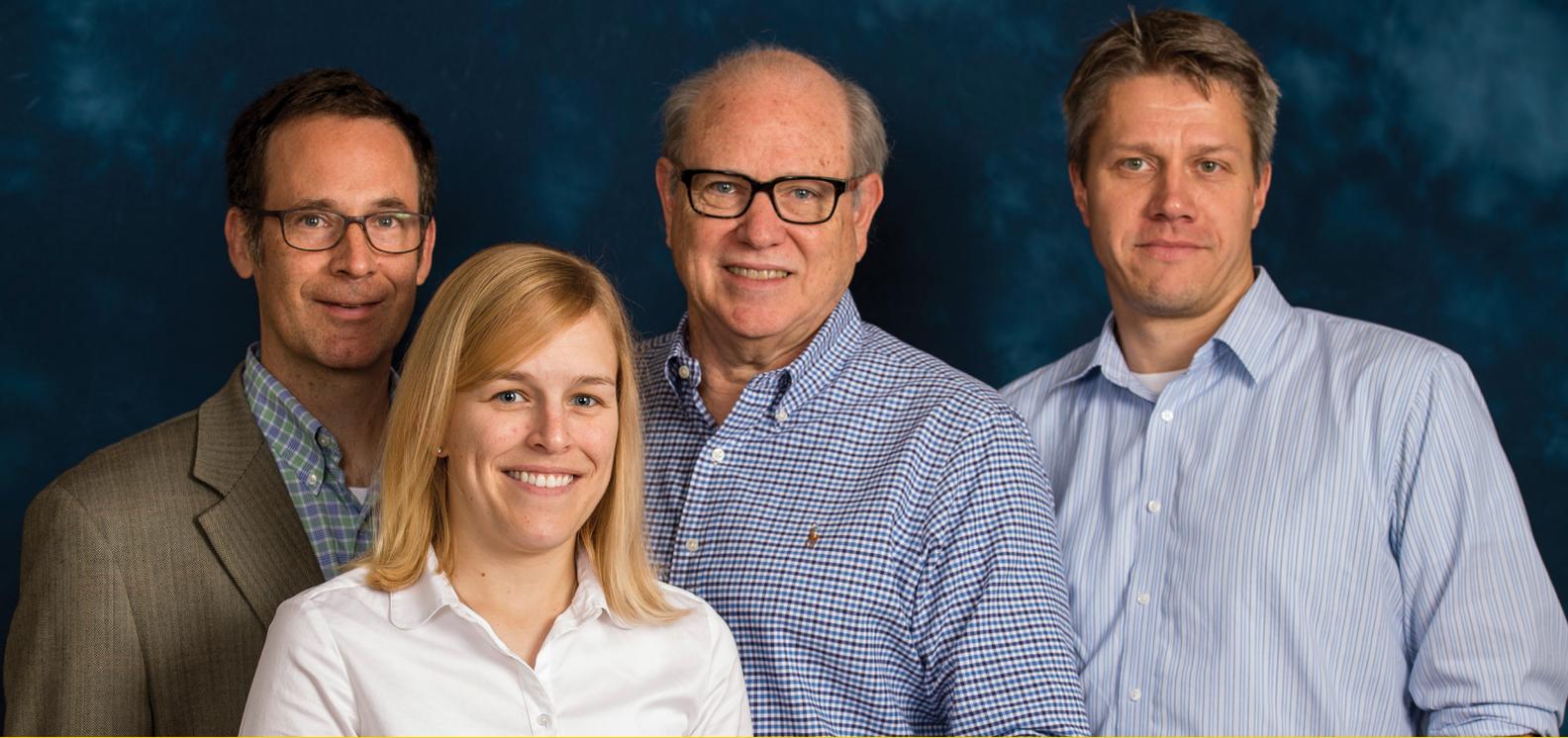




**MEDICAL SCHOOL
MICROBIOLOGY & IMMUNOLOGY**
UNIVERSITY OF MICHIGAN



Jason Wienberg, Mary McCarthy, Harry Mobley, and Eric Martens (See MacNeal Awards, page 18)

FALL 2016 NEWSLETTER

www.med.umich.edu/microbio

News from the Chair	2-3
Faculty News	4-7
Postdoctoral News	8-9
Graduate News	9-12
Undergraduate News	12-13
Alumni News	14-15
Seminars	16-19
Events	19
Donations and Gifts	20

News from the Chair

Dear Friends:

I had the privilege of taking an around-the-world goodwill tour this fall on behalf of the University of Michigan Medical School Department of Microbiology & Immunology. I visited five countries and delivered lectures in Paris, Singapore, Perth, Sydney, and Brisbane. I met with scientific colleagues at institutions and universities and was consistently gratified to find that our “block M” was recognized internationally as a symbol of excellence. International colleagues highlighted the many connections with our outstanding faculty and trainees. I heard scores of positive comments about the great research going on in our department. People I visited mentioned many of our faculty specifically and were surprised to find that so many great scientists (and, of course their trainees and staff) are all in one place. The department and school were invariably appreciated as one of the most recognized centers of excellence in research and scholarship in the world. I happily agreed with these assessments. I was able to spread the good news about advances we have collectively made. As I review this year’s activities for this letter, it is easy to see why I received such favorable responses around the world.



In the past academic year, we had 39 Ph.D. students and 7 Master’s students in training. In the winter semester, 8 Ph.D. students defended their dissertations and three Master’s students earned their degrees. Five Ph.D. and 5 Master’s students matriculated this fall, and thus we currently have 36 Ph.D. and 11 Master’s students. We have good news about successful placement of our outstanding graduates. Of the last 70 doctoral students to graduate, there are 34 postdocs, 11 scientists in the biotech industry, 10 assistant professors (or higher rank), 6 in administrative positions, 4 physicians, 2 scientific writers, and 3 “other,” including ranked military.

Our trainees not only contribute significantly to this scientific success, but also to service locally, nationally and internationally. We are proud to boast an ever-broader influence. Graduate student Amanda Elmore, in the lab of Pat Schloss, brought an Olympic gold medal in rowing home from Rio, where she served to help set the pace in the first rowing position for the U.S. “Women’s 8.”

We are also privileged to have 39 postdoctoral fellows in the labs of our primary and joint faculty. This talented group drives the research in many of our labs and represents us well as the next generation of scientists.

This year our faculty and trainees garnered over \$15 million of research funding, primarily from the National Institutes of Health, a record for the 114-year old department. This will likely move us into the top ten departments in the country in our discipline and is a reflection, as judged by our scientific peers, of the outstanding scholarly work being undertaken in our department. In addition to individual grants, our faculty led major initiatives in RNA Structure, Systems Biology, and Host Microbiome biology. As always, our faculty have won significant national and international awards and recognition as summarized elsewhere in the newsletter.

It is critical to note that all of our efforts are expertly supported by the best research staff and administrative staff in the business!

In addition to research, we teach 23 courses, or sections of courses, and labs to medical students, graduate students, dental students, dental hygienists, and undergraduates. We teach more classroom-based courses by far than any department in the medical school, with participation from the vast majority of our faculty in this effort. As always, we hosted a series of lectureships this year by outstanding guest scientists and ex-trainees including the Heritage, MacNeal Award, Willison, Graduate Student-Invited, and Postdoc-Invited Lectureships as well as the Neidhardt-Freter Symposium.

This year, we were saddened by the passing of three of our *emeritus* faculty. **Frederick Neidhardt, Ph.D.**, the Frederick G. Novy Distinguished University Professor of Microbiology and Immunology, served for 15 years as the 4th chair of the Department. He also served as Associate Dean for Faculty in the Medical School and as the University's Vice President for Research. Fred was credited with pioneering bacterial proteomic techniques and editing "EcoSal," the most thorough reference of the most studied cell, *E. coli*. Among many honors, Fred served as president of the American Society for Microbiology in 1982. **Elliot Juni, Ph.D.** was appointed as Professor in our department in 1966 and was recognized as an unparalleled expert in microbial metabolism. During his tenure he taught microbial physiology to hundreds of undergraduate and graduate students. Dr. Juni demonstrated a life-long commitment to our department, maintaining a small research laboratory until shortly before his death. **Frank Whitehouse Jr., M.D.** served the department for 41 years conducting research in immunology. He was also recognized for his innovative curriculum development and educational research. Indeed, he was awarded special recognition in 1995 by our department for his distinguished contribution to medical and undergraduate education. Dr. Whitehouse taught undergraduates well after retirement. These special colleagues will be missed.

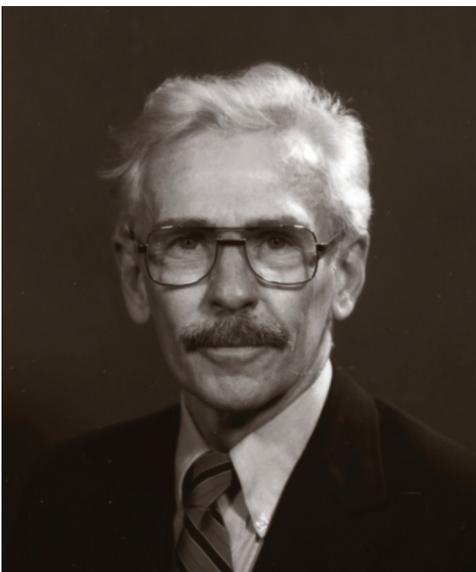
Many of the topics I summarized are covered in more in depth in the upcoming pages. As always, we love to hear what you are doing now. Drop us line or come visit. You are a big part of the UM Microbiology & Immunology family and we always appreciate your involvement and support.

Go Blue!



Harry L.T. Mobley, PhD
 Frederick G. Novy Distinguished University Professor & Chair

Frederick Neidhardt, Ph.D.



Elliot Juni, Ph.D.



Frank Whitehouse Jr., M.D.



Faculty News

Distinguished University Professorship

On September 1, 2014, **Harry Mobley, Ph.D.** was bestowed the title of Distinguished University Professor, one of UM's most prestigious professorships. The Distinguished University Professorships were established to recognize those faculty with exceptional academic achievements, reputations, and training records. Appointees name the professorship after a person of distinction in their field and give an inaugural lecture. Mobley chose to name his after former M&I department chair, Frederick G. Novy; his lecture was entitled, "Stones, Spears, and Bacterial Social Aggression at Its Worst," and was presented on March 29, 2016 in the Rackham Amphitheater. His talk surveyed the scientific findings uncovered about one uropathogenic bacterium studied during his three-decade career, *Proteus mirabilis*.



Laura Mike and Harry Mobley

In the clinic, *P. mirabilis* is most often associated with painful kidney stone formation. Mobley was one of the first researchers to identify and characterize the role of the urease enzyme in elevating the pH of urine, which enhances kidney stone formation. More recently, however, Mobley's research has focused on the complex social behavior of these bacteria. *P. mirabilis* switches between adherent and motile lifestyles, allowing it to adapt to different niches in the environment and the host. In its motile form, individual *P. mirabilis* cells team up with their brethren to swarm across biological surfaces. By observing the organism as it swarms and studying its gene expression, Mobley's research has uncovered a microscopic social aggression involving inter-bacterial competition and killing through a "type VI secretion system." This apparatus forms "spears" within the bacterium that are loaded with toxic proteins. When confronted by another bacterial strain, *P. mirabilis* lets loose a barrage of the poisonous spears, fatally wounding the encroaching strain, forming a clear line at the battlefield. Each bacterium is immune to its own toxins, thus preventing friendly fire. Mobley's work on *P. mirabilis*, in addition to studies on the pathogenic mechanisms of *Helicobacter pylori* and uropathogenic *Escherichia coli*, are major contributions to the field of microbial pathogenesis. We congratulate Dr. Harry Mobley on his very deserving appointment to the Frederick G. Novy Professorship.

—Laura Mike

Frederick Novy Collegiate Professor in Microbiome Research



Pat Schloss and his wife Sarah

This summer **Patrick Schloss, Ph.D.** was appointed as the inaugural Frederick Novy Collegiate Professor in Microbiome Research, one of the first endowed chairs in microbiome research nationally. As the first chair of the bacteriology department at UM, Novy pushed the boundaries of science and medical education, a tradition that holds strong with Dr. Schloss, whose innovative software development has made critical contributions to microbiome research. Dr. Schloss obtained his Ph.D. at Cornell University and conducted his postdoctoral training in the lab of Jo Handelsman, Ph.D. at the University of Wisconsin. There, Schloss developed one of the first computer programs used to analyze 16S rRNA gene sequences, DOTUR. Dr. Schloss was recruited to the University of Massachusetts for his first faculty position, where he developed the more comprehensive program, mothur. Dr. Schloss's publication of the

mothur program coincided with his move to his current position at the University of Michigan. His creation of the mothur program, which has been cited over 5000 times according to Google Scholar, is arguably one of the pivotal programs that enabled the current explosion of bacterial microbiome research. Currently, the Schloss lab focuses on applying mothur and other tools to investigate how the bacterial microbiome impacts *Clostridium difficile* or colorectal cancer. Manuscripts from the lab addressing these topics have been cited over 100 times each.

Instead of taking the usual approach for his Collegiate Professor appointment speech and highlighting these accomplishments, Dr. Schloss talked about his struggles, his family, and his outlook on work-life balance. The result was a powerful 45-minute talk that resounded with all of those in the room. There were a few major takeaways from this inspiring talk. First, everyone struggles at some point in time, no matter how good they are. You have to be able to pick yourself back up and keep at it. Second, having a work-life balance is key to long-term success. Family is very important to Dr. Schloss, and many of his accomplishments are due to the support from his wonderful wife, Sarah Schloss. Finally, the success that Dr. Schloss has enjoyed he attributes largely to the hard work and help that individuals in his lab or family members have collectively put in to support him throughout the years. Dr. Schloss endeavors to pay this forward by offering a \$500 scholarship to support childcare for trainees, enabling them to attend conferences that are critical in establishing their early careers. By the end of Dr. Schloss's speech there was little doubt in the room that there could not be a more deserving recipient for this inaugural position. Congratulations Pat! In case you missed this amazing talk, you can read the transcript here:

<http://www.academichemmit.com/2016/06/27/novy-installation.html>.

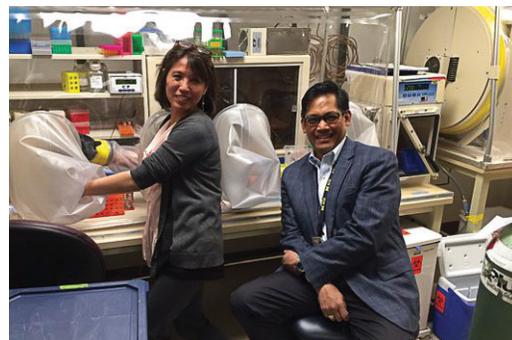
–Marc Sze and Ada Hagan

Host Microbiome Initiative

The Host Microbiome Initiative (HMI) at the UM Medical School is now in its fourth year. Led by **Harry L.T. Mobley, Ph.D.**, Chair of M&I, **Thomas M. Schmidt, Ph.D.**, professor in the Department of Internal Medicine/Division of Infectious Diseases and Ecology and Evolutionary Biology and **Vincent B. Young, M.D./Ph.D.**, professor in the Department of Internal Medicine/Division of Infectious Diseases, the HMI continues to foster research on the role of microbes in human health and disease. This initiative is building upon long-standing strengths in microbiology, microbial pathogenesis, immunology and clinical medicine at the University of Michigan Health System (UMHS). With generous support from the Office of the Dean and all of the medical school departments, the HMI continues to accelerate our understanding of how communities of microbes interact with their host.

Some key accomplishments of the HMI in the third year include

- \$37,988,442 in newly funded awards (bringing the total for the HMI to \$42,813,442) for a total of 26 grants.
- 79 HMI supported publications
- 437 subscribers to the HMI Newsletter
- 184 investigators on the Microbiome Group Seminar list (average attendance at the 16 seminars was 49 individuals). Two major microbiome meetings held on campus sponsored by HMI.
- 45 groups have expressed interest in the Microbiome Explorer Program. 35 have initiated proposals and 20 have been funded/initiated
- The Michigan Microbiome Project (student cohort study led by Thomas Schmidt) has a total of 3 student cohorts completing study.



Kwi Kim and Vincent Young

Dr. Young continues to lead the Microbiome Explorer Program (MEP). The MEP was designed to decrease the “activation energy” required to include a microbial approach to ongoing basic and clinical research. Dr. Young and the HMI staff worked with investigators throughout the medical school to develop a logical plan to extend their existing research to allow microbial analysis. The costs for sample DNA extraction/preparation sequencing and the bioinformatics analysis are borne by the HMI. To date, over 40 investigators have participated in the MEP and manuscripts and grants related to MEP activities are now being generated.

Dr. Schmidt's Michigan Microbiome project has established several large cohorts of individuals who are followed longitudinally for their overall health and its relationship to their microbiome. One of the major projects has studied several cohorts of UM undergraduate students enrolled in the introductory biology lab to determine if the composition of the gut microbiome can be used to predict the impact of fiber supplementation on butyrate production. Butyrate production by gut microbiota is correlated with beneficial effects on the gut. Participants added 40 grams of resistant starch to their daily diet and collected fecal samples both before and during the consumption of resistant starch. Fecal samples were used to determine both the structure of the microbiome and the presence of short-chain fatty acids including butyrate. The initial analysis provided very encouraging results; within days of adding resistant starch to the diet, the composition of the gut microbiome community changed and there was a concomitant increase in butyrate concentrations. This work was recently published in *Microbiome* (Jun 29, 2016; 4(1):33), and since its publication, it is in the top 5% of all research outputs scored by Altmetric.

Dr. Mobley continued to drive research designed to reduce and control healthcare-associated infections (HAIs) in the hospital setting. Reducing HAIs is a major thrust of the U.S. government's "Healthy People 2020" initiative and a key component of President Obama's strategy to combat antibiotic-resistant bacteria. The purpose of Dr. Mobley's program is to study the pathogenesis and epidemiology of bacterial pathogens that plague our hospitals, leveraging advanced technology and approaches made possible by the HMI to study the pathogenesis and epidemiology of HAIs. One example is the use of transposon-directed insertion site sequencing (TraDIS, or TnSeq) to delineate the bacterial genes required for colonization, persistence, spread and pathogenesis in general. Another is the use of whole bacterial genome sequencing to understand the evolution and epidemiologic spread of these hospital-acquired pathogens.

These coordinated efforts continues to drive microbiologic research on the UM campus to improve human health and ensures that the M&I Department will be at the forefront of these efforts.

–Vince Young

The Center for Systems Biology - Advancing Precision Medicine



Stephanie Thiede and Louis Joslyn

The UM Center for Systems Biology (CSB) educational and outreach programs focus on fostering collaborations among faculty and students for multi-scale, systems-level inquiries of biomedical processes. Since its inception, we have had a number of activities within the Center, including a monthly journal club, bi-monthly research conferences, educational course and training offerings by CSB faculty, many joint research initiatives for grant applications, resources for affiliated faculty, and yearly interdisciplinary symposia. The 3rd annual CSB Symposium (September, 2016), which centered on the theme of precision medicine, was our most exciting yet. As with all of our previous events, we sponsored the symposium in collaboration with other centers on campus to emphasize the interdisciplinary nature of the Center and its members.

This year, the Michigan Center for Integrative Research in Critical Care (MCIRCC) in the Medical School, the Center for the Study of Complex Systems (CSCS) in LS&A, and the CSB jointly hosted the one-day symposium, *Advancing Precision Medicine through Complex Systems Biology*. Precision medicine is an emerging approach to health care that tailors disease prevention and treatment to individual variations in genetics, environment, and lifestyle. Building on recent advances in technology, medical research, and policies empowering patients, precision medicine seeks to unite scientists, physicians, and patients as integrated teams working to design and implement individualized health care. President Obama's Precision Medicine Initiative, announced in January, 2015, provides dedicated funding and a presidential mandate to move precision medicine from a promising concept to a powerful, transformative approach to health care. The CSB Symposium addressed this goal. The event featured 8 speakers, 4 from UM (Goncalo Abecasis, Dan Beard, Greg Thurber, Kayvan Najarian) and 4 external scientists (Sui Huang, Director, Institute of Systems Biology; Kathryn Miller-Jensen, Yale University; Yoram Vodovotz, University of Pittsburgh School of Medicine; and Shayne Pierce-Cotter, University of Virginia). 150 people registered for the event and attended

events throughout the day, including scientific talks, lunch, a poster session and a reception. The event achieved five interrelated objectives: (1) advancing systems biology education, training, and research across the entire UM community; (2) educating UM faculty, postdocs, graduate students, and undergraduates about fundamental concepts in precision medicine, challenges to its implementation, and opportunities to improve biomedical research and patient care; (3) examining cutting-edge developments at interfaces of multi-scale systems biology, big data, and health care as applied to research and implementation of precision medicine; (4) providing an interdisciplinary forum for 26 graduate students and postdoctoral fellows across multiple schools and colleges at UM, including Engineering, Medicine, LS&A, Pharmacology, Dental School, and Public Health, to present research through a poster session and reception; and (5) fostering new interactions among UM students and faculty. In addition, through the high profile external speakers, the Symposium exposed attendees to national initiatives and research in this important area. Overall, the event positions UM as a leader in research and clinical implementation of precision medicine.

For the 2016-2107 academic year, the CSB is applying to Rackham Graduate School for a new certificate program for both graduate students and postdoctoral fellows to expand their training in the new and important area of systems biology research through coursework, seminars and training opportunities.

–Denise Kirschner and Gary Luker

Staff Appreciation Lunch - July 2016



Left picture: Heidi Thompson, Akira Ono, Michael Imperiale, Mary O’Riordan, Nicole Koropatkin, Philip King, Marilyn Weir and Bonnie Krey

Middle picture: Joel Swanson, Ann Smith, Eric Martens, Vince Young, Michelle Swanson, Margaret Allen and Vernon Carruthers

Right picture: Nancy Katon, Sheryl Smith, Maria Sandkvist, Kathryn Eaton, Alice Telesnitsky, Malani Raghavan and Denise Kirschner

Faculty Promotions, Honors, and Awards 2016

Vern Carruthers – UM Endowment for the Basic Sciences 2016 Recognition Award

Oveta Fuller – Director, African Studies Center, 2016-2017; completed the 18 month UM Rudi Ansbacher Women in Academic Medicine Leadership program

Gary Huffnagle – Named the Nina and Jerry D. Luptak Professor in the UM Mary H. Wesier Food Allergy Center; appointed Professor, Molecular, Cellular, and Developmental Biology

Michael Imperiale – Rackham Distinguished Graduate Mentor Award

Phil King – UM Endowment for the Basic Sciences 2016 Teaching Award

Denise Kirschner – Elected President, The Society of Mathematical Biology

Yasmina Laouar – Promoted to Associate Professor with tenure

Eric Martens – Promoted to Associate Professor with tenure; selected for the Program Committee of the American Society for Microbiology 2016 Conference on Beneficial Microbes

Beth Moore – Named the Galen B. Toews, M.D. Collegiate Professor of Pulmonary and Critical Care Medicine; American Thoracic Society Assembly on Allergy, Immunology and Inflammation, Chair-elect

Patrick Schloss – Named Frederick G. Novy Professor of Microbiome Research

Michele Swanson – Co-author with Emeritus Professor **Fred Neidhardt** of *Microbe*, the second edition of the undergraduate textbook published in 2016 by ASM Press.

Alice Telesnitsky – UM Endowment for the Basic Sciences 2015 Recognition Award

Sei Yoshida – Promoted to Assistant Research Scientist

Vince Young – Promoted to Professor, Internal Medicine

Postdoctoral News

The M&I Postdoctoral Association (M&IPA) was formed to provide additional career development, research opportunities, and a social network for postdoctoral fellows in the department. All M&I-associated postdocs are welcome to attend our monthly meetings, which feature speakers from across campus that provide resources or training to researchers.

Anna Seekatz from **Vincent Young, M.D./Ph.D.**'s lab acted as this year's M&IPA president. sharing leadership of the group with other active postdoctoral fellows: **Darrell Cockburn** (Koropatkin lab) and **Kaitlin Flynn** (Schloss lab) were liaisons with the University-wide Postdoctoral Association; **Kaitlin Flynn** was also a postdoc administrator of the meetings; **Joyce Wang** (Snitkin lab) and **Marc Sze** (Schloss lab) drafted meeting summaries; and **Kalyani Pyaram** (Chang lab) led the DEI discussions and summarized issues relevant to postdocs within the M&IPA. Some of the topics covered in our meetings included mentoring (provided by Vicki Ellingrod, Pharm.D. from the School of Pharmacy), training grants and career development opportunities available from the Michigan Institute for Clinical and Health Research (MICHR), tips on handling manuscript resubmission and the peer review process (Nick Wigginton, Ph.D., *Science* editor), the tenure process at UM (**Michael Imperiale, Ph.D.**), and business development training and funding through the Fast Forward Medical Innovation group. The M&IPA is honored to have the opportunity to invite two postdoc-invited speakers for the 2016/2017 departmental seminar series: Lauren Bakaletz, Ph.D., Director of the Center for Microbial Pathogenesis and Vice President of the Research Institute at Nationwide Children's Hospital at The Ohio State University College of Medicine (Fall 2016), and Dana Philpott, Ph.D., Associate Professor in the Department of Immunology at the University of Toronto (Spring 2017). This series enables postdocs to engage with national leaders with various scientific expertise, meeting individually to gain career advice and discuss diverse research interests, gaining valuable external insight into the challenges of becoming independent investigators. We look forward to hosting both Dr. Bakaletz and Dr. Philpott this year.



Joyce Wang



Matthew Doherty and Kaitlin Flynn



Shawn Whitefield, Stephanie Spohn and Anna Seekatz

M&I postdocs continue to publish high-impact papers and present at national or international conferences. In continued involvement with the American Society for Microbiology (ASM), numerous postdocs presented at this year's ASM Microbe 2016 in Boston, which for the first time combined the General Meeting with ICAAC. M&I postdocs also presented oral or poster abstracts at the Federation of American Societies for Experimental Biology, Immunology 2016, American Society for Virology Annual Meeting, Anaerobe 2016, Clinical and Scientific Advances in UTI, ASM Beneficial Microbes, MSISB Mount Sinai Systems Pharmacology, International Conference on Mathematical and Computational Medicine, various Keystone Symposia, the Sixth Symposium on the α -Amylase Family in Slovakia, and IDWeek. Several postdocs received travel grants to attend these meetings. **Kalyani Pyaram** received the M&I departmental travel award to attend Immunology 2016, **Anna Seekatz** received the ASM Infectious Disease Fellowship to attend ASM Microbe, and **Sebastien Crepin** (Mobley lab) received the ICAAC Program Award in the area of Pathogenesis of Microbial Diseases at ASM Microbe. Additionally, M&I postdocs were also selected to chair various sessions at national meetings or invited to speak at other institutions. **Chelsie Armbruster** (Mobley lab) was an invited speaker in the Wake Forest Microbiology & Immunology seminar series. **Darrell Cockburn** will serve as the 2017 President for the Gordon Research Seminar on Cellulases and Other Carbohydrate-Active Enzymes. **Anna Seekatz** taught in a pre-conference workshop at Anaerobe 2016 in Nashville, TN.

Several M&I postdocs were awarded competitive awards, grants, or fellowships throughout the year. After last year's K99/R00 award from NIDDK, **Chelsie Armbruster** was awarded a pilot grant through the UM Geriatrics Center. **Laura Mike** (Mobley lab) received the ASM Career Development Grant for Postdoctoral Women to attend a course on 1-D and 2-D NMR, and she was awarded a two-year fellowship from the American Urological Association. **Jeffrey Perry** (Tai lab) and **David Hill** (Young lab) were awarded MICHR Postdoctoral Translational Scholars Program training grants. **Geoffrey Hannigan** (Schloss lab) and **Geetha Kannan** (Carruthers lab) received F32 training grants from the Molecular Mechanisms of Microbial Pathogenesis (MMMP) training program.

The accomplishments of the M&IPA did not go unrecognized, and several individuals received promotions within the department or accepted faculty positions elsewhere. **Chelsie Armbruster** was promoted to Research Investigator in M&I, and she will be taking an assistant professor position at the State University of New York at Buffalo Microbiology & Immunology Department. After his promotion to Research Investigator upon moving to Michigan State University (DiRita lab, now at MSU), **Jeremiah Johnson** accepted an assistant professor position in the Department of Microbiology at the University of Tennessee. **Kari Debbink** (Lauring lab) accepted a research fellow position at the NIH in Ted Pierson, Ph.D.'s lab.

We sincerely thank the support of our department chair, **Harry Mobley, Ph.D.**, for supporting our community, which provides a forum for professional development. We also thank all of the office staff members, particularly **Bonnie Krey**, for assistance.

–Anna Seekatz

Graduate News

The UM Organization for Microbiology and Immunology Students (OMIS) is a student-led organization that provides an avenue for graduate student collaboration and communication within our department. Additionally, OMIS is a great resource for promoting feedback between faculty and students, because OMIS representatives are able to present student interests and concerns during department faculty meetings. This past year, **Hayley Warsinske** and **Matt Foley** served as co-presidents of OMIS, working to improve the student experience and developing new student initiatives.

The UM M&I Department has a proud history of student accomplishment, and UM training programs with a long-standing history of graduate student funding support many of our own. **Ali Mirza**, M.S. student, received a Rackham Summer Award. The Molecular Mechanisms of Microbial Pathogenesis Training Program awarded new traineeships to **Megan Procaro** and **Charles Wang** and renewed funding for **Chris Sumner**, **David Lin** and **Evie Coves-Datson**. The interdisciplinary Genetics Training Program awarded a traineeship to **Katie Brennan**. **Ellyn Schinke**, a dual degree trainee obtaining a Ph.D. in M&I and a M.S. in Hospital and Molecular Epidemiology from the School of Public Health (SPH), has received renewed funding from the SPH Integrated Training in Microbial Systems Training Program. **Ada Hagan**, founder of the MiSciWriters blog (www.misciwriters.com) and student group for science writing, received renewed funding from the American Society for Microbiology (ASM) Robert D. Watkins Fellowship as well as a Rackham Merit Fellowship. **Shawn Whitefield** received renewed



Natalie Maricic



Matthew Foley



Jessica Beauchamp and Mary O'Riordan



Travis Kochan, Nick Lesniak and Danelle Weakland

funding from the Training Program in Translational Research and received an Outstanding Student Abstract award at ASM Microbe. **Jhansi Leslie** and **Amanda Wong** both received Rackham Pre-doctoral Fellowships this year. **Olivia McGovern** received a second year of funding as a Ruth Kirschstein NRSA Fellow.

Graduate students also won many prestigious awards from outside the University. **Hayley Warsinske** was awarded the Lee Segel Prize for best student paper in the Bulletin of Mathematical Biology from the Society of Mathematical Biology, and she was invited to give an oral presentation at the European Conference on Mathematical and Theoretical Biology. **Megan Procaro** received Honorable Mention for her application to the NSF Graduate Research Fellowship Program. **Matthew Foley** was awarded the second place poster prize at the Sixth Symposium on the α -Amylase Family in Smolenice Castle, Slovakia. **Matthew Jenior** took third place in the Anaerobe Society of the Americas Young Investigator Poster Competition. **Ursula Waack** received a travel award to ASM Microbe 2016 in Boston, Massachusetts and gave an oral presentation at South Dakota State University on career opportunities and obtaining a Ph.D. At ASM Microbe 2016, **Shawn Whitefield** received an Outstanding Student Abstract award and **Olivia McGovern** gave an oral presentation. **Sukhmani Bedi** and **J.T. McCrone** gave well attended talks at the American Society of Virology meeting in Blacksburg, Virginia. Recent graduate **Jessica Beauchamp** gave an oral presentation at Northern Michigan University.

–Matt Foley and Hayley Warsinske

Ph.D. Graduates - November 2015 through October 2016

Michael Engstrom “Regulation of the Uropathogenic *Escherichia coli* *tos* Operon and Its Implications for an Expansion of Microbial Reciprocal Regulation Between Adherence- and Motility- Related Genes.” February 22, 2016. Mentor: Harry Mobley

Victoria Holden “The Impact of Siderophores and Iron Acquisition on *Klebsiella pneumoniae* Pathogenesis.” March 17, 2016. Mentor: Michael A. Bachman

Nielson T. Baxter “Microbiota-Based Models Enhance Detection of Colorectal Cancer.” May 6, 2016. Mentor: Pat Schloss

Chelsea Rule “Structural and Functional Insights into the Type II Secretion System of *Vibrio cholerae*.” May 10, 2016. Mentor: Maria Sandkvist

Juliana Cunha “Select Membrane Proteins Modulate MNV-1 Infection of Macrophages and Dendritic Cells in a Cell Type-Specific Manner.” June 30, 2016. Mentor: Christiane Wobus

Natalie Maricic “Genetic and Structural Characterization of Pneumolancidin, a Broad Spectrum Inhibitory Lantibiotic, Produced by *Streptococcus pneumoniae*.” July 22, 2016. Mentor: Suzanne Dawid

Jessica Beauchamp “Localization of the Natural Transformation Machinery and Mechanisms of DNA Selection in *Campylobacter jejuni*.” August 19, 2016. Mentors: Victor DiRita and Suzanne Dawid

Bringing Home the Gold



Amanda Elmore

“I mean, I guess I’m OK”. With that simple answer to a question about her rowing skill, Amanda Elmore (PIBS 2013) asked if she could use her final year of NCAA eligibility to row for the University of Michigan while rotating with my research group. Six months later, Amanda joined my research group as a Ph.D. student. For weekend fun my family and I would watch Amanda and her teammates take on Big 10 rivals in the Huron River. Shortly after competing in the 2014 NCAA championships, Amanda told me that she had been invited to train with the US Olympic Team in Princeton, NJ. She wanted to know whether she could go and try to make the team. This set off a mad dash to create a project that Amanda could work on while away from the lab. She told me, “I’ve balanced sports and school my whole life, so if we figure out a project I’ll make time to get it done.” And she did. Over the past two years, Amanda and I have Skyped together to talk about her progress on the project – characterizing the pan genome of *Fusobacterium nucleatum*, a bacterium found in everyone’s mouth, but only in the colons of people with inflammatory bowel disease and colon cancer.



After beating the rival German team to win the 2015 World Championships, Amanda’s focus turned to being selected to compete in Rio. While microbiologists (and everyone else) worried about contaminated water, the team was more concerned about the size of the waves that caused several days of rowing to be canceled. Back in Ann Arbor, about 20 of Amanda’s friends and colleagues joined on a Saturday morning to watch NBC broadcast the final event and to cheer her on. Sitting in the stroke seat, Amanda helped her teammates keep a strong pace and win the gold medal. She was so exhausted from the race that on the medal stand, her teammates had to hold Amanda up. Since Rio, Amanda has made numerous television appearances with her teammates, was introduced to 110,000 screaming football fans during the Penn State game, and met President and Mrs. Obama and Vice-President Biden at the White House. Amanda even let her colleagues in M&I dote over her and her gold medal at a special reception in the department.

Through this amazing experience Amanda has remained the same humble, kind, and hardworking person who is in awe of microbiology. It is too early to tell whether Amanda will be trying to help the US win another gold in the 2020 Tokyo Olympics, but for now, it is pretty awesome for all of us to work with someone who is not satisfied to simply be the best in the world at her sport. Like all of our students, Amanda wants to be the best in the world in her academic pursuits. It is clear that her discipline in athletics is helping her academic training as well—she’s definitely a little better than just “OK.”

–Pat Schloss

A video about Amanda produced by the UM Medical School can be found at <https://youtu.be/NvBlioXLv48>

Welcome Doctoral Student Class of 2015!



Kathryn Brennan
Evan Snitkin



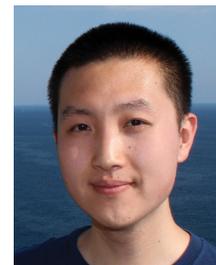
Nicholas Lesniak
Pat Schloss



Zachary Mendel
Joel Swanson



Megan Procario
Adam Lauring



Charles Wang
Suzanne Dawid



Danelle Weakland
Harry Mobley

Kathryn Brennan, B.S. in Biology, California Institute of Technology, Pasadena, CA

Nicholas Lesniak, B.F.A. in Industrial Design, College for Creative Studies, Detroit, MI and B.S. in Cellular and Molecular Biology, University of Michigan, Ann Arbor, MI

Zachary Mendel, B.S. in Biochemistry, American University, Washington D.C.

Megan Procario, B.S. in Biological Sciences, University of Pittsburgh, Pittsburgh, PA

Charles Wang, B.A. in Biology, Washington University in St. Louis, St. Louis, MO

Danelle Weakland, B.S. in Biology, Pennsylvania State University, University Park, PA

Welcome Master's Student Class of 2016!



Jenna Barnes



Colleen Brand



Adrianna Correa-Vallecilla



Trey Williams



Tian-Hui Zhou

Jenna Barnes, B.S. in Biology, Central Michigan University, Mount Pleasant, MI

Colleen Brand, B.S. in Biology, Clemson University, Clemson, SC

Adriana Correa-Vallecilla, B.S. in Biotechnology, La Salle University, Philadelphia, PA

Trey Williams, B.S. in Biomedical Science, Central Michigan University, Mt. Pleasant, MI

Tian-Hui Zhou, B.S. in Biology/General Chemistry, University of Illinois, Urbana- Champaign, IL

Undergraduate News

Ryan Kibler (Koropatkin lab; UM Microbiology Class of 2017) received an American Society for Microbiology Undergraduate Research Fellowship for 2016-2017. He will present his work at the 2017 ASM Microbe meeting in New Orleans. Ryan has been studying the mechanism of starch degradation by human gut bacteria for the last two years. After graduation he plans to pursue a doctorate in biochemistry.

Anna-Lisa Lawrence (Carruthers lab; UM CMB Class of 2016) helped define contributions of host trafficking machinery to a protein ingestion pathway in *Toxoplasma* with Ph.D. candidate Olivia McGovern. Anna-Lisa is now a first year PIBS student at UM with interests in neuroscience, microbiome research and model systems.

Siddharth Madipoosi (Carruthers lab; UMMicrobiology Class of 2019) is measuring the burden of *Toxoplasma* ocular infection in mice and expressing recombinant proteins for molecular diagnosis of chronic toxoplasmosis. Siddharth is interested in pursuing a career involving aspects of both public health and medicine.

David Read (Telesnitsky lab; UM Biochemistry Class of 2017) won the award for Best Presentation, 2016 Undergraduate Research Symposium. Since joining Alice's lab in fall of 2015, David has studied HIV latency on a collaborative project between the Telesnitsky, Kidd, and Chang labs. After graduation David will pursue a Ph.D. in bioinformatics, beginning in Fall 2017.

Jarrett Reichel (Imperiale lab; UM Microbiology Class of 2018) received University Honors for 2015-2016 and was named to the National Society of Collegiate Scholars. In the Imperiale lab, he studies codon bias in BK polyomavirus.

Sydney Shuk (Spindler lab; UM Microbiology Class of 2017) was a Summer Research Intern in Counterterrorism Operations Support, Department of Homeland Security in Las Vegas, NV. Her work involved protocol development for responses to various attacks or incidents; the experience cemented her desire to obtain an MPH in epidemiology after graduation. In the Spindler lab, Sydney is working on virus-host interactions of mouse adenovirus type 1 infections.



Sydney Shuk (right)

Sophia Svoboda (Wobus lab; UM Microbiology Class of 2017) was awarded a UROP Summer Biomedical & Life Sciences Summer Research Fellowship, providing 10 weeks of summer support. Sophia has spent the past year characterizing a panel of monoclonal antibodies directed against murine norovirus. After completing her B.S., she plans to work for a year as a research technician before going to graduate school.

Alex Wells (Carruthers lab; UM Microbiology Class of 2017) helped to identify the function of a secreted phospholipase in *Toxoplasma* egress from host cells with Ph.D. candidate Aric Schultz. Alex plans to pursue a career in epidemiology after completing her senior year at UM.

Microbiology 450: Immersion in Zambia

The Microbiology 450 course “Global Impact of Microbes: Fieldwork” was hosted in Zambia for four weeks in May-June 2016 by the Council of Churches of Zambia (CCZ). Five UM students and two faculty, **Oveta Fuller** from M&I and Avery Demond from Civil and Environmental Engineering, continued research and workshops of an education-based intervention that moves biomedical science discoveries into community use through networks of religious leaders. Pre-departure team training for the immersion occurred on campus throughout the winter term. This was the fifth team of microbiology and infectious diseases students for the experiential learning since a version of the course began in 2010.

The 2016 team worked with CCZ and long-term collaborative partners, the African Methodist Episcopal Church and Rainbow Africa. Among other places, they visited the Tropical Diseases Research Center of the World Health Organization in Ndola and the Center for Disease Control and Prevention of Zambia, the University Teaching Hospital and the Department of Population Studies at the University of Zambia in Lusaka.

Including the 2016 immersion, a total of 37 students have participated in the Micro 450 global immersion course, gaining an understanding of HIV/AIDS, tuberculosis, malaria and other infectious diseases outside the classroom. Students witness the complex interplay of health care infrastructure, poverty, gender inequality, and access to education in relation to transmission of microbes and treatment of infectious diseases.

The immersion is funded in part by internal UM grants from the Center for Research on Learning and Teaching, the African Studies Center and the International Institute.

Undergraduate Research Symposium

This summer, **Nicole Koropatkin, Ph.D.** organized one of the largest annual undergraduate research symposiums the M&I Department has had. On August 11, 2016, ten undergraduates presented work they have done in labs of M&I department faculty. The Department of M&I Research Alternatives and Opportunities fund, supported by a number of donors, sponsored the 2016 Undergraduate Research Award. The judges, **Maria Sandkvist, Ph.D.** and **Evan Snitkin, Ph.D.**, selected **David Read** as the recipient of this award. David is majoring in biochemistry at UM and has been working in **Alice Telesnitsky's** lab for the last year. His excitement for science and research was evident in his impassioned and thorough presentation, titled “Using zipcodes to track HIV.” David looks forward to furthering his research and beginning education towards a doctorate in the future.

–Nicholas Lesniak



Alumni News

Zack Abbott (Ph.D. 2015, M. Swanson), formerly a consultant at Biorasi, a clinical research organization in Miami, was admitted to *Y Combinator*, a Bay Area accelerator program that trains and funds entrepreneurs to launch their own business.

Laura Bauler (Ph.D. 2009, O’Riordan) has a position as Scientific Writer and Editor, Western Michigan University.

Tim Bauler (Ph.D. 2009, King) is an Assistant Professor at Western Michigan University Medical School.

Andrew Bryan (M.D., Ph.D. 2011, M. Swanson) is an Acting Assistant Professor in the Department of Laboratory Medicine at the University of Washington in Seattle.

Elizabeth Cameron (Ph.D. 2014, Martens) is an NIH Ruth L. Kirschstein Postdoctoral Fellow in the laboratory of Dr. Vanessa Sperandio at the University of Texas Southwestern Medical Center.

Chris Carter (M.D., Ph.D. 2009 [CMB], Collins) is an Infectious Disease Fellow, University of Washington School of Medicine, Seattle, WA.

Khalil Chedid (M.P.H. 2016, Capstone with Sandkvist) is currently in the Ph.D. program in Epidemiology at the UM School of Public Health.

David Collins (Ph.D. 2015, Collins) is a Howard Hughes Medical Institute Postdoctoral Fellow at Harvard University, with Dr. Bruce Walker.

Juliana Cunha (Ph.D. 2016, Wobus) is a Postdoctoral Fellow, UM Molecular and Integrative Physiology, with Dr. Bishr Omary.

Zach Dalebroux (Ph.D. 2010, M. Swanson) is an Assistant Professor in the Department of Microbiology & Immunology at the University of Oklahoma Health Sciences Center.

Mahesh Desai (Postdoc, Martens) is a Principal Investigator at the Luxembourg Institute of Health.

Shandee Dixon (Ph.D. 2012, Hanna) is a Diversity and Inclusion in Research Postdoctoral Fellow in the Molecular Microbiology & Immunology department at the Oregon Health and Science University in Portland, in the laboratory of Dr. Fikadu Tafesse.

Zhicheng (Bigbean) Dou (Postdoc, Carruthers) is now an Assistant Professor of Biology and a member of the Eukaryotic Pathogens Innovations Center (EPIC) at Clemson University.

Michael Elftman (Postdoc, Wobus) is an Assistant Professor of Biomedical and Diagnostic Sciences at University of Detroit Mercy School of Dentistry.

Lei Fang (Ph.D. 2004 [UGA Genetics], Spindler) is Director, Product Development, Adaptive Biotechnologies, South San Francisco, CA.

Maris Fonseca (Postdoc, M. Swanson) is an Associate Professor at Monroe County Community College in Monroe, MI.

Shilpa Gadwal (Ph.D. 2014, Sandkvist), is a Career Advancement Fellow at the American Society for Microbiology in Washington, DC.

Eric Garcia (Ph.D. 2010 [CMB], Telesnitsky) is a Research Assistant Professor of Microbiology, Immunology, and Molecular Genetics at the University of Kentucky, Lexington, KY.

Erin (Hagan) Garcia (Ph.D. 2009, Mobley) is an Assistant Professor of Microbiology, Immunology, and Molecular Genetics at the University of Kentucky, Lexington, KY.

Lisa Gralinski (Ph.D. 2008, Spindler) is a Research Associate, University of North Carolina, Chapel Hill. She has been invited to give a lecture on her work on SARS coronavirus and the Collaborative Cross mice in Wuhan, China at the 7th International Symposium on Emerging Viral Diseases.

Miranda Gray (Ph.D. 2011, Sandkvist) is a postdoc in Microbiology and Immunology with Dr. Anthony Maurelli at Uniformed Services University of the Health Sciences, Bethesda, MD. Miranda served as the President of the USU Postdoctoral Association.

Kofi Gyani (ASM Capstone Fellow 2013, M. Swanson and 2013 Pre-MSTP scholar, Wobus) is a graduate student in Computational Biology & Medicine at Weill Cornell Medical College in New York City.



Zack Abbott, Thomas Schmidt and Christopher Sumner

Jeremiah Johnson (Postdoc, DiRita Lab) is an Assistant Professor in the Department of Microbiology at University of Tennessee, Knoxville.

Tanya Johnson (Research Investigator, Sandkvist) is the Science Complex Manager at Eastern Michigan University.

Matthew Kasper (Ph.D. 2005, Collins) is Lt. Cmdr., Deputy Director for the Global Emerging Infections Surveillance and Response System at Armed Forces Health Surveillance Center.

Deanna Kulpa (Postdoc, Collins) is an Assistant Professor of Pediatrics, Laboratory of Biochemical Pharmacology at Emory University School of Medicine.

Phil Lapinski (Ph.D. 2009 [Immunology], King) is a Research Investigator in the laboratory of Dr. Phil King at the University of Michigan.

Jolie Leonard (Ph.D. 2011 [CMB], Collins) is an Assistant Professor of Biology at Indiana Wesleyan University, Marion, IN.

Beth Lubeck (Ph.D. 2015 [Immunology], King) is a Postdoctoral Fellow in the laboratory of Dr. Mark Kahn at the University of Pennsylvania.

Mary McCarthy (Ph.D. 2014, Weinberg) is an NIH Ruth L. Kirschstein Postdoctoral Fellow and recipient of a Spring 2016 Immunology Grant from BD Biosciences in the laboratory of Dr. Tem Morrison at the University of Colorado School of Medicine. She is the recipient of the 2016 MacNeal Dissertation award in the M&I Department.

Lucy McNamara (Ph.D. 2013, Collins) is a Senior Service Fellow (Epidemiologist) at the Centers for Disease Control and Prevention.

Martin Moore (Ph.D. 2003 [UGA Genetics], Spindler) has been promoted to Associate Professor of Pediatric Infectious Disease and is the Director, Children's Center for Childhood Infectious and Vaccines at Emory University School of Medicine. He has been named a Research Scholar of Children's Healthcare of Atlanta.



Jason Weinberg and Mary McCarthy

Jason Norman (Ph.D. 2010, Collins) is a Scientist at Vedanta Biosciences, Boston, MA.

Adewunmi Nuga, M.D. (Ph.D. 2007, Telesnitsky; Postdoc, Collins) is currently a resident in the UM Medicine and Pediatrics Program.

Tyler Nusca (Ph.D. 2012, Sherman) is an Associate Scientist-Strain Engineer at AbSci, a biotech company focusing on protein production technologies in Portland, OR.

Jen Oliver (Ph.D. 2012 [Immunology], King) is a freelance medical science writer in Michigan.

Marcy Patrick (Ph.D. 2011, Sandkvist) is a Senior Scientist at Addgene (Cambridge, MA).

Jeff Perry (Ph.D. 2012, Wobus) is a Postdoctoral Fellow, UM Internal Medicine, with Dr. Andrew Tai.

Julie Pfeiffer (Ph.D. 2001, Telesnitsky) has been named a Howard Hughes Medical Institute Faculty Scholar. Julie is an Associate Professor at University of Texas Southwestern Medical Center.

Yolanda Rivera (2015 PREP student, M. Swanson) is a graduate student in the UM M&I Department.

Jeremiah Roeth (Ph.D. 2005 [CMB], Collins) is Senior Director, DNA Vector Development, UVD, Intrexon Corporation.

Theresa Rogers (Postdoc, Martens) is an Assistant Professor of Biology at California Lutheran University.

Marijo Roiko (Ph.D. 2013 [CMB], Carruthers) Microbiology Program Director at Altru Health Systems discovered a new species of bacteria, *Pontibacter altruii*, which she named after her employer. Brilliant career decision!

Chelsea Rule (Ph.D. 2016, Sandkvist) is a Pre-Health Advisor in the UM LS&A Newnan Advising Center.

Aleksandra Sikora (Postdoc, Sandkvist) is an Assistant Professor in Pharmaceutical Sciences at Oregon State University. She will present the UM M&I Heritage Lecture on December 1, 2016.

Philip Smaldino (Postdoc, Telesnitsky) is an Assistant Professor in Biology at Ball State University.

Hannah D. Steinberg (summer research student 2013, M. Swanson) is a Masters student in the Hospital and Molecular Epidemiology program at UM School of Public Health.

Elizabeth Wonderlich (Ph.D. 2010 [CMB], Collins) is a Research Assistant Professor at Center for Vaccine Development, University of Pittsburgh.

Natalie Whitfield (Ph.D. 2009, M. Swanson) is the Director of Technical and Laboratory Operations at OpGen.

Maya Williams (Ph.D. 2013 [CMB], Collins) is Lt. Cmdr., Head of the Viral and Rickettsial Diseases Department at Naval Medical Research Center.

Seminars

2016 Michigan Meeting on Microbiomes

Experts from across the continent gathered in Ann Arbor last May to engage the public in a comprehensive discussion of the impact that microbial communities have on our well-being and the environment. This forum, titled “Unseen Partners: Manipulating the Microbial Communities that Support Life on Earth,” was a collaboration between the UM Center for Microbial Systems and the Michigan Meeting program sponsored by the Horace H. Rackham School of Graduate Studies. The Michigan Meetings are designed to both support and enhance the ability of UM faculty to address topics of interdisciplinary and global importance and to identify Ann Arbor as an international center for scholarly and social discourse.

Organized in large part by **Tom Schmidt, Ph.D.** (professor in the Department of Internal Medicine/Division of Infectious Diseases and Ecology and Evolutionary Biology), **Anna Seekatz, Ph.D.** (Young lab) and Michael Dority (UM Internal Medicine), the symposium highlighted representatives from a breadth of scientific disciplines including medicine, ecology, genetics, public health, environmental studies, civil engineering, and climate science. Each speaker demonstrated how the emerging field of microbiome study is impacting their current and future endeavors. The potential positive and negative implications of tinkering with these “Unseen Partners” was on full display throughout the meeting.

During the event, MiSciWriters, a graduate student group, chronicled in detail the happenings of each day. Their blog can be found at <https://misciwriters.com/2016/05/16/michigan-meeting-2016-coverage/>



Some highlights from the Michigan Meeting:

- Derek Lovley, Ph.D., University of Massachusetts, spoke on his work with electrically conductive microbial communities. Dr. Lovley described how *Geobacter* species present in these conductive communities use microbial nanowires to mediate Direct Interspecies Electron Transfer (DIET). He went on to discuss the possibility of harnessing DIET to produce batteries fueled by bacterial degradation of biological material.
- Norman Pace, Ph.D., Professor of Developmental Biology at the University of Colorado, and Ford Doolittle, Ph.D., Professor Emeritus at Dalhousie University took the stage in a rousing debate over the nature of the tree of life, the relevance of the term prokaryote, and the origin of eukaryotic life. The sparring between Doolittle and Pace was so fierce at some points that some wondered if the two would be able to reconcile their differences once the debate ended. These worries were assuaged though as the former opponents shared a friendly embrace at the conference wrap-up the following day.
- Each evening was closed with a primetime session open to the public. The first of these presentations was focused on the overall influence the microbiomes have on us and our society. Jack Gilbert, Ph.D., Professor of Surgery at the University of Chicago, and Ed Yong, science writer for The Atlantic, paired up to tackle this broad presentation. This session was covered in detail by Irene Park of The Michigan Daily: <https://www.michigandaily.com/section/news/session-discusses-role-microbes-human-health>
- For the final evening session, **Vincent Young, M.D./Ph.D.**, UM M&I and Internal Medicine, and Pilar Ossorio, Ph.D., University of Wisconsin Law, played off each other as they discussed the science and ethics behind fecal microbiota transplantation (FMT). Dr. Young discussed not only FMT’s usefulness for treating the pathogen *Clostridium difficile*, but also the potential complications FMT may pose if not conducted safely and ethically. Young noted that replacing one’s microbiome through FMT could also impact someone’s risk of depression, obesity, and type 2 diabetes. Dr. Ossorio then discussed the issues surrounding FMT from a legal, ethical, and practical standpoint. She explained in detail the reasoning behind the FDA’s hesitancy about licensing FMT and the possibility that FMT may simply be an “interim solution,” since the active ingredient of feces impacting *C. difficile* infections has yet to be characterized.

Overall Ossorio and Young embodied the tone of cautious optimism that permeated throughout the conference. It was a message to embrace the potential of these new discoveries tempered with the reality of our present understanding, and the understanding of how much is left to learn.

–Brad Pingel and Tom Schmidt

Neidhardt-Freter Symposium

The annual Neidhardt-Freter Symposium in Bacterial Physiology and Virulence took place on October 20, 2016. This year's symposium was a special occasion, commemorating the life and contributions of the late Frederick Neidhardt, Ph.D., who passed away just two weeks prior to the event. In tribute to Neidhardt, current Frederick G. Novy Distinguished University Professor and Chair **Harry Mobley, Ph.D.** introduced two special speakers, former Department Chair Michael Savageau, Ph.D. and John Ingraham, Ph.D., both from the University of California, Davis, to memorialize the work and life of Neidhardt, who served as the 4th Chair of the M&I Department. Neidhardt, the Frederick G. Novy Distinguished Professor of Microbiology and Immunology, excelled in his research and service to the scientific community. He established the field of microbial proteomics, focusing on gene regulation and molecular physiology of bacterial growth. Savageau and Ingraham put particular emphasis on his work outside the lab in addressing the recruitment and mentorship of junior faculty, particularly women and minorities. Neidhardt's impact extends to the present diversity of research personnel and expertise in the Department.



Department of Microbiology 1970
Rolf Freter and Frederick Neidhardt (bottom row, middle left and right, respectively)

Our Department is fortunate to have been led by another devoted researcher named in the lectureship, Rolf G. Freter, Ph.D. Freter's research focused on host-human interactions, a field particularly relevant to the present-day interest in microbiome research. Freter's work established the importance of local mucosal immunity in intestinal pathogen defense, pioneering the idea of polymicrobial bacteriology. The work of both Neidhardt and Freter continues to be relevant, garnering citations even in current publications.

The speakers chosen for this year's lectureship honored fields established by both Freter's and Neidhardt's research. **Eric Martens, Ph.D.** introduced the first speaker, Andrew Goodman, Ph.D., from the Department of Microbial Pathogenesis at Yale University School of Medicine, who discussed his work on the causes and consequences of interpersonal microbiome variation. Goodman's exciting research focuses on ecological regulatory mechanisms of different *Bacteroides fragilis* and *Bacteroides thetaiotaomicron* strains in a gnotobiotic mouse model. **Nicole Koropatkin, Ph.D.** introduced the second speaker of the symposium, Christine Szymanski, Ph.D., from the Department of Microbiology at the University of Georgia. Szymanski presented a talk titled, "New paradigms for *Campylobacter jejuni* survival in the gut." Her work focuses on the impact of sugar metabolism on *C. jejuni* glycosylation and how it pertains to gut colonization. Both speakers noted the contribution that Neidhardt's and Freter's work has had on their own research.

–Anna Seekatz

Heritage Lectureship

The Department of Microbiology and Immunology's Heritage Lecture is an annual opportunity to invite outstanding alumni back to Ann Arbor to reconnect with the department. Invited former trainees (students and postdocs) have all built successful careers in their respective fields, and the lectureship gives current trainees and faculty the opportunity to meet and interact with them. The Department's 2015 Heritage invited speaker was **David Hendrixson, Ph.D.**, an Associate Professor at the University of Texas Southwestern Medical Center at Dallas. A former postdoctoral trainee in **Victor DiRita's** lab, Dave described some of his research studying the genetics of *Campylobacter jejuni* and *Helicobacter pylori* in his December 3, 2015 talk entitled, "How to build a polar flagellar motor in bacterial pathogens."

–Ada Hagan

Willison Lectureship

On November 5, 2015 the Department of Microbiology and Immunology had the honor of hosting Jeffrey Weiser, M.D. for the annual Willison Lectureship. The lectureship was established in 1988 by former M&I doctoral trainee, Frances Willison Bishop, Ph.D. in honor of her parents. Dr. Weiser was the postdoctoral mentor for two M&I affiliated professors, **Suzanne Dawid, M.D., Ph.D.**, and **Michael Bachman, M.D./Ph.D.**, during his time at the University of Pennsylvania. Dr. Weiser is now a professor and chair of Microbiology at New York University School of Medicine. In his talk, titled “Subversion of inflammatory responses by the pneumococcus”, he described his lab’s research into the mechanism of secondary pneumococcal infections following influenza.

–Ada Hagan

MacNeal Awards

Each year the Ward J. MacNeal Distinguished Dissertation Award is given to a M&I Ph.D. graduate whose dissertation demonstrates a number of qualities that include a degree of innovation, creativity, and insight into their work, and an effectiveness of writing that is reasonably understandable to readers of various disciplines.

The 2015-2016 Ward J. MacNeal Distinguished Dissertation Award recipient was **Joseph P. Zackular, Ph.D.** Zackular’s dissertation research, titled “Characterizing the Role of the Gut Microbiome in Colorectal Cancer,” was conducted in the lab of **Patrick Schloss, Ph.D.** Over the course of his graduate studies Zackular published 3 articles as the primary author and a 4th paper as the secondary author. He is currently a postdoctoral research fellow at Vanderbilt University in the lab of Eric Skaar, Ph.D. On March 11, 2016, Zackular returned to Michigan to speak about his current research in a talk titled “Impact of Dietary Metals on the Gut Microbiota and *Clostridium difficile* Infection.”



Pat Schloss and Joseph Zackular

The 2016-2017 MacNeal Award recipient was **Mary K. McCarthy, Ph.D.** McCarthy’s dissertation entitled, “Host Inflammatory Responses to Adenovirus Respiratory Infection,” was completed under **Jason Weinberg, Ph.D.**’s mentorship. McCarthy published 5 first-author primary research articles, 2 reviews, and was a co-author on 2 other primary articles from the Weinberg lab. McCarthy is a postdoctoral researcher at the University of Colorado, Denver, with Thomas (Tem) Morrison, Ph.D. On September 30, 2016, McCarthy gave her MacNeal lecture entitled “Chikungunya Virus Infection Alters the Architecture and Impairs the Function of the Draining Lymph Node.”

–Brad Pingel and Kathy Spindler

Postdoctoral Fellow-Invited Seminar

In late October 2015, the M&I postdocs hosted David Russell, Ph.D., the William Kaplan Professor of Infection Biology in the Department of Microbiology & Immunology at Cornell University. He gave a fascinating talk entitled “Tuberculosis, HIV, and the impact of the host cell environment.” He presented four stories from his lab, focused on understanding the interplay between the metabolism of the pathogen and the host cell, and novel approaches that his lab is using to identify weak links in bacterial metabolism that can be exploited for drug development. His seminar had something for everyone, including bacterial pathogenesis, virology, and the immune response. Dr. Russell also presented a fascinating study on the potential role of alveolar macrophages as a reservoir for HIV, based on samples from human subjects in Malawi.

–Anna Seekatz

Graduate Student-Invited Seminar

On Thursday September 29, 2016, the M&I Department was treated to a talk by Eric P. Hoberg, Ph.D., the graduate student-invited speaker for the Fall 2016 research seminar series. Dr. Hoberg is a zoologist at the USDA Animal Parasitic Disease Laboratory in Beltsville, MD, where he analyzes coevolutionary and biogeographic relationships for nematodes infecting Holarctic ungulates, North American hooved mammals such as deer. During his talk, titled “Consequences of Living on the Planet: Complexity, Accelerating Change and Emergent Pathogens,” Dr. Hoberg described the evidence that suggests that climate and biodiversity have a much greater impact on the evolution of a pathogen than does the pathogen’s preferred host. He also discussed how anthropomorphic climate change is impacting the behavior of parasites in North America.

–Brad Pingel

Events

M&I Departmental Retreat

In mid-October, M&I faculty and trainees met for the M&I Departmental Retreat. This year, the event was a joint venture with the Michigan State University Department of Microbiology and Molecular Genetics, chaired by previous M&I faculty member, Victor DiRita, Ph.D. The two chairs, DiRita and **Harry Mobley, Ph.D.**, opened the meeting, emphasizing the strengths of each department and opportunities for collaboration. Chris Waters, Ph.D., from MSU and **Vern Carruthers, Ph.D.** gave the first presentations, which were followed by a trivia night jointly hosted by MSU and M&I graduate students.



Representatives from both departments kicked off the next morning’s program. This included **Neal Hammer, Ph.D.** (UM M&I alumnus), Cecilia Martinez-Gomez, Ph.D., and Taylor Dunivin, a graduate student in Ashley Shade’s lab, all from MSU and **Jie Geng, Ph.D.**, from **Malini Raghavan, Ph.D.**’s lab, **Mark Anderson, Ph.D.**, from the Mobley lab, and **Adam Lauring, Ph.D.** from UM. Following these faculty presentations, attendees chose between concurrent break-out sessions focused on various shared interests between the departments. Gemma Reguera, Ph.D. (MSU), Andy McColm (MSU Innovation Center), **Zach Abbott, Ph.D.**, and **Niel Baxter, Ph.D.**, (both former M&I graduate students) presented a career panel for the trainees on alternatives to academia, focusing on the biotech industry, entrepreneurial endeavors and college teaching. This was followed by a 5-minute flash talk session that showcased the work of 10 trainees from each institution. These talks were a great advertisement for the poster session that followed, in which trainees and faculty members could informally highlight and discuss their latest work. After working all day, the evening was completed with a “science-oke” event - that is, karaoke where the song lyrics were recrafted to reflect scientific topics such as bacteria, viruses, and the peer review process. This was an event filled with creativity and laughter! The next morning, there was a quick wrap-up session to review the discussions from the break-out sessions and discuss ways to continue the friendship and collaborations between these two sister departments. Initial feedback indicates that both faculty and trainees from UM and MSU enjoyed this networking opportunity. Both Departments thank **Nicole Koropatkin, Ph.D.**, **Evan Snitkin, Ph.D.**, Roguera, and Hammer (MSU) for organizing an interactive retreat that will hopefully lead to many future collaborations.

–Anna Seekatz and Nicole Koropatkin



Donations and Gifts

The Department of Microbiology gratefully acknowledges the generosity of donors to the Department in 2015-2016. The Department manages several endowments that provide support for student stipends, tuition expenses, and other scholarly activities in the Department. These funds are essential to further our mission of academic excellence. Details can be found at our website:

<https://leadersandbest.umich.edu/find/#!/med/med/microbio>

We especially encourage you to consider making a donation on GIVING BLUEDAY, Tuesday, November 29, 2016. It's your day to be a Victor for Microbiology & Immunology!

<http://givingblueday.org/>

Donors to Microbiology & Immunology October 1, 2015 – September 30, 2016

Laura C. Alexander
Ben L. Allweiss
Virginia W. Campbell
Alicia Q. Cheek
JoAnn O. Chie
Jennifer Chua
Don B. Clewell
Evelyn M. Coves-Datson
Norma J. Deering
Jack D. Dostal
Gary M. Dunny
Kate A. Eaton
Elizabeth E. Ehrenfeld
Elliot H. Gertel
Lisa M. Hammer
Michael J. Imperiale
Susan M. Jacquez-Dean
Pamela G. Jones
Jack E. Juni
Susannah R. Juni

Debbi Kause
Denise E. Kirschner
Nancy W. Kranz
Samuel Krimm
Lily W. Ladin
Hannah Maier
Laura A. Mike
Michael R. Mowatt
Ruthann Nichols
Sierra Nishizaki
Sally Oey
R.H. and M.J. Olsen Living Trust
Justine M. Pinsky
Elizabeth E. Proulx
Earl J. Pursell
Malini Raghavan
Anita L. Regalado, D.D.S., Family Dentistry
Barbara Ronis
Michael A. Savageau
Moselio Schaechter

Aliza Shevrin
Tyler J. Sisk
Floyd Smith
Rodney J. Sobieski
Katherine R. Spindler
Don Spivak
Lawrence R. Sternberg
Nancy B. Sudia
Katie L. Summers
Jennifer K. Sun
Yvonne Y. Sun
Michele S. Swanson
Alice P. Telesnitsky
Stephanie N. Thiede
Holly Turula
Christina N. Vallianatos
Beth VanDusen
Christiane E. Wobus

Newsletter Editorial Staff

Kathy Spindler, Editor

Ada Hagan, Doctoral Student

Nicholas Lesniak, Doctoral Student

Brad Pingel, Master's Student

Anna Seekatz, Postdoctoral Fellow

Heidi Thompson, M&I Office

Regents of the University: Michael J. Behm, Mark J. Bernstein, Laurence B. Deitch, Shauna Ryder Diggs, Denise Ilitch, Andrea Fischer Newman, Andrew C. Richner, Katherine E. White; Mark S. Schlissel, ex officio

University of Michigan Nondiscrimination Policy Statement

The University of Michigan, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action. The University of Michigan is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation, gender identity, gender expression, disability, religion, height, weight, or veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be addressed to the Senior Director for Institutional Equity and Title IX/Section 504/ADA Coordinator, Office for Institutional Equity, 2072 Administrative Services Building, Ann Arbor, Michigan 48109-1432, (734) 763-0235, TTY (734) 647-1388. For other University of Michigan information call (734) 764-1817.