

T H E N I C H E

V1 #2

DEPAUL UNIVERSITY | DEPARTMENT OF BIOLOGICAL SCIENCES

FROM THE DESK OF THE CHAIR

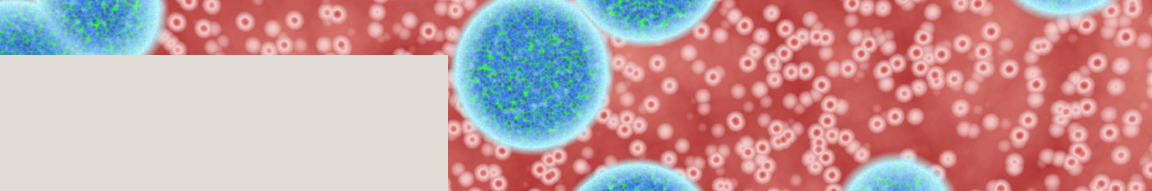


There have been a number of exciting changes that have occurred in the past year for the Department of Biological Sciences. One of the most significant changes has been the move to the College of Science and Health (CSH). This new college will include programs in biology, chemistry, physics, nursing, psychology, environmental science, mathematics and health sciences. CSH represents the tenth college/school here at DePaul University. With over 750 majors, the Department of Biological Sciences is the second largest program in the new college, trailing only psychology. Two departmental faculty members have taken on leadership roles in CSH. Phillip Funk, Ph.D., is serving as the associate dean for external relations and Margaret Silliker, Ph.D., is serving as associate dean for graduate studies.

The second major change is the department's involvement in the new (fall 2011) degree program in health sciences. Several faculty in the department contributed to the development of this interdisciplinary program and several of our core courses will be integral to the health sciences curriculum. Dorothy Kozlowski, Ph.D., a biological sciences faculty member, is currently serving as the chair of the new Department of Health Sciences. Our faculty are looking forward to playing a significant role in shaping the direction of the new college and contributing to the program and curriculum innovations that will benefit those DePaul students interested in the growing career opportunities in the science and healthcare fields.

Over the past five years, enrollments in courses offered through the Department of Biological Sciences have experienced phenomenal growth. This is a testament to the diligent work of our faculty and staff. As result, we have added more course sections and several new faculty to teach these courses. Our two most recent hires are ecologist Jalene LaMontagne, Ph.D., and neurobiologist Eric Norstrom, Ph.D.

Continued on next page



Continued from page 1

Both LaMontagne and Norstrom will teach courses in their area of expertise and provide exciting new research opportunities for both our undergraduate and graduate students. We wish nothing but the best for LaMontagne and Norstrom and we hope that they have a long and productive association with DePaul.

In addition to their commitment to student education in the classroom, all of our faculty have active research agendas involving students. In this issue of *The Niche* you will read about some of the research that is being conducted in the laboratory of Kenshu Shimada, Ph.D. Some of Shimada's research has recently been published in the prestigious journal *Science* and has received a great deal of attention in the scientific community. You will also get a chance to see a list of the research conducted by some of our students that was recently presented at the annual Science Showcase event. I continue to be amazed at the level and sophistication of the undergraduate student research that is being conducted in the department.

In closing, I hope you enjoy this second issue of *The Niche*. We are very proud of our current students and alumni and we hope that you are proud of your association with DePaul University and the Department of Biological Sciences. Thank you for your continued support. ■

John Dean

Chair of Biological Sciences

NEW FACULTY BIOS

Jalene LaMontagne, Ph.D.

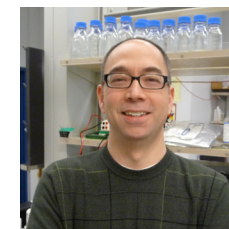
Assistant Professor, Ecology



I received my Ph.D. in environmental biology and ecology from the University of Alberta in 2007. I came to DePaul University in September 2011 from the University of Calgary, and before that I worked as a founding faculty member at the Asian University for Women in Bangladesh. I am a population ecologist, and I use a combination of both lab experiments and field work to ask questions about variation in resource availability over space and time and how this affects the performance of individuals and gives rise to the population-level patterns that we see. I use *Daphnia pulex* and algae in lab experiments because they have a strong predator-prey interaction, *Daphnia* populations are easy to manipulate and they can mature in as little as six days. I also enjoy doing field research out in the forest where I study mast seeding, the synchronous production of very large seed crops by a population of plants. Trees are also ideal to work with because they don't move, and this means that I can follow seed production by individual trees over time. I'm very happy to be here at DePaul and this year I am teaching Biology 215 (Ecology) and Biology 192 (General Biology II).

Eric Nortsrom, Ph.D.

Assistant Professor, Neurobiology



I come to DePaul from the University of Chicago, where I performed research on Alzheimer's disease as a postdoc after receiving my Ph.D. from the committee on neurobiology on the topic of molecular mechanisms of prion disease propagation. The focus of my current research is cellular and molecular neurobiology with an emphasis on neurodegenerative diseases. In my lab, I use molecular, biochemical and cell biological methods to investigate the behavior of proteins involved in Alzheimer's disease. How do the molecular behaviors (and misbehaviors) of these proteins lead to disease states in the brain? Revealing the answers to this broad question will help guide therapies for Alzheimer's and other brain disorders. Thus, I focus on protein interactions involved in the pathogenesis of diseases like Alzheimer's and attempt to understand which interactions are critical for the development of disease. I also attempt to discover potentially important novel interactions in hopes of discovering new targets for preventing Alzheimer's. I taught Cellular Neurobiology (BIO 339) in the fall quarter and will teach General Biology I (BIO 191) in winter and Anatomy (BIO 201) in the spring. I'm happy to be here at DePaul University and excited to be embarking on a journey of teaching, discovery and mentorship.



NEW COLLEGE OF SCIENCE AND HEALTH

DePaul created the new College of Science and Health in response to the nation's growing demands for science and health professionals. The College of Science and Health combines the expertise of the departments of biology, chemistry, environmental science, mathematics, nursing, physics and psychology to create undergraduate and graduate programs that will prepare students interested in the sciences as well as the growing fields of the health professions.

We are excited for the developments that the College of Science and Health will bring to our students and to our alumni. As Charles Darwin himself once said: "In the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively are the most adaptive to change." It is with this same spirit that we look forward to collaborating between the departments in order to build a college devoted to the exploration and enhancement of the sciences at DePaul.

Jerry Cleland, Ph.D., former chair of the Department of Psychology, will serve as the interim dean of the new college. In an interview with DePaul's Newline, Cleland states "the new college will allow for greater collaboration among our science faculty in developing new, interdisciplinary academic programs and pursuing multidisciplinary external research funding. Over the past decade, DePaul has invested extensively in new science facilities and in new science faculty, both of which directly support the creation and expansion of the new college."

As a result of the formation of the new College of Science and Health, there is now a new Office of the Dean and an Office of Advising and Student Services. To help you know where to go and who to turn to, we have compiled a list of some of the people running these offices, along with their contact information.

Rev. Dennis H. Holschneider, C.M., DePaul's president stated, "By educating future scientists, mathematicians, health care providers and caregivers, science educators, researchers, managers, and administrators—all with firm foundation in a liberal arts education and strong commitment to social justice and civic engagement—the College of Science and Health will strengthen DePaul's expression of its Vincentian, Catholic and urban identity." ■

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ALUMNI PROFILE

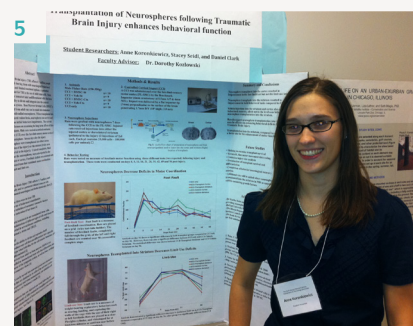
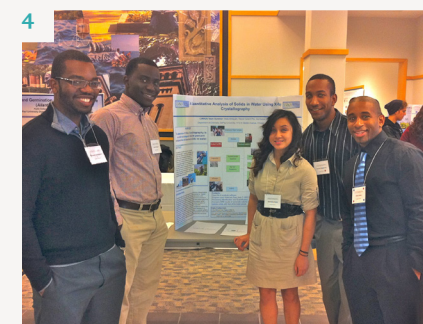
NORA O'BRYNE

Nora O'Bryne graduated summa cum laude in June 2011 with a double major in biological sciences and chemistry. At DePaul, she worked as a teaching assistant for the chemistry department and in Professor Peszek's research lab. In addition, she researched breast cancer in University of Chicago's Department of Medicine. Nora also volunteered with Peer Health Exchange, teaching health classes in Chicago public high schools where funding was cut for health education.



This August, Nora started her first year of medical school at Loyola University Chicago Stritch School of Medicine. She is very happy at Loyola—the professors and students are very helpful and friendly. There are many programs for shadowing, research and volunteering both in Chicago and abroad. Currently, Nora volunteers to play with kids on the pediatrics floor of the hospital and she frequently shadows an anesthesiologist. This summer, she is going to Africa to provide medical care in local communities.

Medical school is a lot of work, but she loves every minute of it. She feels that being a science major at DePaul prepared her well for medical school, especially the year-long biochemistry sequence of classes. Nora remembers being interested in science since she was a kid, so it was not surprising that she chose to study biology and chemistry in college. Since she was always interested in science, being a doctor was something that had been in the back of her mind for a long time. She absolutely knew that she wanted to be a doctor after shadowing an oncologist at the University of Chicago Hospitals during her sophomore year at DePaul. Nora is unsure what specialty she will pursue, but cites oncology and anesthesiology as current interests. ■



1 Biological Sciences Open House: From left: Rosemary Uluocha, Margaret Johnson, Rima Barkauskas

2 Biological Sciences Open House: From left: Tara Chavez, Jalene LaMontagne, Ph.D.

3 Halloween: Sally Cocjin, Julian Lebron

4 Undergraduate Research Showcase: From left: Alexander Adegunwa, Wale Afolayan, Germaine Suiza (non-DePaul student), Trevor Grandpre, Brice Jones

5 Undergraduate Research Showcase: Anne Koronkiewicz

6 Undergraduate Research Showcase: Pre-Dental Club: From left: Katie Kupczyk, Nick Poulos, Gabby Perez, and Rana Sweis



ADVICE FROM THE FRONT

In our never ending quest to provide the best information for our biology students, the editors of The Niche decided to go to some of our current upper-level students to find some of the real scoop on how to navigate the turbulent waters of today's college student. These are just some of their responses.

What would be your advice on how to make it through a difficult course?

- Study in advance. Do your homework.
- Take it a day at a time. Study hard and study with friends.
- Read over the book and lecture notes whenever you are sitting around.
- Talk to people. Talk to your advisor, your instructor, and your peers.
- Go to office hours. Meet with professors.
- Time management is key. Prioritizing your schedule in such a way that just like a class or shift at work you plan to do homework for a class at a certain time.

What would you tell an incoming freshman is the best thing about the biology program?

- Professors!
- It's a good size—big enough to meet new people in each course you take, but small enough to always recognize a handful of faces.

What advice would you give students as to which biology elective to choose?

- Take things that matter to you, not what is an easy A.
- If you're looking to go into a professional program after finishing the undergraduate program, research what multiple schools want as prerequisite courses early in the year. Then you can plan accordingly.

Where do you think is the best place to study on campus?

- The library is great when you need to focus on studying. The quad and SAC are perfect if you like to have things going on around you while you get work done.
- Most voted for the library—followed by the quad, SAC and the study areas in McGowan.

Where is the best campus spot for a midday nap?

- An even split between dorm room, library, quad and McGowan study areas. (Seems to be a strong overlap between napping spots and studying spots.)

Where is the best spot for some off-campus food?

- Sushi Para, Dominick's, Dog House, State Restaurant, Chipotle, Bourgeois Pig, Thai Bowl, Pick Me Up Cafe, Devil Dawgs, Nesh, Duck Walk

What was your favorite liberal studies elective course?

- Sculpture, Latin American History, Russian, the Beatles, Political Science, History of Modern Architecture, Business, Ethics, and Society

How many hours a week do you think you need to study to do well in the biology program?

- It depends on the student.
- Study as many hours as you can.
- Three hours a day keeps the pain away.
- Answers typically ranged from 10-40 hours per week of outside studying.

What is your favorite way to spend time (on or off campus) with friends when you want to relax and relieve some stress?

- Get together to watch sports games
- Dancing to cheesy 80's music
- Hanging out with some friends, walking down Michigan Ave. and shopping
- See concerts, go to movies, or go out on the town
- Starbucks on Fullerton
- Going out to get food with people and chit chat
- Going to the beach when it's warm
- Museum of Surgical Science

Who do you go to for support when you need advice on academic/career issues, or questions/concerns on your life's path or what it all means?

- Michelle Johnson is a boss.
- My advisor.
- My mother—she gets a weekly phone call.



NATURAL SCIENCES, MATHEMATICS AND TECHNOLOGY UNDERGRADUATE RESEARCH SHOWCASE

The Department of Biological Sciences was proud to once more feature several of its student researchers in the ninth annual Science Showcase. You can see more information about it at:
newsline.depaul.edu/Pages/Studentsdiscusstheirscientificresearchatannualshowcase.aspx.

We are proud to list these students below, along with the names of their presentations.
Congratulations on your great work.

IKECHUKWU ACHEBE Morphology of cranial musculature in crocodile shark, *Pseudocarcharias kamoharai*.

WALE AFOLAYAN, TREVOR GRANDPRE AND GERMAINE SUIZA XRay Crystallography in Water.

SARAH BLACKSTOCK Mating patterns of marine amphipods: analysis of field patterns.

BRENDAN BUTKUS Regulation of Granulosa Cell Proliferation and Apoptosis by Cyp26b1 and Retinoic Acid in the Mouse Ovary.

MICHAEL DEMCZUK Regulation of Granulosa Cell Proliferation and Apoptosis by Cyp26b1 and Retinoic Acid in the Mouse Ovary.

NELL FANTER, MICHAEL MCLAUGHLIN, RUPALI PADHIAR, GIANCARLO SALDANA AND ROBERT SCHUCH Coliform Levels in Chicago Waters.

RYAN FINN Montmorillonite K10 Clay-Catalyzed Hydration of Alkynes.

MATHEW FRANCIS Analysis in Yeast of a Putative Human Disease Mutation in a Gene Encoding Subunit of the Mitochondrial ATP Synthase.

CHRISTOPHER GALLARDO Fossil marine vertebrates from the Lincoln Limestone in southeastern Colorado.

CARMELA GALLUZZI A new skeleton of the Late Cretaceous bony fish, *Micropycnodon kansasensis*, from the Niobrara Chalk of Kansas.

MATTHEW HARTZELL AND SANJAY CHERALA Effect of a Bile Salt on the Bioavailability of a Family of Antibiotics.

BRICE JONES PCR Amplification of *Leishmania* NAGT for sequencing to identify the unknown species of isolates from Thailand.

ANNE KORONKIEWICZ Transplanting Neurospheres as a Treatment for Traumatic Brain Injury.

KATE KORONKIEWICZ Slow myosin heavy chain 2 promoter expression in fast and fast/slow avian myogenic cell clones.

JENNIFER KUHN AND YURI ZAPATA Light Effects on the Movement of Pennate Diatoms.

TSZVETOZARA KYOSEVA Alzheimer's disease, characteristics of the Arctic mutant.

SHAWNA LISZEWSKI Eating and sleeping, is this a cure for Alzheimer's disease?

BETHANY LITT Amygdalin and its Potential Effects on the Progression of Alzheimer's Disease.

ALEJANDRA LUNA SMN regulation of miRNA abundance in Spinal Muscular Atrophy.

ANJEANETTE MENDEZ Single-point mutation of the Alzheimer's Beta-Amyloid peptide--Arctic.

ILYSHA MINOR Exotic alternatives as preventatives for Alzheimer's disease.

LUKE MOCKAITIS Effects of Milk thistle (silymarin) on fibril formation in Alzheimer's disease.

BETSY MONTGOMERY Utilizing Conductance Assay to Study Efficacy of Flavonoid Compounds on $\Delta F508$ -CFTR Recovery.

LILLIAN PEREZ Exported Molecules that Distinguish Normal and JNCL Fibroblasts as a Biomarker for JNCL Disease Progression and Therapeutic Efficacy.

BRANDON POLASKEY Is milk thistle able to prevent the formation of amyloid fibrils?

STACEY SEIDL Contusion size is significantly decreased in calpain-1 knockout mice following a controlled cortical impact.

RANA SWEIS Miracle Berry: A possible preventative for Alzheimer's disease? Type II diabetes?

ERIN TERRANOVA Progress Toward Plant Cell-Assisted Synthesis of Novel Alkaloids.

ROSEMARY ULUOCHA The effects of melatonin and vitamin D with calcium as a possible preventative for various amyloid diseases.

Congratulations as well to all of their faculty mentors from DePaul, Rosalind Franklin University of Medicine and Science, Lincoln Park Zoo, and Chicago Community Colleges: Robert Bridges, K-P Chang, Stanley Cohn, Joseph X. DiMario, Matthew R. Dintzner, Domink Duelli, Michelle Hastings, Lihua Jin, Dorothy Kozlowski, Ronald Kaplan, Jingjing Kipp, Seth Magle, Justin Maresh, David Mueller, Kyoung Oh, Jim Onoda, Sandra Chimon Peszek, Kenshu Shimada, Margaret Silliker, Roger Sommer, Tim Sparkes.

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RESEARCH IN ACTION

OPEN WIDE!



This issue's faculty research in action picture is from the work of Kenshu Shimada, Ph.D. It is a CAT scan of a one and a half meter long male salmon shark (*Lamna ditropis*) from the coast of central California, and it is now a happy member of the Field Museum specimen collection. This scan was part of Shimada's work for his on-going collaborative project with the Children's Memorial Hospital on the anatomy and evolution of the shark group called Lamniformes, a group that includes well-known forms such as the goblin, basking, mako and great white sharks. His work often uses his deep knowledge of shark anatomy to reconstruct the size and characteristic of prehistoric fish (mainly sharks) from their fossils to better understand their evolution and relationship to other animals. For past and present shark information you can really dig your teeth into, or to find out more about his research, contact Shimada at kshimada@depaul.edu. For more information about the CAT scan research you can check out the article at: onlinelibrary.wiley.com/doi/10.1002/ar.20903/pdf. 