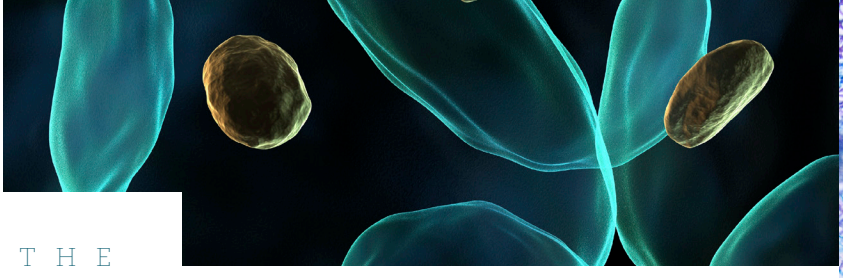
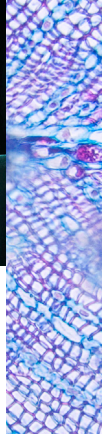




THE NICHE

V5 #1

DEPAUL UNIVERSITY | DEPARTMENT OF BIOLOGICAL SCIENCES

LETTER FROM THE CHAIR

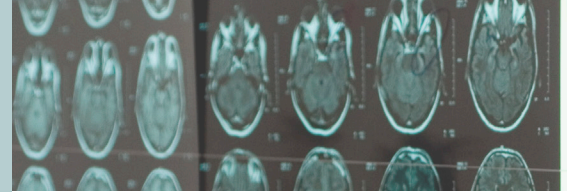
By the time you read this introduction the 2016-2017 school year will be underway. It is always an exciting time to see activity around campus pickup in the fall with new and returning students eager to continue their studies, make new acquaintances, and reconnect with friends. Though for most students the school year is from September to mid-June, many others are on campus taking summer courses or doing research alongside a faculty member. Our faculty also are busy in the summer conducting research and reevaluating our curricular programs in order to meet the changing needs of our students. During the summer of 2016, the faculty in the Department of Biological Sciences held a day-long retreat that allowed us to examine the biology student experience, look at ways to market our concentrations, set goals, and plan our next steps. It was a positive experience for the faculty involved and will help us to focus our efforts over the next couple of years on ways to continue to strengthen our department. We are proud of our department and we like the broad array of courses and research experiences that we are able to provide our students from ecology and evolution to plant and animal physiology to cell and molecular biology.

We have added a new faculty member to our department this year. Margaret Bell, PhD, will have a joint appointment between the departments of Biological Sciences and Health Sciences. Bell received her PhD in neuroscience from Michigan State University and she will be teaching a variety of courses for both departments. We are very excited to have Bell join us and we hope she has a long and distinguished career here at DePaul. You can read more about Bell in this issue of the Niche.

In addition, we have faculty that have been recognized for some notable achievements or have reached some important milestones. Jalene LaMontagne, PhD, was recognized for five years of service this past year, and in the fall of 2015, Margaret Silliker, PhD, was added to the 25-year club in recognition of 25 years of service. It is also with great pleasure that we announce that Windsor Aguirre, PhD, and Jingjing Kipp, PhD, have both been promoted to associate professor with tenure. We wish them continue success. We also want to extend our congratulations to Kenshu Shimada, PhD, on being awarded the College of Science and Health Excellence in Research Award. This is an honor that is well deserved.

There are many other interesting stories included in this issue Niche that we hope you find enjoyable. Thanks for reading, and, as always, thank you for your continued support.

John Dean
Professor and Chair of Biological Sciences



NEW FACULTY PROFILE - MARGARET BELL

MARGARET BELL

In partnership with the Department of Health Sciences, the Department of Biological Sciences is very excited to introduce Margaret Bell, our newest faculty member. Bell has always been fascinated with understanding how one's body works. She received her BA in biology, specializing in neuroscience, from Boston University. While she was there, she explored the city, did research with cichlids at the New England Aquarium, and studied Tropical Ecology in Ecuador. She went on to pursue her PhD in neuroscience at Michigan State University, working with Cheryl Sisk, PhD, and studying how pubertal maturation of hormones and brain causes shifts in social behavior during adolescent in hamsters. Afterwards, she did a postdoctoral fellowship at University of Texas at Austin with Andrea Gore, PhD. There, she was able to mesh her concern for the environment with her interest in hormones and the brain, as she began to study endocrine disrupting chemicals (EDCs). She used PCBs to study how these environmental contaminants can alter neural and endocrine development in rats. More recently, Bell has become interested in how PCBs affect the intersection of brain-immune-endocrine systems. This year, she'll be teaching Cell Biology, Human Anatomy and Physiology, and Endocrinology and getting her lab started. She is originally from Michigan, loves being outdoors with her husband and son, and is looking forward to meeting DePaul students and enjoying the city. A warm welcome goes out to Professor Bell.

FACULTY PROMOTION TENURE AND DISTINGUISH SERVICE AWARDS

The Biological Sciences Department is very pleased to announce two recent promotions in our department, both JINGJING KIPP, PHD and WINDSOR AGUIRRE, PHD were promoted to associate professors with tenure. In addition to these accomplished promotions, JALENE LAMONTAGNE, PHD, was recognized with a Distinguish Service Award to DePaul for five years of service and MARGARET SILIKER, PHD, was inducted into the 25-years of distinguished service club. We are so proud of the accomplishments of our faculty, and thank them for their excellent teaching, dedicated scholarship, and continued commitment to the Department of Biological Sciences and DePaul University.

UNDERGRADUATE SCIENCE SHOWCASE

We are so proud to once more list some of our student researchers, along with the titles of their presentations, who participated in presenting some of their ongoing research as part of the annual College of Science and Health Undergraduate Science Showcase poster presentations this past November. Congratulations to everyone on your great work.

DAVID ABRAMOV, Impact of Invasive Purple Loosestrife (Lythrum salicaria) on Growth, Metabolism and Metamorphosis of The American Bullfrog (Rana catesbeiana)

THOMAS BORDERS, Temperature effects on the development of vertebrae and body shape in the tetra Astyanax mexicanus (Teleostei: Characidae)

KIM DAM, Screening Methods for Broadly Neutralizing HIV Antibodies

ALEX JAGLA, The Impact of Temperature on Gene Expression During Somitogenesis in Astyanax mexicanus

EVAN JOHNSON-RANSOM, Fossil Fishes from the Pfeifer Shale Member of the Upper Cretaceous Greenhorn Limestone in North-Central Kansas, U.S.A.

KIRBY KARPAN, Tinkering with the Axial Skeleton II: Uncovering Vertebral Length Variation in the Threespine Stickleback

ABIGAIL LEEPER, Conifer Seedling Abundance and Environment Correlation

ADAM MALINOWSKI, Impact of Salt Concentration on Stenotrophomonas maltophillia Viability and Biofilm Formation

BRYAN MCCLARTY, Do Kainate Receptors Play a Role in Sensory Fiber Development into the Spinal Cord?

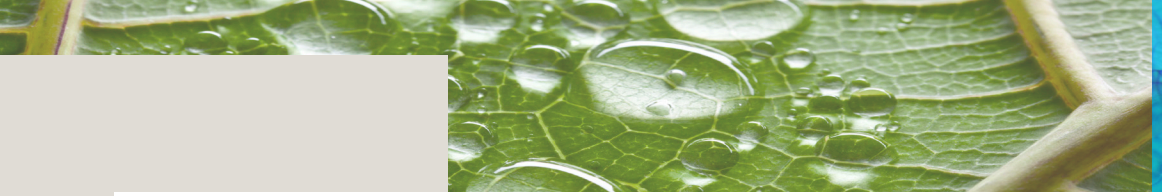
CHRISTIAN OVIES AND DEISI WILLIAMSON, Mutagenesis of the chB6 Alloantigen

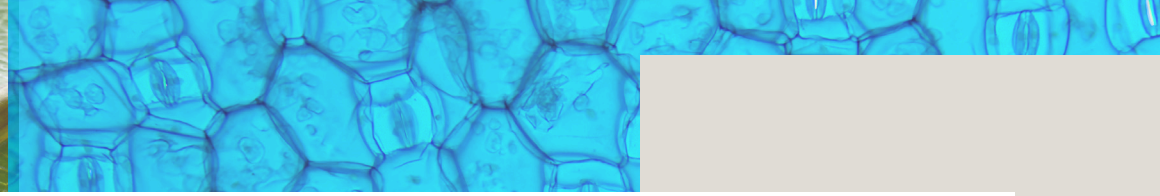
KAYNE PATTERSON, Multi-species effects on Diatom Motility

PAIGE SKORSETH, Can asymmetric running patterns be predicted by assessment of asymmetric standing posture? A Case Study in Elite College Runners

SARA TEEMER, Intra-specific competition and within-host distribution of the parasitic copepod Naobranchia lizae

EMILY WHITMORE, Regulation of the Na+/K+-ATPase beta subunit, NKCC and CFTR in gills of lake trout (Salvelinus namaycush) during acclimation to changing salinity





BIOLOGY SENIOR AWARDS AND SYMPOSIUM

Each year the Department of Biological Sciences selects one of our graduating seniors for our Outstanding Senior Award, as well as acknowledging other seniors who have accomplished dedication and effort within the department with a Departmental Appreciation Award for their great contributions. To honor our graduates, we hold a senior symposium day where we not only present our awards, but also offer all senior researchers the opportunity to present their great research accomplishments. The afternoon was filled with great student talks, fascinating poster presentations, and satisfying food for thought (and consumption).

JAMES COY-DIBLEY—OUTSTANDING SENIOR

James (pictured to the right below) earned a stellar GPA with a neuroscience concentration and chemistry minor. He is insightful and engaged, and his drive and contagious curiosity earn respect from his peers. He embarked on an independent project in the Kozlowski Lab, mining the literature to develop quantitative methods to analyze factors that modulate the immune response to brain injury. This project received grant funding, formed the basis of his honors thesis and a manuscript, and will be presented at the National Neurotrauma Meeting. James is a coveted TA who exceeded expectations by developing his own chemistry tutorial website. James plans to pursue a medical career, and we will be proud to call him a DePaul alumnus.

James' presentation at the Senior Symposium, discussing the question "Does connexin mimetic peptide affect immune response following traumatic brain injury?"

In addition to the Outstanding Senior Award, the department presented two other senior students with departmental Senior Appreciation Awards. The two winners of this award for 2016 are:

BRYAN MCCLARTY

Bryan (pictured center) is an enthusiastic student eager to take on leadership roles. As president of DePaul SACNAS, he gave generously of his time to help members pursue their career goals. He presented his work (done in the Brooke Lab) on the opportunistic pathogen Stenotrophomonas maltophilia at the Science Showcase, and is co-author on a related manuscript. Bryan plans to pursue a PhD in neuroscience at Northwestern, where he spent last summer exploring afferent fiber development in the mouse spinal cord, and presented the work at the SACNAS national meeting.

EMMA WHITMORE

Emma (pictured left above) is an excellent student with a desire to support and educate others. She maintained an excellent GPA while working as a veterinary technician and biology TA. As president of the DePaul Pre-Vet Club, she recruited speakers, coordinated events, and was a valued peer mentor. Emma is currently applying for internships to fill a gap year before pursuing a veterinary degree.

BIOLOGY SENIOR SYMPOSIUM FEATURED STUDENT TALKS

JAMES COY-DIBLEY (advised by Kozlowski) examines the question does connexin mimetic peptide affect immune response following traumatic brain injury?

ABBY LEEPER (advised by LaMontagne) speaks on the topic: From seeds to seedlings: Conifer reproduction in the Upper Peninsula's Huron Mountains

SARAH SCHEINMAN (advised by Kozlowski) looks into evaluating the effectiveness of the SLICE Concussion Education Program

BIOLOGY SENIOR SYMPOSIUM STUDENT POSTER PRESENTATIONS

URIEL BARAY (advised by Silliker) Identifying open reading frames in the mitochondrial genomes of related strains of Didymium iridis

KATHERINE GIORDANO (advised by Kozlowski) Modeling subconcussive impact in the adult rat

ANNIE MCINTOSH (advised by Shimada) Morphometric analysis of the pedal claw of Confuciusornis sanctus and its implications for the contributions of size and shape to morphological variation

KAYNE PATTERSON (advised by Cohn) An analysis of multiple species presence on diatom motility

SARA TEEMER (advised by Sparkes) Host-parasite relationships between the copepod Naobranchia lizae and its host (Mugil cephalus): a description of morphological development

EMILY WHITMORE (advised by Bystriansky) Regulation of NKCC, CFTR, and the Na/K-ATPase beta subunit in the gills of lake trout during acclimation to changing salinity

The Chicago Area Undergraduate Research Symposium (CAURS)

Biology students URIEL BARAY, KAYNE PATTERSON and ABBY LEEPER presented their research at the Chicago Area Undergraduate Research Symposium. Uriel was honored with the designation of Top Presenter from DePaul University and Abby received an honorable mention designation for top presenter from her respective discipline. Many other DePaul students and mentoring faculty participated in the 2016 symposium. Congratulations to all who participated. You can read more about Uriel, Kanye and Abby's research here: **caurs.com/files/2016%20CAURS%20Booklet.pdf.**

PHOTO GALLERY

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1. Recent DePaul graduate and current Ph.D candidate, Ramiah Jacks presents her keynote address at our Undergraduate Research Showcase.
2. Our annual Darwin Day Celebration included a great talk by Charles Knapp, PhD, from the Shedd Aquarium, as well as a delicious turtle cake.
3. Seniors Uriel Baray and Kayne Patterson stop to pose for a picture at biology's annual Senior Symposium.
4. Biology took home yet another win at the annual Cross-McGowan Classic softball game with a victorious score of 14-6 over chemistry.
5. What would Pi day be without some actual pies? The Department of Biological Sciences celebrated a successful Pi Day with a selection of great pies and even better people.
6. Graduate student Liz Vaca poses for a quick picture before she walks across the stage to obtain her Masters of Science in biology diploma.

COLLEGE OF SCIENCE AND HEALTH EXCELLENCE IN RESEARCH AWARD

We are proud to note that Kenshu Shimada, PhD and professor of Environmental Science and Studies and Biology received the Excellence in Research Award from the College of Science and Health this last year. Kenshu has been a prolific scholar, having published 93 papers during his career, most of them since he joined DePaul in 1999. These papers have come out in a variety of outlets, including many with a notable impact for his discipline (vertebrate paleontology). Of particular significance is his publication in Science - "100-Million-Year Dynasty of Giant Planktivorous Bony Fishes in the Mesozoic Seas," published in 2010. Especially noteworthy is the quality of Kenshu's work, the collaborations he has developed with students, the reception of this work by his peers, and the degree of excitement his work has generated in the media.

Kenshu is a broadly trained vertebrate paleontologist whose expertise is in Late Cretaceous-age marine vertebrates where he has named over a dozen new fossil fish taxa. Although he works, and has published extensively, on extinct sharks and bony fishes, he retains strong general interests in comparative biology. These broad interests are reflected in his research and writing, which extends to descriptive work on extinct marine reptiles, shore birds, and terrestrial and semi-aquatic mammals, as well as the systematics and functional morphology of modern sharks. He has provided research experience for many students (51 so far), in both environmental science and studies, and biology departments, as well as students in chemistry, anthropology, and the School for New Learning. His work has received coverage in National Geographic, Discovery, and more locally in the Chicago Tribune. Congratulations Kenshu Shimada!

DARWIN DAY SPEAKER

This past year we celebrated what would have been Charles Darwin's 206th birthday in great style. In recognition of Darwin Day, we not only had a departmental reception, including a cake made to honor him, but provided a forum for thoughtful research and discussion on evolution. The biology department invited guest speaker, Charles Knapp, PhD, (pictured left) from the Shedd Aquarium, to join us and talk about his work. Knapp gave an excellent lecture entitled "The evolution of zoos and aquariums: 21st century conservation organizations." Darwin Day was once more a success and an enormous "thank you" is in order to Knapp who helped make Darwin's 206th birthday a memorable and thought-provoking one.

DePaul University
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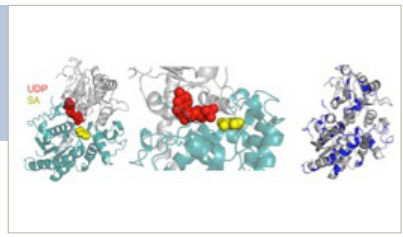

RESEARCH IN ACTION

RESEARCH IN ACTION

If you want some research that really starts to grow on you, then look no further than our own Professor John Dean, PhD. His research primarily involves the study of the metabolism of plant natural products. Specifically, he is interested in the enzymes and processes that allow plants to detoxify internal chemicals by moving them into and out of the vacuole. Plants make an amazing array of chemicals that have important ecological functions including serving as attractants for pollinators and seed-dispersing animals, as well as defense compounds for protection against herbivores and microbial pathogens. Dean is interested in determining how plants metabolize and store a major plant defense chemical, salicylic acid (SA) in the cell. Dean has demonstrated that plants store SA in the cell vacuole, in a form that is attached to glucose. Recently, Dean in collaboration with Jun-yong Choe, PhD, at Rosalind Franklin University have been able to determine the crystal structure of a plant enzyme involved in SA-glucose conjugation, as well as determining membrane transporters involved in the movement of the SA-glucose conjugates into the cell vacuole. It is anticipated that these studies will help aid in the development of plants (including important agricultural species) that are more resistant to destructive pathogens. This most recent work has been submitted for publication to the journal EMBO reports.