DEPARTMENT OF MEDICAL MICROBIOLOGY & IMMUNOLOGY

MMI NEWS

SPRING 2024

DEPARTMENT STATS

24 Faculty

30 Research Staff

24 Postdocs

39 Graduate Students

7 Administrative Staff



DEPARTMENT OF MEDICAL MICROBIOLOGY & IMMUNOLOGY RELAUNCHES NEWSLETTER!

We are thrilled to announce the relaunch of the Department of Medical Microbiology & Immunology newsletter! In our commitment to keeping our community informed and engaged, we are now set to deliver two issues per year, providing a comprehensive recap of our department's achievements and progress towards fulfilling our mission.

Our newsletter serves as a vital platform to showcase the ground-breaking research, innovative initiatives, and noteworthy accomplishments within the realm of medical microbiology and immunology. We believe that by sharing these stories, we not only celebrate the hard work of our dedicated faculty, postdoctoral researchers, staff, and students but also foster a sense of unity and collaboration within our community.

We invite everyone to explore the pages of our inaugural relaunch issue, where you'll find exciting updates and a glimpse into the dynamic world of medical microbiology and immunology. We look forward to your continued support and engagement as we embark on this exciting journey together. Stay tuned for more updates and thank you for being a valued part of our community!

Vanessa Sperandio, Department Chair

IN THIS ISSUE:

MMI Creates the Rod Welch Distinguished Lectureship Fund

Department Successfully Host Inaugural Retreat

Tanner Robertson Wins 2023 Cool Science Image Award

Department Welcomes Two New Faculty

Faculty Spotlight: Marta Gaglia, PHD

Meet Our Researchers: Carlos Ramirez-Flores, PhD

Amazing Speakers Scheduled for the 2024 Perlman Symposium

Department of Medical Microbiology and Immunology
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

MMI CREATES THE ROD WELCH DISTINGUISHED LECTURESHIP FUND

The University of Wisconsin-Madison, School of Medicine and Public Health, and Department of Medical Microbiology & Immunology are partnering to recognize the accomplishments of a talented scientist, administrator, and educator by establishing the Rod Welch Distinguished Lectureship Fund.

Dr. Welch joined the faculty of the Department of Medical Microbiology & Immunology at UW-Madison in 1982 and quickly rose to the rank of full Professor in 1993. In 2000 he became the Chair of the Department, a position he held for 21 years when he stepped down and retired, becoming Professor Emeritus. As Department Chair, Dr. Welch built one of the top microbiology and immunology departments in the country.

Considering Dr. Welch's remarkable achievements, the time has come to pay tribute to his exceptional leadership and contributions. We want to recognize the significant impact he has had on our department and the global community. By endowing this lectureship in Dr. Welch's name, the Department of Medical Microbiology & Immunology at UW-Madison will have the financial resources to invite prominent individuals who are making substantial strides in their fields. These speakers will engage with our faculty, post-doctoral fellows, students, and the wider public, fostering enriching discussions and inspiring future leaders.

Individuals can make a donation to the fund through the Wisconsin Foundation website.



Dr. Rod Welch served as Department Chair from 2000-2021.

DEPARTMENT SUCCESSFULLY HOSTS INAUGURAL RETREAT

In a gathering that showcased the vibrant spirit of academic camaraderie, the Department of Medical Microbiology & Immunology at the University of Wisconsin-Madison held its very first annual department retreat on Wednesday, August 23, 2023. With a remarkable 90% attendance from the department, the event marked an exciting milestone in fostering collaboration and knowledge-sharing among the community.

The setting for this dynamic exchange of ideas was none other than the iconic Memorial Union on the UW campus. The gentle breeze from Lake Mendota and the historic aura of the venue added an extra touch of inspiration to the day's proceedings.

The retreat's schedule was designed to be as engaging as it was informative. In line with the Department's commitment to fostering a culture of collaboration, the retreat served as an avenue to learn about the ongoing projects in other labs. Attendees were treated to a series of concise, yet impactful, talks delivered by esteemed faculty members, dedicated research staff, and aspiring trainees. Each presentation, lasting around 20 minutes, was like a snapshot of the ongoing research endeavors within the department. From the latest breakthroughs in medical microbiology to the intricacies of immunological explorations, the talks painted a vivid tapestry of the diverse pursuits driving the department's progress.

A highlight of the event was the poster session, where trainees had the opportunity to showcase and discuss their research projects. The room was abuzz with energy as these future leaders of the field shared their findings, theories, and questions. This interactive platform not only encouraged intellectual exchange but also planted the seeds for potential collaborations across different labs and research avenues.

The Department of Medical Microbiology & Immunology's

continued on next page

inaugural annual retreat not only celebrated the accomplishments of its members but also marked the beginning of a tradition that promises to propel the field of medical research to new heights. As attendees left with fresh insights, promising connections, and a renewed sense of purpose, the echoes of collaboration reverberated, promising exciting breakthroughs on the horizon.

The 2024 retreat will be taking place on Thursday, August 15.

MARK YOUR CALENDAR FOR THESE UPCOMING EVENTS!

MMI SEMINARS

JAN 19
LAUREN PALMER
UNIVERSITY OF ILLINOIS AT CHICAGO

JAN 26
DR. KARL THOMPSON
HOWARD UNIVERSITY

FEB 2
DR. LUIZ PEDRO SORIC de CARVALHO
WERTHEIM UF SCRIPPS INSTITUTE

MHD TRAINEE SEMINARS

FEB 20
JESSICA MAGRI, PEPPERELL LAB

MAR 5
KATIE BARNES, KNOLL LAB

MAR 19
JACOB VANDER GRIEND, MANDEL LAB

2024 PERLMAN SYMPOSIUM

APR 26
REGISTRATION IS OPENS IN FEBRUARY
PERLMAN.MMI.WISC.EDU

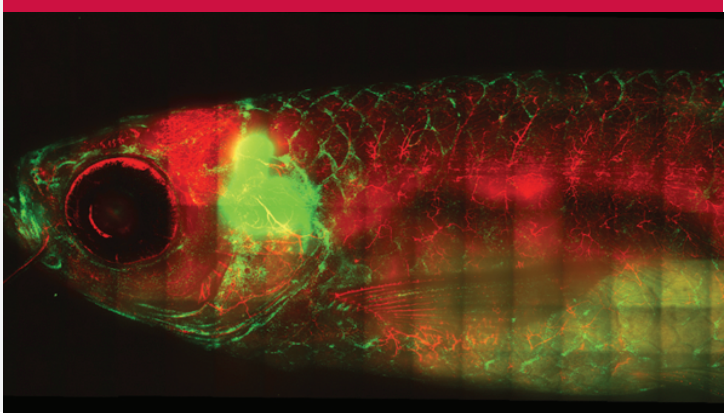
The full events schedule can be found at:
mmi.wisc.edu/events

TANNER ROBERTSON WINS 2023 COOL SCIENCE IMAGE AWARD

The Cool Science Image Contest recognizes the technical and creative skills required to capture and create images, videos and other media that reveal something about science or nature while also leaving an impression with their beauty or ability to induce wonder. The contest is sponsored by Madison's Promega Corp., with additional support from UW–Madison's Office of University Communications.

An image (below) of a transparent zebrafish's lymphatic network captured with a Zeiss spinning disk confocal microscope earned microbiologist Tanner Robertson, PhD, recognition in UW–Madison's 13th annual Cool Science Image Contest. Robertson is a postdoctoral fellow in Dr. Anna Huttenlocher's research group within the Department. His image was among the 12 winning entries in this year's content. The winning images were on display tin an exhibit at the McPherson Eye Research Institute's Mandelbaum and Albert Family Vision Gallery on the ninth floor of the Wisconsin Institutes for Medical Research.

Seen for the first time under a microscope, a transparent zebrafish's T-cells, which fight invaders like viruses and bacteria, shine green against the red of the fish's blood vessels, revealing the T-cells' organization into a networked immune system. Mammal immune systems are organized around lymph nodes, but non-mammal vertebrates like fish don't have nodes or connecting vessels. This view of a fish lymphatic network may help improve wildlife vaccines and lead to a better understanding of the evolution of immune systems.



DEPARTMENT WELCOMES TWO NEW FACULTY

The Department of Medical Microbiology & Immunology is welcoming two new faculty. Margaret Alexander and Gustavo Caballero-Flores joined us as assistant professors, each poised to make impactful contributions.



MARGARET ALEXANDER, PHD

Dr. Margaret Alexander joined us from the University of California - San Francisco this month. The Alexander laboratory is currently researching the ways by which diet, microbiota, and immune responses interact and the consequences of these interactions for auto-immunity. Their goal is to uncover the mechanisms by which complex diets influence diseases, as well as how disease-associated microbiota members affect immune responses during disease.

The Alexander Lab research is broken into two projects:

Project 1: Investigating Microbiota-Dependent Mechanisms by which Diets Impact Immune Responses and the Consequences for Autoimmunity.

Project 2: Targeting Dietary Interventions of Autoimmunity by Leveraging Knowledge of How Disease-Associated Microbes Influence Immune Response



GUSTAVO CABALLERO-FLORES, PHD

Dr. Gustavo Caballero-Flores will be joining us from the University of Michigan in March. Dr. Caballero-Flores' research combines techniques from molecular microbiology, genomics, and immunology to study the mechanisms of bacterial pathogenesis and immune response in the neonatal and adult gut, the molecular mechanisms by which the intestinal microbiota limit the expansion of enteric pathogens, and the role of mucosal immunity in protection against enteric disease. Using the *C. rodentium*-mouse model of infection that closely mirrors human disease by Enteropathogenic E. coli, he has demonstrated that maternal pathogen-specific IgG protects neonatal mice against enteric infection by coating the bacterium and promoting its phagocytosis by neutrophils. Current efforts are focused on deciphering the mechanisms by which the pathogen subverts the colonization resistance imposed by the gut microbiota during early infection and the effect of microbial interactions in shaping the mucosal immune responses in the gut. The studies have the potential for an impact on the understanding and/or treatment of enteric disease in highly susceptible human populations.

FACULTY SPOTLIGHT: MARTA GAGLIA, PHD



Dr. Marta Gaglia joined the department in October of 2022.

Hometown: Torino, Italy

Dr. Marta Gaglia joined the Department of Medical Microbiology & Immunology in October of 2022. The Gaglia Lab focuses on virus-cell interactions in infections with the human respiratory virus influenza A virus and the human oncogenic virus Kaposi's sarcoma associated herpesvirus (KSHV). By studying both RNA and DNA viruses, they have a unique vantage point to observe both conserved and individual mechanisms of host manipulation.

Their goal is to solve scientific puzzles and dig deeper to link molecular events during viral infections to human disease in a supportive environment that fosters learning and growth.

What inspired you to select your field of study?

In my undergraduate Intro to Microbiology class, I learned that at the time (er,1999) measles virus was one of the top causes of childhood death world-wide. It made a big impression on me, as a revelation on the continued relevance of infectious diseases to human health. I took a detour first by doing a PhD in Neuroscience, but when I decided to choose a different field for my postdoctoral fellowship, that memory influenced my choice. (Thanks to vaccination, measles virus is no longer a top cause of childhood death today, by the way).

What is one piece of advice you would give to students?

We are often told that there is one way to do this job and this career – it is not true. If you want to do it, you can do it your own way.

When you're not in the lab, how do you spend your time?

Reading fantasy and mystery novels, taking walks with my husband, doing yoga, playing board games, making crepe paper flowers, traveling, cooking, and baking.

If you didn't become a scientist, what career would you have pursued?

I am not sure – I love languages, so maybe translating or interpreting?

What is the best meal you've ever had?

Squid ink risotto at a restaurant in Pisa. I was with a good friend and colleague, and that made the experience more special.

More faculty spotlights can be found at: www.mmi.wisc.edu/meet-our-researchers

FACULTY ACCOMPLISHMENTS

Dr. Christina Hull received the 2023 GWIMS Excellence in Mentorship Award.

Dr. Andy Mehle was promoted to the rank of full Professor.

Dr. Mark Mandel received the Vilas Mid-Career Investigator Award.

Dr. Laura Knoll was elected to the American Academy of Microbiology.

Dr. Drew Hryckowian was named the inaugural Judy L. and Sal A. Troia Endowed Professor in Gastrointestinal Disease Research.

Dr. Vanessa Sperandio was named the Robert Turell Professor in Infections Diseases.

MEET OUR RESEARCHERS: CARLOS RAMIREZ-FLORES, PHD



Dr. Ramirez-Flores works as a Research Associate in the Laura Knoll Lab.

Hometown: Xalapa, Veracruz, Mexico

Carlos is a Mexican biologist and biochemist interested in the biology of Toxoplasma gondii. In Dr. Laura Knoll's lab he is trying to understand the enzymes and molecules involved in the signal to start the sexual cycle of Toxoplasma. He is also interested in the proteins released by Toxoplasma gondii and their effects on host cells. In his free time, he likes to walk, spend time with his wife and eat ice cream (even in Winter), pizza and his own Mexican food.

What inspired you to select your field of study?

Curiosity. I was raised in a family of teachers and professors. My mom was teacher of biology and chemistry. Since I was a kid, I used to read the quizzes and evaluations from my mom's lectures. For sure I knew all the topics in advance and always had the best grades at school.

What is one piece of advice you would give to students?

There is time for everything. Time for working, for studying, but also for relaxing and spent time alone, or with your loved ones.

When you're not in the lab, how do you spend your time?

I love to spend time with my wife Mariana and my little daughter Miranda. We love to walk and visit new places around Madison area. Small towns are the best.

If you didn't become a scientist, what career would you have pursued?

Middle or high school teacher, I would say. When I was a kid, I used to play piano and my mom supported me for starting that (other) long career, but I changed my mind.

What is the best meal you've ever had?

Probably a French dinner in a hotel at Cancun when my wife and I got engaged.

You have to sing karaoke, what song do you pick?

I am bad singing. If needed, a Mexican pop song, Luis Miguel's, or Juan Gabriel's songs.

Have you ever completed anything on your "bucket list"? If so, what was it?

Living in a different country.

What is the last TV show that you binge-watched?

I think it was Money Heist years ago.

If you could have any super-power, what would it be?

Eat what I want and be healthy. Or maybe, travel in time?

MMI IN THE NEWS

Dr. Andy Mehle Uses New Genetic Screening Tool to Research Influenza

Keller Lab Mines Fungi for Useful Molecules

Gaglia Lab and Colleagues Reveal How Key Protein Might Help Influenza A Infect its Hosts

MMI Researchers Image Adaptive Immune Systems at Work in Fish

SMPH Chats with Vanessa Sperandio for Women's History Month

AMAZING SPEAKERS SCHEDULED FOR 2024 PERLMAN SYMPOSIUM

The 2024 Perlman Symposium will take place on Friday, April 26th in the Microbial Sciences Building on the University of Wisconsin-Madison campus. Event organization is well underway, with registration set to open in February. This year, we have some amazing speakers lined up!



HELEN BLACKWELL, PHD
UNIVERSITY OF WISCONSIN-MADISON

The Blackwell laboratory is designing, preparing, and screening focused collections of small molecules to ask important questions in bacteriology. Specifically, they seek to uncover compounds that modulate key protein-protein interactions involved in bacterial communication pathways.



JASON CRAWFORD, PHD
YALE UNIVERSITY

The Crawford laboratory is developing and systematically applying genome sequence-guided methods for the discovery of genetically encoded small molecules from mutualistic and pathogenic microorganisms. High-throughput genome sequencing of bacteria and fungi has revealed many highly unusual “orphan” bio-synthetic gene clusters suspected of synthesizing novel, structurally diverse, and biologically active small molecules.



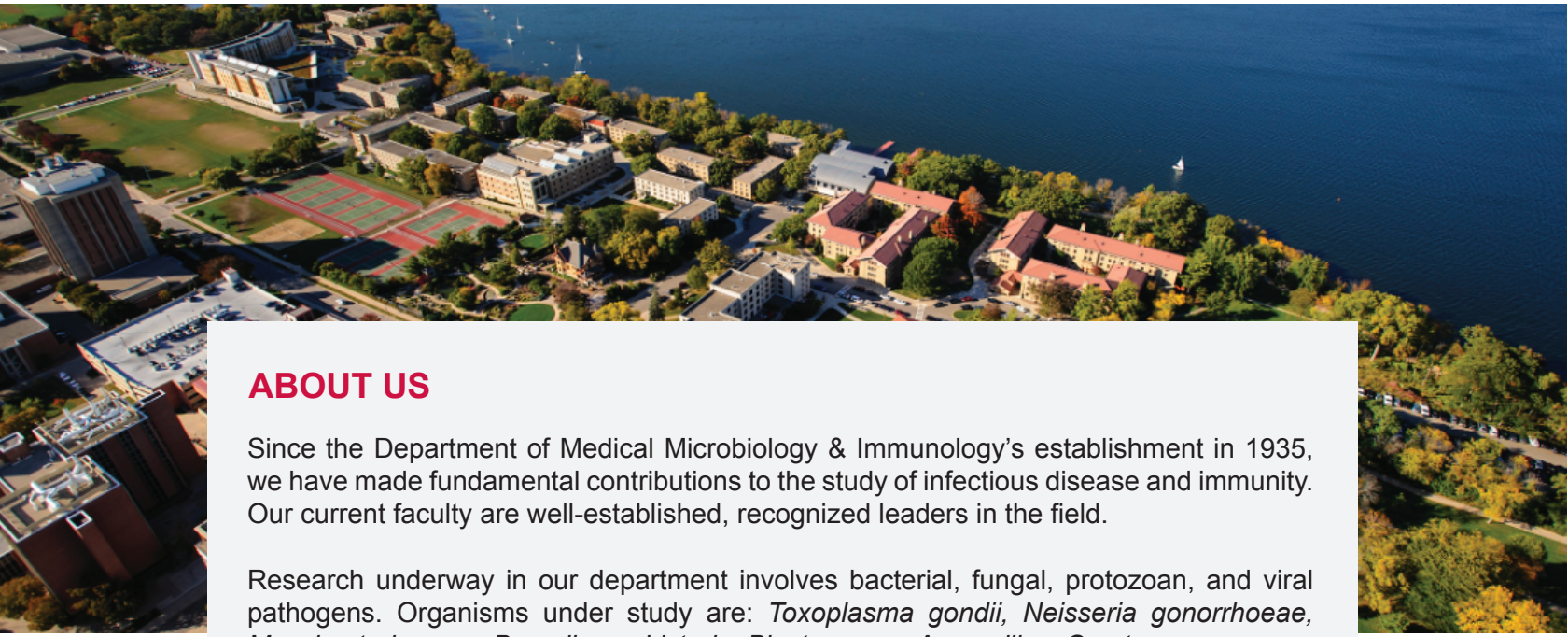
KIMBERLY KLINE, PHD
UNIVERSITY OF GENEVA

The Kline laboratory is working to understand the bacterial virulence factors that contribute to colonization, biofilm formation, and infection by *E.faecalis* and related pathogens. Using genetic and biochemical approaches, coupled with high resolution microscopy and ‘omics approaches, they are exploring the molecular mechanisms that dictate focal localization of virulence factor assembly sites, using the pilus assembly platform as a model system.



DAVID WEISS, PHD
EMORY UNIVERSITY

The Weiss laboratory is largely focused on understanding mechanisms of antibiotic resistance and developing novel therapeutic approaches to combat drug-resistant bacteria. A major area of interest is elucidating the factors controlling heteroresistance, a phenomenon in which a minor subpopulation of cells exhibits phenotypic resistance and co-exists with a majority susceptible population.



ABOUT US

Since the Department of Medical Microbiology & Immunology's establishment in 1935, we have made fundamental contributions to the study of infectious disease and immunity. Our current faculty are well-established, recognized leaders in the field.

Research underway in our department involves bacterial, fungal, protozoan, and viral pathogens. Organisms under study are: *Toxoplasma gondii, Neisseria gonorrhoeae, Mycobacterium sp., Brucellasp., Listeria, Blastomyces, Aspergillus, Cryptococcus neoformans, Candida*, influenza virus, Herpes simplex, enterohemorrhagic *E. coli* and uropathogenic *Escherichia coli*. Faculty also investigate diverse immunological topics such as the sexual dimorphism of immune responses, regulatory T cell biology, leukocyte migration, and vaccine development.

We provide an exceptional learning environment for undergraduates through rigorous coursework and research opportunities. Graduate students may earn a Ph.D. through our nationally acclaimed, Microbiology Doctoral Training Program which is ranked first among U.S. public institutions and third nationwide.

CONTACT US

Microbial Sciences Building
1550 Linden Drive
Madison, WI 53706

www.mmi.wisc.edu

FOLLOW US ON X

@UWMADISON_MMI

Department of Medical Microbiology and Immunology
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH