



# Department of Biology Updates

## A Message from the Chair

Dear Alumni and Friends of the Biology Department,

Welcome to our latest issue of the Biology Department newsletter. We have two issues per year in which we hope to keep you up-to-date on departmental activities and achievements. I encourage you to drop us an e-mail and let us know about any news and developments in your life and career ([BioloogyDept@luc.edu](mailto:BioloogyDept@luc.edu)).

This is the third year in a row that Loyola has matriculated a record number of freshmen, going against the nationwide trend. At the start of this semester we had over 1100 students registered in Freshman Biology. The new interdisciplinary Neuroscience Program has matured to be the third largest major in the College of Arts & Sciences with about 400 majors. The department major continues to flourish with 1600 majors in addition to contributing significantly to teaching the Neuroscience majors.

We continue to seek ways to provide our students with research opportunities in our labs both during the academic year and summer. We funded 13 Biology Summer Research Fellows and three two-year Biology Research Fellowships from departmental allocations, including the Biology Gift Account. However, there were well over 100 students in the labs this past summer. Students participated in a very successful collaborative research program between the Oncology Program at Stritch School of Medicine and the College of Arts and Sciences.

We have been fortunate to hire several new faculty members in the Department. Dr. Diana Kim is a Lecturer who is teaching Anatomy & Physiology and Neuroscience. We were able to recruit two new Assistant Professors, Dr. Jen Beshel, a neuroscientist, and Dr. Mike Grillo, a plant geneticist, teaching Introduction to Neuroscience and Genetics, respectively. In addition, Drs. Christine Beatty, Shauna Price, and Molly Staley have joined the department as Instructors.

We are especially proud of Dr. Jennifer Zitzner. After only 5 years of service she was awarded the most prestigious University-wide teaching award, the Ignatius Loyola Award for Excellence in Teaching. This award "...recognizes faculty whose teaching involves a commitment to excellence, raises global awareness, promotes social justice and educates the whole student". Please join in congratulating her for this remarkable award.

Finally, Dr. Mary Ann Glogowski is retiring at the end of the Fall 2018 semester after teaching in the department for more than 36 years. She has given much to the Department of Biology and especially to the thousands of students she has taught. After retiring, Mary Ann is planning to pursue her interest in dog breeding and shows across the country. Please wish her well on her retirement.

Best wishes, Jim Cheverud, Professor and Chair



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## New Bacterial Genomics Course Examines Bacterial Roles in Human Health



Front bench (left-right): Kennedy Mitchell (Senior Biology & Psychology Major), Mary Batrich (Junior Nursing Major), Sana Khan (Junior Neuroscience Major), Aashaka Shah (Senior Biology & Bioinformatics Major), Zubia Merchant (Sophomore Biology Major)

not revealed. Dr. Catherine Putonti, Associate Professor in the Departments of Biology and Computer Science and a member of the Loyola Urinary Education & Research Collaborative, led the class as they extracted the DNA of their isolates, preparing it for sequencing using next-generation sequencing technology at Loyola's Genomics Facility. Students learned how to assemble and annotate the genomes of their isolates. Through in-depth analyses of the genomes, students predicted (often correctly) if their strain was from an individual with or without a UTI. Students in the course will be co-authors in the forthcoming publication of this study, providing a significant contribution to research in UTI diagnosis and treatment. This course will be offered again in summer 2019, tackling a new bacteria and question in human health.

An estimated 40% of women will develop a urinary tract infection (UTI) in their lifetime. While *E. coli* is the #1 cause of UTIs in women, it is also part of the healthy microflora of a woman's urinary tract. The difference between *E. coli* causing UTIs and benign, commensal strains remains an open question. In a new summer course called Bacterial Genomics, 28 undergraduate Bioinformatics, Biology, and Neuroscience majors began to unravel this mystery. Each student was given two *E. coli* isolates collected from the bladders of women, but the patient's condition (UTI or non-UTI) was



Front bench (left-right): Meghan Rokas (Junior Biology Major), Athina Gerodias (Junior Bioinformatics & Biology Major)

## New Biology Research Faculty

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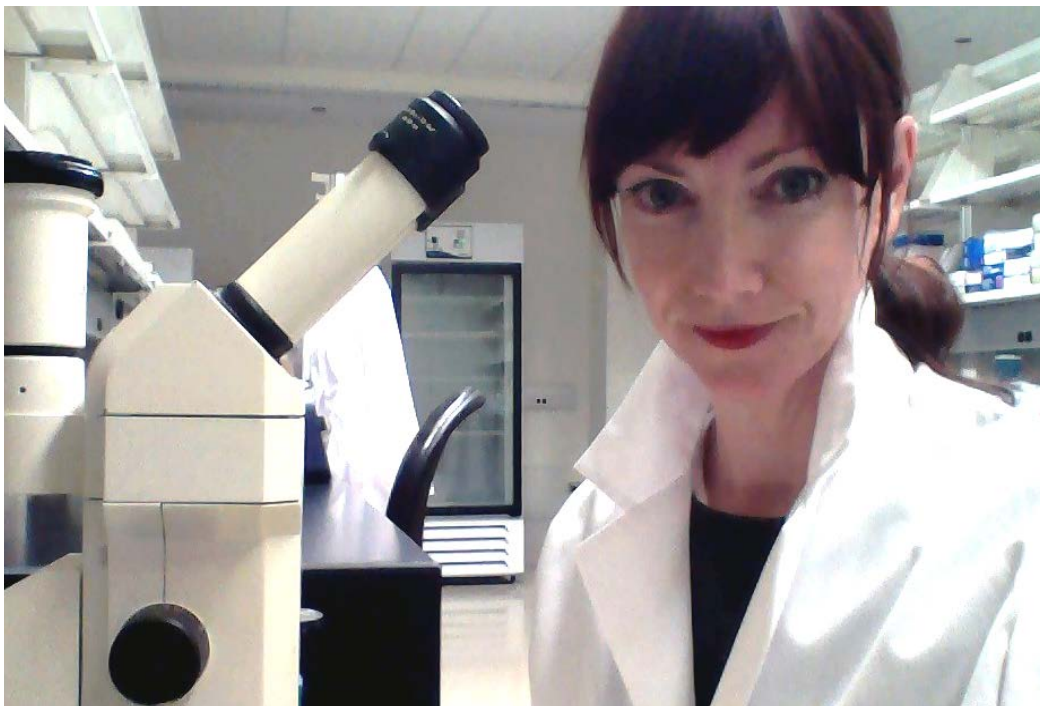
Dr. Michael (Mike) Grillo joined the Biology Department this fall as an Assistant Professor. Dr. Grillo is fascinated by the vast diversity of life on Earth. He has a broad background in evolutionary genetics and the overarching goal of his research is to understand the mechanisms which allow organisms to adapt to their environment. He received his Ph.D. from Michigan State University with his dissertation research focused on examining the genetic basis of adaptation to distinct wetland habitats in the wild relatives of cultivated rice. He then was awarded a National Science Foundation Postdoctoral Fellowship at the University of Illinois at Urbana-Champaign to study genomic aspects of the mutualism between legume plants and symbiotic nitrogen-fixing bacteria. Dr. Grillo loves to travel and has conducted field research in Thailand, India, Costa Rica, and California. At Loyola his lab will be utilizing the greenhouses and environmental growth chambers on the roof of the Quinlan Life Sciences Building to conduct experiments on plant adaptation to abiotic and biotic facets of the environment. Dr. Grillo also served two years as the Academic Programs Coordinator at the W. K. Kellogg Biological Station where he oversaw undergraduate research experiences, internships, and field-based biology courses. At Loyola he is currently teaching Genetics and will be developing a course in Evolutionary Medicine. In his free time Dr. Grillo likes spending time outdoors and enjoys hiking, fishing, camping, and gardening. He is enjoying living in Chicago with his wife, dog, and backyard chickens including a hen named Sister Jess.



Dr. Mike Grillo collecting plants in a coastal sage brush community in southern California

## New Biology Research Faculty (cont.)

Neuroscientist Dr. Jen Beshel also joined the Biology Department as an Assistant Professor this fall. She studies the neural circuits that control food selection and intake and how impairment within these circuits contributes to conditions of overweight and obesity. After completion of her undergraduate



Dr. Jen Beshel settling in to her new lab at Loyola

degree at the National University of Ireland, Galway, Dr. Beshel attended and received her Ph.D. from The University of Chicago. There she was awarded a pre-doctoral National Research Service Award from the National Institutes of Health to study how the brain processes odors. Her postdoctoral work was at Cold Spring Harbor Laboratory, a private, non-profit research institution on Long Island, NY ranked #1 in the world by Thomson Reuters for basic research in molecular biology and genetics. At CSHL she was the first to establish a model of genetically-induced obesity in the fruit fly *Drosophila*. For this discovery Dr. Beshel won the Polak Young Investigator Award from the Association of Chemoreception Sciences. At Loyola, Dr. Beshel will continue to leverage the power of the fly model system to gain mechanistic insight into how experience and environmental conditions alter the brain circuits that control feeding behavior. She hopes that research in her lab will facilitate the identification of novel therapeutic targets to treat maladaptive weight gain. Dr. Beshel also is excited to support the growing Neuroscience major at Loyola and to introduce students to the basic operating principles of their own brains through her Introduction to Neuroscience class.

## Mary Ann Glogowski Retires after 36 1/2 years of Service to Loyola University Chicago

After 36 1/2 years of service, Senior Lecturer Mary Ann Glogowski describes her time at Loyola University Chicago.



### **What brought you to Loyola?**

*I was working at another institution at the time that I made application for a position at LU. What drew me to LU was its well regarded reputation and the position that I applied for would involve mainly teaching which I truly love.*

### **What have been your favorite memories?**

*First and foremost, my favorite memories are my interaction with students at LU. Over the years I, obviously, have taught many students and I will always fondly remember my times with the students. I am very grateful to the Biology Department Chairpersons over the years who always gave me the opportunity to create and design new laboratory exercises in Microbiology and Immunology and General Biology. I have especially enjoyed finding ways to improve them and redesigning them into more open inquiry STEM related experiences. I will always be thankful for the trust given by the Chair in granting my many equipment and instrumentation requests that allowed me to improve the Microbiology and Immunology laboratory experiences for the students of LU.*

*One memory that dates how much technology has changed over the years here at LU is the introduction of the first PCs and email at LU. I still remember going the very first workshop designed to introduce the Biology Department faculty to the use of computers at LU. We had to learn the DOS commands that would boot the Windows operating system. And we were reminded that connecting to the Internet required us to use a dial up modem and would cost the University money because of the telephone connection, which was a blazing 40–50 Kbit/s compared to the Gigabit speeds that we now enjoy - using the Internet was anything but fast. I also remember that not all of the faculty in the Department were initially given a*

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## Mary Ann Glogowski Retires after 36 1/2 years of Service to Loyola University Chicago

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*computer. I had to routinely go to Dr. Dom Castignetti's office to use a computer, which he graciously let me use when he was not using it.*

### **What are some of the things that have changed over your time at Loyola?**

*I don't know where to begin because there are so many things that have changed! When I started the campus did not look anything like it does today. All of the many beautiful and technology rich buildings and classrooms that we now have did not exist. There was no technology used in any of the classrooms and the mode of instruction was very different back then. Now the classes are much more student centered and STEM rich. LU has grown in so many positive ways that I can't begin to enumerate them all.*

### **What are some of your hopes for the future of the Biology Department?**

*The Biology Department has never been stagnant and has always embraced positive change. The Department has been on the forefront of creating engaging student-centered experiences. My hope is that the Department continues to focus on bringing STEM experiences into each and every class and laboratory experience that students have at LU. I also hope that they continue to be supportive of women who want to pursue a career in biology and biotechnology via the Biology Department. Finally, the Department faculty has grown in number since I was first hired. I hope they continue to hire the most amazing faculty that will support the mission of LU.*

## Biology Faculty and Staff Changes

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The Biology Department welcomes the following new faculty and staff members.

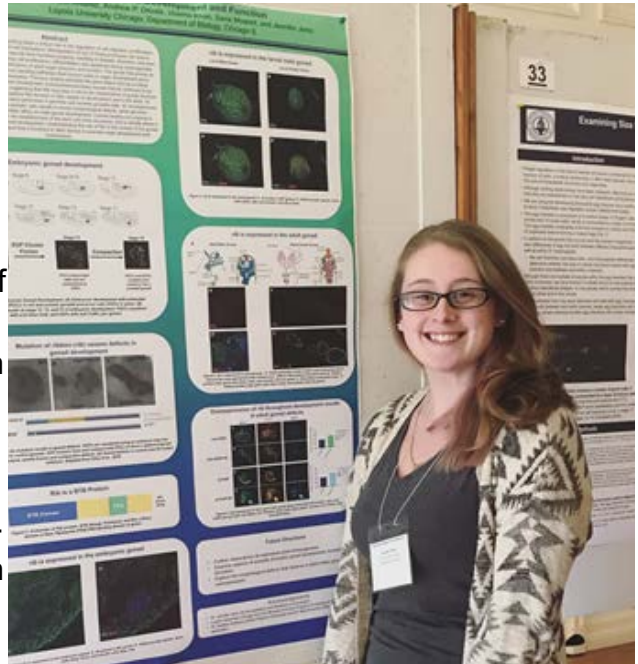
Christine Beatty, Ph.D. – Instructor  
Jennifer Beshel, Ph.D. – Assistant Professor  
Michael Grillo, Ph.D. – Assistant Professor  
Diana Kim, Ph.D. – Lecturer  
Shauna Price, Ph.D. – Instructor  
Molly Stayley, Ph.D. – Instructor  
Sam Thornton - Office Assistant

And wishes the best to our departing faculty and staff who have accepted new positions.

Chris Caldero – Loyola University Purchasing  
Hunter Cole, Ph.D. – Loyola University New Orleans  
Mary Ann Glogowski, M.S. - Retiring  
Frank Inghima – MAMS Advisor  
Sushma Reddy, Ph.D. – University of Minnesota  
Jenny Rios – Research Services

## Students Present Their Work at Midwest Drosophila Conference

On November 3rd and 4th, students and faculty from the Biology Department attended the Midwest Drosophila Conference in Monticello, IL. Undergraduate students Shannon McDonnell, Luselena Perez, and Danielle Talbot of Dr. Jennifer Jemc Mierisch's lab presented posters on their working examining the genetic regulation of organ development in the reproductive and nervous systems. Undergraduate students Madison Martin and Vaughn Fulgham of Dr. Daniel Cavanaugh's lab presented their work describing the cellular basis of circadian rhythm regulation. Student attendance was made possible by funding through the Loyola Undergraduate Research Opportunities Program.



## Faculty Awarded an NSF Grant for a New Laser-Scanning Confocal Microscope



Principal investigator (PI) Dr. Jennifer Jemc Mierisch and CO-PIs Dr. Daniel Cavanaugh, Dr. Rodney Dale, Dr. R. William Rochlin, and Dr. Stefan Steidl recently received a Major Research Instrumentation Award from the National Science Foundation for the acquisition of a new laser-scanning confocal microscope. The new confocal microscope will enhance research in the biology, chemistry and psychology departments ranging in topic from organ development to circadian rhythms and drug addiction. The new microscope will allow faculty to train students in the use of current technology in the context of independent research, providing students the opportunity to gain valuable research experience, to contribute to publications, and to present work at regional and national conferences. In addition, the microscope will be also be used in multiple Biology courses, and outreach programs.

## Dr. Jennifer Zitzner Receives the St. Ignatius Loyola Award for Excellence in Teaching

Dr. Jennifer Zitzner, Advanced Lecturer, was awarded the St. Ignatius Loyola Award for Excellence in Teaching at the Faculty Convocation in September 2018. This prestigious award is named for Ignatius of Loyola, founder of the Jesuit order and patron saint of our University. St. Ignatius Loyola's commitment to education was born out of a belief that society could be changed for the betterment of all if future leaders were provided a rigorous curriculum based in ethics and the humanities. The Loyola Award recognizes faculty whose teaching involves a commitment to excellence, raises global awareness, promotes social justice and educates the whole student. The award honors the faculty member who embodies excellence in all aspects of teaching, including advising/mentoring, teaching to mission and engaging students in their learning.

Dr. Zitzner uses her own life experience in the classroom and embraces the Jesuit philosophy of care for the whole person. In her Human Structure and Function courses, students discuss how the topics covered affect their everyday lives. The use of video case studies

helps to bring real world components into her classes and allows time for reflection of the material. Regardless of major, course, or background of student, Dr. Zitzner strives to offer each student the opportunity to grow not only in their academics but also their sense of self and purpose.

She believes the journey students experience in our classes is often seen, not in grades, but from their reactions or comments made after they have digested the material. Through her course activities and student responses, she sees students forming a sense of self and discover how their actions make a difference to others.



Dr. Jennifer Zitzner (center) receives the St. Ignatius Loyola Award from Acting Provost Margaret Callahan (left) and President Jo Ann Rooney (right).



## Master of Arts in Medical Sciences (MAMS) Program Update

This August MAMS welcomed another groups of very talented young people! Over the course of their lives, they have volunteered at hospitals for 81 years, done 22 years of tutoring, completed 51 years of research (produced 20 publications), performed 24 medical mission trips, worked for 20 years as Scribes, 8 years in the Pharmaceutical industry, and 7 years as lab technicians! Four have built homes with Habitat for Humanity, 5 have sports medicine experience, 6 were EMTs, 2 were cheerleaders and we have one competitive Dragon Boater. 19 different languages are spoken including Spanish, Korean, Mandarin Chinese, Urdu, Italian, Polish, French, Yoruba, Punjabi, Tagalog, Romanian, Greek, Bengali, Assyrian, Japanese, Gokana, Ibo, Malayalam, and Sign Language.

MAMSers from the Class of 2018 are currently going through the interview cycle and several already with offers of admission in hand. Consistent with Loyola's Mission, the MAMS community of students, faculty and staff continue to "expand knowledge in the service of humanity through learning, justice and faith."



Under leadership from MAMSer Sarah Pajek, a group of students worked as EMTs in Aid Stations during the 2018 Chicago Marathon providing emergency care for participating runners. (Pictured: Sarah Pajek and Alexandra Plezia).

## NIH R15 Grant Awarded to Dr. Bill Rochlin for Research on Axon Targeting During Development

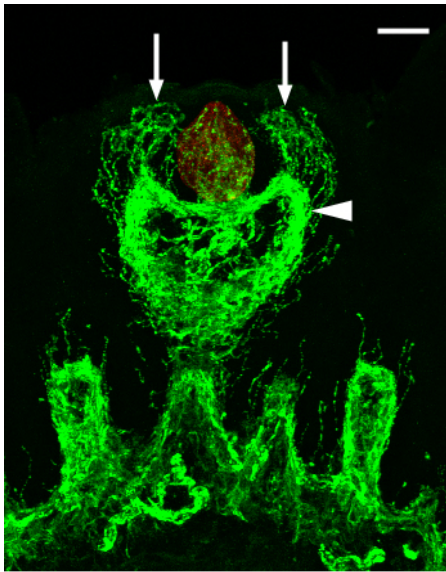


Figure 1. Innervation of a one month old rat fungiform papilla. Axons (green) are labeled for GAP43 and neurofilament. Taste axons innervate the taste bud (red). Non-taste axons (e.g., touch, pain, or temperature responsive) terminate in surrounding papilla epithelium (arrows), and just beneath the epithelium (arrowhead). Bar = 25  $\mu$ m. Staining and confocal imaging carried out by former student Jen Gomulka.

Bill Rochlin was recently awarded an NIH R15 grant entitled “EphA/ephrinA guidance of taste and somatosensory axons during lingual innervation.” The long term objective of this work is to uncover guidance mechanisms that are critical to axon targeting during development, plasticity, and regeneration following injury. The discrete nature of taste papillae and the taste buds within their epithelium make it an excellent model for studying axon targeting mechanisms. Taste axons innervate taste buds but not adjacent epithelium, and somatosensory axons that penetrate non-taste epithelium surround the taste bud but do not enter it.

Cell-attached cues could provide the signaling resolution needed for discrimination between adjacent target and non-target cell populations. EphA receptors (EphA's) and ephrinA's are cell-attached cues that can mediate growth promotion, repulsion (non-target recognition), or stabilization (target recognition). Identifying guidance molecules and understanding their roles in targeting axons to papillae and taste buds may uncover guidance mechanisms

that apply to other parts of the nervous system in which the fidelity of initial innervation is not as obvious as in the tongue. These mechanisms may also be employed throughout life as peripheral epithelial targets routinely undergo turnover in the absence of injury and are also re-innervated after injury.

## Alumnus Update - Anthropology and Biology Graduate Rita Smith



Madagascar appears to be a beautiful country. At least that's what I gather from the photos I've been getting from a former student of mine, Rita Smith. Rita graduated from Loyola with a B.S. anthropology, with a minor in biology in 2018 and spend several months since then working with primatologists out of Centre ValBio (CVB) in Ranomafana, Madagascar tracking and collecting data

and samples from primates native to the area, including different species of lemurs. She has completed her field work and is applying to graduate schools to pursue her PhD. I was chatting with a biotech researcher just last week about what things I should focus on with my students to make sure they're prepared as they start their careers. He said, "Enthusiasm for the research and raw smarts." This was not quite what I was expecting, but for students like Rita, it's a sign that she's ready for grad school and beyond. She has a demonstrated passion for her research and also happens to be quite clever. I'm looking forward to following her career over the next several years as I'm sure she'll be able to do great things.





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#### ABOUT THIS NEWSLETTER

This newsletter was compiled by Dr. Jennifer Zitzner and edited by Drs. Michael Burns and Jen Beshel for the purpose of keeping our departmental alumni abreast of new developments, programs, and events.

## *We would love to hear from you!*

If you know someone whom you would like to see featured in the Faculty or Alumni Spotlight section, or have ideas about things you would like to see in future newsletters, please send a message to [biologydept@luc.edu](mailto:biologydept@luc.edu).

Also, we here in the Biology Department love hearing from our alums, so don't be a stranger! Please feel free to email us with updates to let us know where you are and what you're doing; email pictures if you have them!

## **Alumni Support**

The University and the Department of Biology are extremely grateful for the generosity of all our donors. Donations in any amount, from one to thousands of dollars, are appreciated and help the department serve our students. Your support of the Biology Department permits us to continue many programs and services including:

- Student research fellowships
- Travel funds that allow students to attend local and national meetings
- Professional development opportunities for Biology Faculty
- Equipment for teaching and research laboratories

If you would like to make a gift to the Biology Department Gift Fund, you may do so in two ways:

**Online:** [Click here](#) to be redirected to the secure donations website

**Mail:** Please mail checks to  
Loyola University Chicago  
Biology Department  
c/o Stephanie Tomakowski  
820 N. Michigan Avenue, Ste. 1721  
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Please include in the memo line: Biology Department Gift Fund