LOYOLA UNIVERSITY CHICAGO

Preparing people to lead extraordinary lives

Department of Biology Updates

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A Message from the Chair

Dear Alumni and Friends of the Biology Department,

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I'd like to welcome you to our newest 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. In turn, I encourage you to drop us an e-mail and let us know about any news and developments in your life and career.

The department continues to flourish with 1600 majors and about 450 graduates this year. Due to the generosity of Fr. Regan of the College of Arts & Sciences and the Health Sciences Division Provost Dr. Callahan, we have placed eight undergraduate researchers in the Oncology Research Institute at Stritch School of Medicine over the summer. The exciting research performed as a result of this program can be seen here. We have also started a new summer intern program with Sarepta Therapeutics, a pharmaceutical company in Boston. Their generous support allows for two interns working on their campus. Sarepta is led by Dr. Ed Kaye, a double graduate of Loyola with a BS in Biology and a MD at Stritch School of Medicine. We continue to seek outlets for our students to participate in research in addition to the 175 students working in Biology Department research labs.

We are planning to update our Microscopy Facility over the next several years. We are seeking funds for a new confocal microscope, a microCT scanner, and a Scanning Electron Microscope. Our confocal and Scanning Electron microscopes are heavily used but aging and increasingly difficult to repair. The microCT would be new for the department but will be used by many researchers and their research students.

We are participating in new interdisciplinary programs including a BS in Neuroscience in collaboration with Psychology and a new MS and BS/MS program in Bioinformatics with Computer Science. The department is also working on a possible BS/MPH degree program in Biology at the Lake Shore Campus and the School of Public Health at the Health Sciences Campus.

Best wishes,

Jim Cheverud

Service Project Transcends College Lines as Nursing Students Collaborate with Biology Faculty

This spring, Dr. Jennifer Zitzner, Lecturer in the Biology Department, collaborated with her past and current nursing students to help her organize a service project to give back to the Ronald McDonald House Charities (RMHC) – an organization that affected her family when her 4 year-old son had unexpectedly been hospitalized. As she describes of her experience, "Two saving graces helped my family through what has been the scariest time with our children: the nurses who took care of my family and RMHC that gave us a free place to stay, home-cooked meals, and a bed to sleep." The service project allowed Dr. Zitzner to combine both components.

When approached with the idea, the nursing students jumped on board, coming up with the theme "Home Away From Home". The entry fee was an item off of the RMHC "wish list" (non-perishable food items, paper products, etc). The Nursing Council students set up booths that had information about RMH and also allowed attendees to make cards for children at RMH. Dr. Zitzner spoke briefly about her experience and a RMH representative also spoke about the charity. Dr. Zitzner reflected, "I was privileged to work alongside my current and previous students to bring this experience through multiple aspects of the Ignatian principles."

Frontiers in Science Symposium—Dr. Barbara Schaal

Each spring, the Biology Department hosts the annual Frontiers in Science Symposium. This year's invited speaker was Dr. Barbara A. Schaal, an evolutionary biologist and the Dean of the Faculty of Arts & Sciences at Washington University in St. Louis. The first woman to have served as the Vice-President of the National Academy of Sciences, she also assumed the role of President of the American Association for the Advancement of Science (AAAS) in 2016. As an expert in the field of plant genetics and plant evolution, she served as an advisor on the President's Council of Advisors on Science and Technology (PCAST) during the Obama administration.

Dr. Schaal discusses graduate student research during the Frontiers in Schience Poster Session

Her talk, "Science for the Public Good," pertained to the importance of "making an argument for science" in public and political discourse, thereby stressing to policy makers in the new administration the importance of scientific discoveries. In particular she emphasized basic research which serves as the foundation for many areas of technology including aeronautics, GPS, energy, climate change, and transportation. Using agriculture as an example, Dr. Schaal noted that it plays a major role in energy and bio-economies and has reciprocal effects with climate change. Modern agricultural practices that negatively affect the climate can have local and global repercussions. Therefore, it is imperative to push for common-sense scientific policies and sound decision making to support the public good.

Dr. Schaal's talk was well-received by students and faculty alike, and we hope to continue the tradition of bringing insightful speakers to share their thought-provoking views with the Loyola community. Story and photo by Holly Dimitropoulos.

MAMS Update

MAMS students Kevin Condit, Ashley Iannantone, Paul Digiovonni Lauren Grimm, Leigh Martin, Patrick Foley, Robin Schneider ,and Jasmine Solola. Center: Tanya, a pantry worker who is well-known by many of the patrons.

Greetings from the MAMS program! This year Dr. Pamela Osenkowski has rejoined the MAMS faculty teaching Advanced Genetics. With a background in Alzheimer's Disease research at Harvard University, she brings a cutting edge perspective to the program. Her class covers principles in human medical genetics and the underlying genetic changes of human disorders. Dr. Erin Hayes is also back in MAMS with a graduate level physiology course. This year she has added a component on the underlying physiological dysfunction in selected diseases.

The students have had a strong presence in the Chicago philanthropic community. A major effort was hosting Trivia Night at Bar Louie River North – a fundraiser for the Old Irving Park Community Clinic – raising over $1000 for OIPCC. The MAMS-OIPCC relationship continues to bring benefit to our respective organizations and to the many uninsured patients in the Chicago area who rely on the clinic for their healthcare.

This year the MAMS class has been exceptionally active and the students carried out additional service projects in the area. 1) organized the uniform closet and supply room, deep cleaned the classroom whiteboards, and maintained the lunch room at Chicago Collegiate, a school in the Roseland neighborhood; 2) a day at Lakeview Pantry serving clients from food-insecure households, restocking shelves, and cleaning the building; 3) an evening at A Just Harvest in Rogers Park, where they prepared plates and served dinner to patrons.

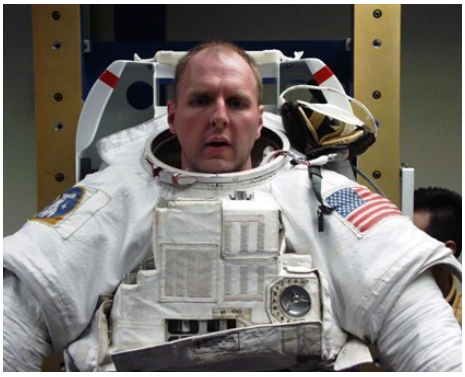
An adult Bald Eagle was observed flying low at Caldwell woods. Photo: Robert Morgan.

Experiencing Ornithology—BIOL215

As part of Biology 215 - Ornithology this spring semester, Senior Lecturer, Robert Morgan took students' studies outdoors on 3 field trips to study bird identification and behavior. In February, the class visited Caldwell Woods on Devon Avenue where they were able to observe 18 woodpeckers of 3 different species: Red-bellied, Downy and Hairy. The unexpected highlight of this trip was the appearance of an adult Bald Eagle that soared low over the class giving great views! In March, a visit to Montrose Harbor and dunes, although quite wet and windy, yielded a large flock of Red-breasted Mergansers in the shelter of the harbor, with many males already displaying to females. In the wooded areas it was amazing to see a total of 40 tiny Golden-crowned Kinglets foraging for insects in the cold and blustery conditions. The last field trip to Skokie lagoons on April 2nd turned out to be excellent timing, as the newly arrived group of 40 Great Blue Herons were actively building nests, and gave the students great views as they perched in trees and broke off branches to build their large stick nests in the nearby trees. Altogether, the students were able to observe some 50 species in the 3 field trips giving them a good introduction to the variety of birds and their behaviors in the Loyola neighborhood.

Ornithology students observing a Red-bellied Woodpecker in February. Photo: Anita Morgan.

Biology Alumnus Update from Dave Brashinger ('92)



I have two degrees from Loyola (B.S. Biology and M.S. Microbiology & Immunology), and my career has taken me from industry, to NASA, to the classroom. I started my post-graduate life in the medical diagnostics industry. I relocated from Chicago to Houston to conduct biomedical research on the astronauts living on the Russian MIR space station. However, my position lost grant funding shortly after my arrival and I refocused my career on medical and technical training.

For 13 years, I worked at the NASA-Johnson Space Center as an instructor, flight controller, and training specialist in human spaceflight mission operations. I specialized in space medicine, spacecraft life support, and the U.S. space suit. During that time, I also trained as a paramedic and taught anatomy & physiology and emergency medical technology at the local community college. I left human spaceflight when the Space Shuttle fleet was retired and started teaching college full-time.

I am currently an assistant professor and the director of the natural sciences program at American Public University System. I am responsible for the content and quality of all natural sciences (biology, chemistry, physics, and earth science) courses and curricula. We utilize computer simulation, commercial laboratory kits, and laboratory instrumentation to teach science courses entirely online for our undergraduate natural sciences majors, non-majors, and allied health students.

Faculty and Student Awards &

Faculty Awards

Dr. Timothy Hoellein—Mary Therese Langerbeck Award for Undergraduate Research and Mentoring

Dr. Sushma Reddy—2016 Sujack Family Award for Faculty Research Excellence

Dr. Theresa Grande—Faculty of the Year Finalist

Dr. Gerald Buldak—Sujack Award for Teaching Excellence Nomination

Recipient of the Sujack Family Award for Research Excellence: Dr. Sushma Reddy joined by her two daughters and Chairman, Jim Cheverud

Promotions

Dr. Holly Dimitropoulos—Promotion to Advanced Lecturer

Dr. Jennifer Zitzner—Promotion to Advanced Lecturer

Welcomes and Farewells

We welcome Dr. Michael Burns to the faculty this year. His work focuses on the gut microbiome and its role in colon cancer. The Biology Department bids farewell to Dr. Jessica Brann. We wish all the best in her new adventures!

Student Awards (additional student awards in Weekend of Excellence)

Stephanie Kaszuba —John W. Hudson-Boris E.N. Spiroff Award

Nooreen Khan —The Edward E. Palincsar Service Award

Weekend of Excellence Recognizes the Efforts of Biology Students and Faculty

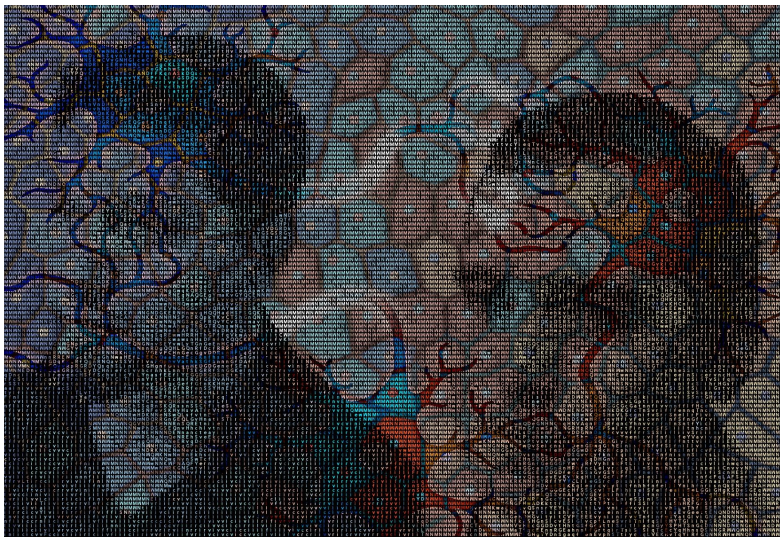
Loyola University Chicago's Weekend of Excellence took place on the Lakeshore campus from April 20th – 23rd. Exemplary students, student groups, and faculty were recognized with awards on each of the four days. Students were also able to showcase their work through a variety of presentations, performances, and exhibits. Students and faculty from the Biology Department were incredibly well represented at the Undergraduate Research and Engagement Symposium on Saturday. There were over 200 research poster presentations and 40 oral research presentations, with Biology students contributing nearly 70 of these presentations. The poster sessions were well-attended, and the students were eloquent and enthusiastic when sharing their research findings.

Overview of Undergraduate Research and Engagement Symposium poster session

In the award ceremony on Saturday evening, several awards were given to Biology students including:

- Laurynas ("Larry") Kalesinskas—Outstanding Loyola Undergraduate Research Award (Dr. Catherine Putonti's lab)

- Riddhi Shah—first prize for the University Libraries Undergraduate Research Paper Award for her paper, "Therapeutic Effects of Curcumin on Brain Ischemia," which she wrote for a BIOL399 independent study course (Dr. Pamela Osenkowski—mentor) Ms. Shah also presented a poster earlier in the afternoon on her work with a team studying the use of different antipsychotic medications on ER patient outcomes.



Not all of the awards for biology students were for research though. Another bioinformatics major, Abdul Zakkar, won the Beauty in Biology contest for his art piece, "Units of Life." (shown on the left) The piece was a composite figure generated using a program that he wrote in the Python programming language. He's made the original code available on his GitHub page (https://github.com/abdulzakkar/imageToSeq).

Additionally, this year Biology students successfully competed for 48 Summer Fellowships (Biology Summer Research, McNair, Provost's, Carbon, WISER, and Interdisciplinary Research Fellowships) and 38 academic year Mulcahy Fellowships.

Dr. William Kroll Retires as Regional Director of the Junior Science and Humanities Symposium (JSHS)

After 36 years of being involved with and later the Director of the Regional Junior Science and Humanities Symposium (JSHS), Dr. William Kroll is passing the torch of coordinating the regional competition to Dr. Patrick Daubenmire of Chemistry.

What is the JSHS competition?
It is a competition for high school students doing original research in STEM. It is funded by the Army, Navy and Air Force. It started in 1958 or 59 in response to the Soviets launching Sputnik. The fear was that American students were falling behind in the sciences. Students present their research at one of 48 regional competitions. Winners at each regional get scholarships of $1000-$2000 and a chance to compete at the National Symposium for up to an additional $12,000 in scholarship money. Loyola has hosted the Chicago regional competition since 1975.

How have the student projects/presentations evolved over the years?
They have gotten MUCH more sophisticated. When I first started with JSHS, it was unusual for a student project to be done in a university lab. Now it's the norm. Judges still like original projects done from the ground up in the basement, garage or high school lab but, in general, projects are more complex and the students are far more knowledgeable about the subject matter.

In your history as the Director, what have been your favorite memories?
Hard to pick, but the national competition is always a blast. I have moderated and judged sessions at nationals and heard kids present research on the formation of crystals under conditions of weightlessness (homemade project involving surplus weather balloons) and a kid who invented a machine that did the umpires' job of rubbing Delaware River mud on new baseballs. (His prototype was made from Legos, but as it evolved, he used colorimetric analysis to assess consistency and had a machine shop build a sturdier device. He later sold it to the New York Mets.) We also had one of our own Chicago Region kids evaluate the properties of different ceramic compounds for use in amateur baseball bats using an old bicycle. (The pros require wooden bats.)

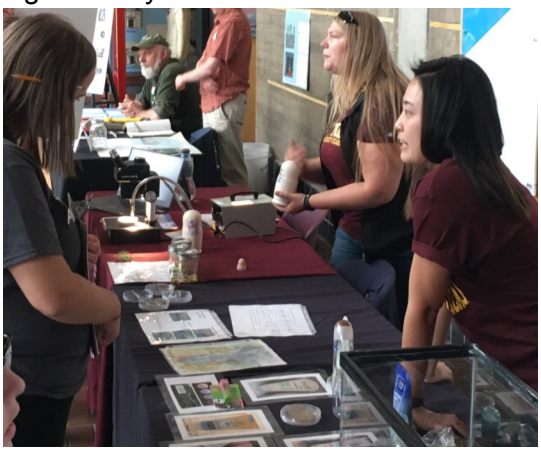
What will you miss most now that you have passed on the torch to your colleagues?
I'll miss the actual day of the symposium. In the weeks leading up to it, I'm stressed, frustrated and worried. Somehow, we always seem to pull it off, and when the program goes smoothly, I feel a great deal of satisfaction.

I'll also miss the folks who have been long-time participants (judges and/or reviewers). Despite the time and effort involved and their busy schedules, they generously volunteer their services year in and year out. These folks include Pat Duffie, Bryan Pickett, Ken Olsen, Andy Howard (of IIT) and many others too numerous to mention. I also owe a great debt of thanks to Lillian Hardison from Classical Studies who handles most of the administrative tasks involved with JSHS.

And finally, I'll miss the brilliant and goofy teenage researchers. Smarter than smart, on the cusp of adulthood and yet, a little awkward and self-conscious, just like we all were at that age.

Kelly/Hoellein Labs Participate in Community Outreach

Members of the Kelly and Hoellein Labs participated in "Science Night at the Museum", a family friendly outreach event hosted by the Grand Rapids Public Museum in Grand Rapids, Michigan on April 18. This annual event is part of the Michigan State University Science Festival, a multi-day series of events open to the general public that seeks to highlight the fields of science, technology, engineering, arts, and mathematics (a.k.a. STEAM). This year's "Science Night at the Museum" was attended by more than 400 people from towns throughout the Western Michigan region. Kelly and Hoellein Lab members Rachel McNeish, Lisa Kim, Liam Schorr and John Kelly educated visitors about our work with microplastic and other types of litter in freshwater ecosystems. Our display included examples of microplastic sources and hands-on models demonstrating plastic accumulation in aquatic food webs. Visitors to our display were able to use a microscope to view microplastic that had been collected from a local river and were able to collect data on litter present in a model debris dam. You can learn more about the work of the Kelly and Hoellein Labs on their respective websites: http://kellymicroecolab1.wixsite.com/



Faculty and Undergraduates Bring Microbiology to the High School Classroom

It is often difficult for students to grasp the concept that some organisms can grow in the absence of oxygen and that oxygen can be toxic to organisms. However, as educators usually describe in the classroom, the importance of anaerobic microorganisms can be seen in many areas of industry, health, and the creation of several categories of food ranging from fermented alcohols to breads and cheeses. However, the equipment to grow anaerobic microorganisms can be too costly for high school biology laboratories. Therefore, Drs. Domenic Castignetti and Jennifer Zitzner, along with Dr. Castignetti's undergraduate students have developed an inexpensive and easy technique to culture facultative anaerobic bacteria from yogurt to demonstrate that anaerobic microorganisms reside and can be cultured from everyday food. The method, to be published shortly, uses readily available and low cost equipment that will allow students to culture and visually identify anaerobic bacteria that they may consume on a regular basis, demonstrating the utility of organisms that thrive in an anaerobic environment. It will allow high school students to participate in an inquiry exercise that will explore the growth and identification of anaerobic microorganisms and will reinforce the importance of anaerobic microorganisms in foods such as yogurt, sauerkraut and cheese.

Dr. Domenic Castignetti and student, Mandy Weaver, observe Gram-stained anaerobic bacteria cultured from low-cost anaerobic chambers.

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ABOUT THIS NEWSLETTER

This newsletter was compiled by Dr. Jennifer Zitzner and edited by Drs. Jim Cheverud, Michael Burns, Jeff Doering, and Robert Morgan for the purpose of keeping our departmental alumni abreast of new developments, programs, and events.

Join Us for Alumni Weekend—June 10, 2017

Please join us for Alumni Weekend on Saturday, June 10. Enjoy an all-you-can-eat and drink from local food trucks and restaurants. There's activities for all ages, live music, and more! For tickets and more details, please visit LUC.edu/alumniweekend.

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 an email to: biologydept@luc.edu

Also, we here in the Loyola Biology Department just love hearing from our alums. So don't be a stranger! Please email us at biologydept@luc.edu, let us know where you are, what you're doing, and send us 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 for 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 directed to the secure donations website

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Biology Department
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