

T H E N I C H E

V4 #1

DEPAUL UNIVERSITY | DEPARTMENT OF BIOLOGICAL SCIENCES

LETTER FROM THE CHAIR



As you read through this issue of the Niche, you will notice that the last academic year (2013-2014) was my 25th year of service here at DePaul University. A number of significant changes have occurred during this time. The physical nature of the Lincoln Park campus has changed dramatically. These changes include the blocking of Seminary Avenue, construction of the quad, Richardson Library, Student Center, Sullivan Athletic Center, Ray Meyer Fitness and Recreation Center, McGowan North and South, Art Museum, Theatre School and others. In 1989 (my first year at DePaul), the total university enrollment was over 15,000. The current total university enrollment (2014-2015) is over 24,000. I also have seen some significant changes to the Department of Biological Sciences. During my first year, the departmental research and teaching labs were located in O'Connell Hall, there were only eight tenure-track faculty, and our general biology courses had a total enrollment of approximately 90 students. We are now located in McGowan North and South, have 16 tenure-track faculty and three teaching professionals, and an enrollment in our general biology courses of nearly 450 students. I can only imagine what the next 25 years will bring, but I know we are planning for the future and will be well positioned to continue the success of this institution and department.

I mentioned above how the LPC campus has changed, but it is really the people at DePaul that make the difference. We have a number of young colleagues representing the future of this department. In this issue of the Niche you will read a profile about our newest colleague Megan Schrementi, PhD. We certainly hope Dr. Schrementi has a successful and productive career at DePaul. In addition, you will read about three colleagues receiving awards. Dr. Kozlowski was inducted into the Society of Vincent de Paul Professors, Dr. Sparkes was awarded the Excellence in Teaching Award, and Dr. Brooke received the Faculty Mentor of the Year Award in the College of Science and Health.

I am also very proud of the students in our department. It is always exciting to see the students present their research at the annual Undergraduate Science Showcase event. You will see some of the titles of these presentations in this issue of The Niche.

If it has been awhile, and you are able, we would love to have you come back to campus for a visit. Thanks for reading and thank you for your continued support. ■

John Dean

Professor and Chair of Biological Sciences

NEW FACULTY PROFILE: MEGAN SCHREMENTI

The Department of Biological Sciences would like to introduce one of our new faculty members, Megan Schrementi, PhD. Megan joined the department in September of 2014 as a laboratorian and instructor. She received her PhD in microbiology and immunology from Loyola University Chicago where she studied the role of inflammation in wound healing. She continued her postdoctoral research at the University of Illinois at Chicago where she studied the regulation of inflammatory genes in the wound healing process. In 2009, she focused her career path on teaching and took a position as a visiting assistant professor at the University of St. Francis in Joliet where she taught microbiology, human biology and introductory biology. From St. Francis, she took a full-time tenure position at the Illinois Math and Science Academy (IMSA), a residential school for extremely gifted high school students, in Aurora, Illinois. In addition to teaching microbiology, biology and scientific methods at IMSA, Megan also did pedagogical studies that focused on student's ability to transfer their learning and apply it to more challenging critical thinking scenarios. She also assisted in several student research projects in collaboration with advisors at Northwestern and Loyola University. At DePaul, she has been an instructor in the lab for General Biology III for science majors (Bio 193) and Microbiology (Bio 210) during the fall quarter. She will be the instructor and lecturer from Bio 210 in the winter quarter 2015. Schrementi tells us that thus far she has enjoyed her time at DePaul and is thrilled to be back on a college campus. ■



PUBLISHING POWERHOUSE

Faculty members in the Biological Sciences Department have had another productive year publishing in diverse areas including evolution, ecology, neurobiology, parasitology, plant and animal physiology, microbiology, virology, genetics and molecular biology. In addition to publishing in peer-reviewed journals, faculty members have obtained numerous internal and external grants to support their research programs which provide research experiences for both undergraduates and graduate students. Representative publications for 2014 are shown below.

Aguirre WE, Walker K, Gideon S (2014) Tinkering with the axial skeleton: vertebral number variation in ecologically divergent threespine stickleback populations. *Biological Journal of the Linnean Society* 113:204-219

Aguirre WE, Navarrete R, Calle P, Sanchez-Garces GC (2014) First Record of *Iotabrycon praecox* Roberts 1973 (Characidae) in the Santa Rosa River, southwestern Ecuador. *Checklist* 10:382-385

Boachon B, Gamir J, Pastor V, Erb M., Dean J, Flors, V, Mauch-Mani B (2014) Role of two UDP-glycosyltransferases from the L group of *Arabidopsis* in resistance against *Pseudomonas syringae*. *European Journal of Plant Pathology* 139:707-720

Brooke JS (2014) New strategies against *Stenotrophomonas maltophilia*: a serious worldwide intrinsically drug-resistant opportunistic pathogen. *Expert Review of Anti-infective Therapy* 12:1-4

Caddigan SC, Barkauskas RT, Sparkes TC (2014) Intra-population variation in behavior modification by the acanthocephalan *Acanthocephalus dirus*: are differences mediated by host condition? *Parasitology Research* 113: 4307-4311

Fan Q, Longnecker R, Connolly SA. 2014. Substitution of herpes simplex virus 1 entry glycoproteins with those of saimiriine herpesvirus 1 reveals a gD-gH/gL functional interaction and a region within the gD profusion domain that is critical for fusion. *Journal of Virology* 88:6470-6482

Gilliland WD, Colwell EM, Osiecki DM, Park S, Lin D, Rathnam C, Barbash DA (2014) Normal segregation of a foreign chromosome during *Drosophila* female meiosis despite extensive heterochromatin divergence. *Genetics* (In press)

Gilliland WD, Colwell EM, Lane FM, Snouffer AA (2014) Behavior of aberrant chromosome configurations in *D. melanogaster* female meiosis I. *G3: Genes, Genomes, Genetics* (In press)

Gorman KL, Shimada K, Witzke BJ (2014) Late Cretaceous marine fishes from the basal Greenhorn Limestone in western Iowa. *Transactions of Kansas Academy of Science* 117:91-99

LaMontagne JM, Kilgour RJ, Anderson EC, Magle S (2014). Tree cavity availability across forest, park, and residential habitats in a highly urban area. *Urban Ecosystems*: DOI 10.1007/s11252-014-0383-y

Li XW, Rees JS, Xue P, Zhang H, Hamaia SW, Sanderson B, Funk PE, Farndale RW, Lilley KS, Perrett S, Jackson AP (2014) New insights into the DT40 B cell receptor cluster using a proteomic proximity labeling assay. *Journal of Biological Chemistry* 289:14434

Loh M, Vital W, Vu V, Navarrete R, Calle P, Shervette VR, Torres A, Aguirre WE (2014) Isolation of sixteen microsatellite loci for *Rhoadsia altipinna* (Characiformes: Characidae) from an impacted river basin in western Ecuador. *Conservation Genetics Resources* 6:229-231

Nelms A, McIntosh AP, Shimada K (2014) Fossil fishes from the Jetmore Chalk Member (Lower Turonian) of the Upper Cretaceous Greenhorn Limestone in north-central Kansas. *Transactions of Kansas Academy of Science* 117:245-252

Philibert KD, Marr RA, Norstrom EM, Glucksman MJ (2014) Identification and characterization of A β peptide interactors in Alzheimer's disease by structural approaches. *Frontiers of Aging Neuroscience* 6:265. doi:10.3389/fnagi.2014.00265

Shimada K, Currie PJ, Scott E, Sumida S (2014) The greatest challenge to 21st century paleontology: When commercialization of fossils threatens the science. *Palaeontologia Electronica*, 17(1E) 4 PP

Shimada K, Welton BJ, Long DJ (2014) A new fossil megamouth shark (Lamniformes: Megachasmidae) from the Oligocene-Miocene of the western United States. *Journal of Vertebrate Paleontology* 34:281-290 ■

CONVOCATION AWARDS: EXCELLENCE IN TEACHING AND VINCENT DE PAUL INDUCTION



Dorothy Kozlowski and Tim Sparkes

At the 2014 Annual Academic Convocation, we were thrilled to hear that two Biological Sciences professors would be receiving awards. Dorothy Kozlowski, PhD, neurobiologist and professor in the Biological Sciences Department, was inducted as a new member in the Society of Vincent de Paul Professors, an organization of faculty at DePaul University whose goal is to enhance the educational mission of the university in ways consistent with its distinctive values, such as Vincentian personalism,

social justice and service. Tim Sparkes, PhD, behavioral ecologist and associate professor in the Biological Sciences Department, was awarded the Excellence in Teaching Award for the College of Science and Health. The Excellence in Teaching Award is awarded to professors based on a number of factors, including teaching breadth, performance, student course evaluations and overall teaching philosophy. To view more photos and information from the 2014 Academic Convocation, please visit: depaulnewsline.com/gallery/2014-convocation-awards-faculty-and-staff?utm_source=CRM&utm_medium=email&utm_campaign=september-18-2014. □

CONGRATULATIONS TO DR. KOZLOWSKI AND DR. SPARKES.

JOINING THE 25 YEAR CLUB



John Dean and Stan Cohn

Current Biological Sciences Departmental Chair John Dean and former Biological Sciences Departmental Chair Stanley Cohn have been initiated into the 25 Year Club at DePaul University. Colleagues reaching their 25th anniversary are invited to attend a celebratory luncheon hosted by the president as well as have their names added to public recognition plaques located on the Loop and Lincoln Park campuses. The department also took it upon us to throw our own surprise party for Dean and Cohn. Congratulations Dr. Dean and Dr. Cohn, our department would not be the same without all of your wonderful contributions. mission.depaul.edu/Programs/awards/25YearClub/Pages/default.aspx □

CSH HONORS BANQUET: JOANNA BROOKE FACULTY MENTOR OF THE YEAR

Joanna Brooke, PhD, received the first-ever Faculty Mentor of the Year Award in the College of Science and Health at the College of Science and Health's Annual Honors Banquet. Brooke received her MSc and PhD degrees in microbiology and immunology at the University of Western Ontario and completed her postdoctoral research at the University of Texas Southwestern Medical Center in Dallas. She joined the Biological Sciences Department at DePaul in 2001. Her medical microbiology research in infectious disease at DePaul has involved both undergraduate and graduate students, with several students presenting their work at national and international conferences. Students from Brooke's lab have entered into research positions at Harvard Medical School, Northwestern University, Children's Memorial Research Center, Argonne National Laboratory and into graduate programs,



Senior Biology Major Ian Sanchez presents Brooke with her award

pharmaceutical and biotechnology companies, professional secondary education programs, dental, optometry and medical schools. Brooke teaches a range of courses at DePaul including microbiology, biotechnology and medical bacteriology. At DePaul she serves as chair of the Institutional Biosafety Committee, as a member of the Liberal Studies Council and the College of Science and Health Research and Faculty Development Committee. □

CONGRATULATIONS DR. BROOKE.

CSH HONORS BANQUET: RICKY GHANDI BIOLOGY SENIOR STUDENT OF THE YEAR

Ricky Gandhi was selected as the Biological Sciences Department's Senior of the Year Award Recipient. Ricky possesses some of the most varied interests and talents of any student that has completed the biology program in recent years. Upon graduation, he will have completed a dual degree that includes a Bachelor of Science in biological sciences with minors in chemistry and physics, and a Bachelor of Arts degree in political science with a minor in economics. All of which was completed in four years with a 3.71 cumulative GPA. In addition to his coursework, Ricky also conducts research in the laboratory of Talitha Rajah, PhD. Specifically, he is using fluorescent staining and confocal microscopy to examine if soy components can inhibit breast cancer cell movement. In addition to his academic pursuits, Ricky also has some impressive extra-curricular activities. He has been serving as the student representative to the biology departmental faculty meetings and has helped make curricular decisions by providing the department with valuable insight into the student experience. □



Associate Dean Margaret Silliker presents Ricky Gandhi with his award

CONGRATULATIONS RICKY.



PHOTO GALLERY



1. Roshan Ali and Maxine Loh at commencement 2014

2. Laura Palacios' DNA cap

3. Maria Ulloa, Natalia Ziemianska, Arta Zenunovic and Webster Vital at commencement 2014

4. Senior Appreciation Award Recipients Fiona Lane, Michael Lordon and Ricky Gandhi

5. Senior Biology majors and student athletes Natalie Rizzo and Alexandra Muller

6. Evan Johnson-Ransom presenting at the Annual Undergraduate Science Showcase

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 this November in presenting some of their ongoing research work as part of the annual Undergraduate Science Showcase poster presentations. Congratulations to everyone on your great work.

LISSETTE ARELLANO "Morphological Divergence of *Brycon alburnus* Population in Rivers and Artificial Impoundments of Western Ecuador"

RACHEL LANGE "Characterization of CT Dhr1, an Essential DEAH-Box ATP-Dependent RNA Helicase"

SARAH BELTON "Transient Blockade of NMDARs During Early Adolescence Differentially Disrupts Basolateral Amygdalar (BLA)" and "Ventral Hippocampal (vHipp) Transmission in the Prefrontal Cortex (PFC)"

MARISSA LOCKE "Delimiting Species Boundaries in the Face of Conflicting Phenotypic and Molecular Data"

KATELYN CARLSON "Vertebral Number Variation in Ecologically Divergent Three-Spined Stickleback and "DinF and NorM Membrane Proteins, Multidrug and Toxic Compound Extrusion (MATE) Transporters: How These Proteins May Contribute to Multidrug Resistance"

ADAM MALINOWSKI, BRYAN MCCLARTY, CAROLYN ROBINSON, AND WILLIAM SPEAR "Effect of Surfactant on Biofilm Development in a Respiratory Isolate of *Stenotrophomonas maltophilia*"

ALLISON GRECCO "Individual Variation in White Spruce Cone Size"

RAMSEY MILLISON "The Impacts of Prairie Restoration on Belowground Processes in Chicagoland Prairies"

ALEXANDER HADDAD "Herpesvirus Entry Glycoprotein Interactions Detected by Proximity Biotinylation"

KATIE REGET "An Assessment of Egg Laying Muscular Mutations In *C. elegans*"

DELANEY HALPIN, AISHA ISMAIL, WILLIAM MACKE, AND SZYMON OLSZEWSKI "Habituation and Repression of Light-Stimulated Directional Changes in Diatoms"

SHEEMA SHABAHANG "Development of Small Molecule Caspase-1 Inhibitors" and "Feeding and Stress"

REBECCA JAEGER "Killer Whales: Survival and Renewal Analysis"

JOSHUA SMITH "Studies toward Stereoslective Allylation of Aldehydes using allylsilane Substraes"

EVAN JOHNSON-RANSOM "Fossil Marine Vertebrates from the Pfeifer Shale Member of the Upper Cretaceous Greenhorn Limestone in Republic County, Kansas"

SHRASTA TAMRAKAR "Isothermal Titration Calorimetric Study of Mpp10 and Imp3 Interaction"

REBECCA URSIN "In Vivo Impact of Vitamin A Deficiency or Retinoic Acid Synthesis Inhibition on Ovulation and Oocyte Matuation in Mice"

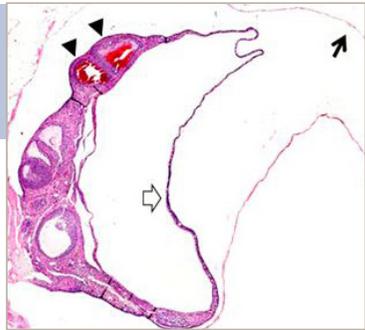
ERICA VALDEZ "Naticidae Gastropods and Predator-Prey Relationship Related to Size-Selectivity" 

 Find us on Facebook: facebook.com/depaulbio

 Follow us on Twitter: [@depaulbiodept](https://twitter.com/depaulbiodept)

RESEARCH IN ACTION

VIRTUES OF VITAMIN A



Ovarian follicle development is a complicated process critical for female reproduction and health. The Kipp lab uses a broad spectrum of molecular, cellular, biochemical, genetic, morphological and physiological approaches to investigate hormone signaling and gene expression in the regulation of ovary development. Recently the Kipp lab has identified retinoic acid, an active metabolite of vitamin A, as a novel ovarian regulator that plays a role in this process. Using a dietary vitamin A-deprivation animal model, the Kipp lab has shown that vitamin A deficiency causes a variety of ovarian pathologies, leads to delayed egg maturation, and reduces ovulation rate, all of which could negatively impact female fertility. The image exemplifies some striking ovarian pathologies observed in long-term vitamin A deficient mice. Black arrow heads: hemorrhagic follicles. Open arrow: follicular cyst. Black arrow: bursa cyst. Currently the lab is investigating further the functions of vitamin A and retinoic acid in the ovary and the underlying molecular and cellular mechanisms. The expected findings promise new insights into the prevention and treatment of reproductive and endocrine diseases such as polycystic ovary syndrome, premature ovarian failure and ovarian cancer. 