended by international scientists, educators, and entrepreneurs in sessions featuring thematic forums, roundtable discussions and exchange activities. The forum encouraged advocacy for the establishment of a sustainable development model where environmental protection and human health synergistically reinforce each other.



Dr. Jennifer Sun, Lauren Hall, Chloe Costea, and Dr. Max Häggblom

Student Awards

- **Robert S. and Eileen A. Robison Scholarship Award:** Gustavo G. Rios Delgado (Boyd Lab), Avanthika Bharath (Vetriani Lab)
- **Douglas E. Eveleigh & Stephen M. Cuskey Graduate Student Travel Awards:** Matthew Finegan, Chloe Costea, Amara Qureshi, Neil Simmons, Jordyn Ruszczyk
- **Selman A. Waksman Award for Academic Excellence in Microbiology:** Julia Moritz, Parth Sharma, Maryam Mohammed
- **Theodore Chase Award:** Hannah Panesso, Marianny Peralta Rodriguez, Seth Yalong Calindas
- **David H. Strumeyer Excellence in Biochemistry Award:** Bhavya Prakash Gupta, Illia Kholiavin
- **Biochemistry and Microbiology Research Excellence Award:** Nicole Diana Almosd, Stanley Michael Paluszek, Shriya Singaraju
- **Christine Pootje Douglass Residential College Microbiology Fellowship:** Angel Robinson



Lauren Hall, PhD
Graduate Program: Microbial Biology | Advisor: Max Häggblom
A Tale of Two Reefs: Organohalide Cycling in Marine Sponges

Marine sponges and their associated microbiota contribute to many biogeochemical cycles, including the organohalide cycle. Despite the wealth of information concerning natural organohalide production, there is limited information available about dehalogenation of organohalides in marine environments. Reductive dehalogenation by bacterial symbionts of sponges has been described, but their host-specificity and diversity remain unclear. This thesis investigated the host-specificity of Great Barrier Reef sponge microbiomes, with a particular focus on dehalogenating strains, and characterized novel sponge-associated dehalogenating bacteria. Sponges of the Great Barrier Reef were found to have diverse, host-specific microbiomes, but host-specificity does not extend to dehalogenating symbionts. This implies some bacterial symbionts are selectively retained whereas others are horizontally acquired, which may reflect their level of contribution to the health of the holobiont. Additionally, four novel dehalogenating strains were isolated and characterized. This work advances our understanding of natural organohalide cycling, with implications for bioremediation of anthropogenic halogenated contaminants.



Jeremy (Jake) Lessing, PhD
Graduate Program: Microbiology: Neurosciences| Advisor: Maria Gloria Dominguez-Bello
C-section delivery alters the early life microbiome and neurodevelopment

C-section (CS) delivery is associated with increased risk of neurodevelopmental disorders, but underlying mechanisms remain unclear. We hypothesized that birth mode affects neurodevelopment in ways that might be reversible by microbial restoration. To test this, we compared hippocampal transcriptomics and gut microbiomes in mice discordant for birth mode, with or without C-section restoration (CSR) by maternal vaginal exposure at P0. Using conventional B6129SF1/J and 16p11.2del heterozygous mice, we collected gut contents, hippocampi, and perfused brains at P7 and P21. CS birth significantly altered gut microbiota, with CSR partially restoring 65% of disrupted ASVs at P7 and 53% at P21. CS also altered hippocampal gene expression, with reduced expression of 69 genes and increased expression of 16 genes at P7, shifting pathways toward increased cell division and reduced synaptic plasticity. Microbial restoration did not rescue brain gene expression, highlighting persistent early neurodevelopmental effects of C-section. Manuscripts are in progress.



Melissa Woortman, PhD
Graduate Program: Nutrition: Microbiology | Advisor: Maria Gloria Dominguez-Bello
Human breast milk variations by time of day and method of breast milk provision

Human breast milk contains hormones, immune factors, and microorganisms that support infant health, yet their daily variation—and how expressed milk alters them—remains unclear. This study examined circadian changes in milk composition and the effects of feeding expressed milk on maternal and infant microbiota. Milk from 38 mothers sampled across four daily time points showed strong 24-hour rhythms in melatonin and cortisol, while IgA and lactoferrin varied mainly with infant age, maternal BMI, or infant sex. Milk microbiota also shifted diurnally, with more skin-associated bacteria at night and environmental bacteria during the day. In a second analysis of 14 mother–infant pairs, infants showed lower microbial α-diversity than milk, and age-related increases in milk diversity occurred only when milk was expressed, suggesting reduced infant oral contact modifies milk microbiota. During her time in the lab, Melissa Woortman contributed to four publications: JIM 2021 (PMID: 33540195); Microorganisms 2025 (PMID: 39787927); Frontiers in Nutrition 2025 (PMID: 39820687); and one accepted, PMID pending.

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