



DEPARTMENT OF
BIOLOGICAL SCIENCES

||||| 2021 - 2022 ACADEMIC YEAR HIGHLIGHTS

ADVANCING HUMAN AND ENVIRONMENTAL HEALTH



UNIVERSITY OF
NOTRE DAME
College of Science

The **Department of Biological Sciences** is the core of research and education in the Life Sciences at Notre Dame. Housed predominantly in the Galvin Life Sciences Building at the center of our beautiful campus, the department is home to a diverse community of scholars invested in biological inquiry. Our diverse teaching and research interests span the broad range of the life sciences.

Our endeavors can be conceptually organized into three foci: Cellular and Regenerative Biology; Infectious Disease and Global Health; Ecology, Evolution and Environment. However, our culture and practice is highly interdisciplinary; we integrate across these foci and beyond traditional disciplinary, scientific and administrative boundaries.

Our overall mission is to conduct research at the forefront of 21st century integrative biology and to cultivate leaders who will make a difference to the future of human health and the environment.



Jason Rohr
*Ludmilla F., Stephen J., and
Robert T. Galla College
Professor & Department
Chair*



Mike Pfrender
*Professor & Associate Chair;
Director, Genomics &
Bioinformatics Core Facility*



Zach Schafer
*Coleman Foundation
Associate Professor of
Cancer Biology &
Assistant Chair*

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DEPARTMENT OF BIOLOGICAL SCIENCES

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WELCOME ABOARD!

THE DEPARTMENT OF BIOLOGICAL SCIENCE IS THRILLED TO WELCOME
NEW FACULTY MEMBERS IN THE COMING ACADEMIC YEAR



Katrina Adams, *Gallagher Assistant Professor*

Dr. Adams earned her B.S. in Biochemistry and Cell Biology from the University of California, San Diego in 2008. She then studied at University of California, Los Angeles and earned her Ph. D. in Molecular Biology. Currently, Dr. Adams is a Postdoctoral Research Fellow at the Children's National Hospital in Washington D.C. She currently works in the Center for Neuroscience Research in the lab of Dr. Vittorio Gallo, Ph.D.



Trenton Agrelius, *Assistant Teaching Professor*

Mr. Agrelius earned his B.S. in Biological Sciences from Augusta University, his M.S. in Marine Sciences from the University of South Carolina, and his Ph.D. in Biological Sciences from the University of South Carolina. He has been the instructor of record for two separate four-credit General Biology courses at Allen University, Columbia, SC. For BIO 113, he developed and administered two sections of lecture and laboratory for majors covering cytology, metabolism, genetics, and an introduction to molecular biology. For BIO 110, he developed and administered two sections of lecture and laboratory for non-majors covering cell organization and reproduction, organ systems, and basic chemistry. He also has been a teaching assistant for several courses at the University of South Carolina.



Paul Kulesa, *Berthiaume Family Professor in Neuroscience, Associate Faculty Director of the Notre Dame Integrated Imaging Facility (NDIIF);*

Dr. Paul Kulesa is currently a Full Professor and Director of Imaging at the Stowers Institute for Medical Research. Dr. Kulesa earned his B.S. in Aerospace Engineering from Notre Dame in 1984. He received an M.S. in Applied Math from USC in 1990 and a Ph.D. in Applied Math from the University of Washington in 1995. Dr. Kulesa was a postdoctoral fellow with Dr. Scott Fraser at Cal Tech from 1995-2002 before beginning his independent career at Stowers in 2003. He rose through the ranks at Stowers and was promoted to his current rank of Professor in 2012.



Diane Lane, Assistant Teaching Professor

Dr. Diane Lane is an Assistant Professor of neuroscience at Weill Cornell Medical College in the Feil Family Brain and Mind Research Institute. She studies central nervous system processing of pain perception and plastic mechanisms associated with drug tolerance. She received her B.A. in Psychology and with a minor in Zoology from Eastern Illinois University, a M.S. in Applied Biopsychology with a minor in statistics from the University of New Orleans in 1994. In 2014, she received her PhD from Washington State University. Her thesis centered on the role of periaqueductal grey in the development of tolerance to morphine. After her PhD, she conducted postdoctoral research at Weill Cornell Medical College in the Division of Neurobiology.



Jianneng Li, Archibald Assistant Professor

Dr. Li earned his B.S. in Biology from Shanghai Ocean University in 2008 before completing his Ph.D. in Biophysics at Fudan University in 2013. Dr. Li became a Postdoctoral Fellow at the Learner Research institute at Cleveland Clinic in 2013 and went on to be appointed as a Research Associate in May of 2021.



Julian Torres-Dowdall, Assistant Professor

Dr. Julian Torres-Dowdall, is a Project Leader at the University of Konstanz in Germany. He is an evolutionary biologist whose research aims to understand the mechanisms that govern evolutionary trajectories in natural populations and generate biodiversity, especially in adaptive fish radiations. He received his B.A. in Biology and Zoology in 2002 from the Universidad Nacional de Tucumán, Argentina, followed by an M.S. in 2005 in Wildlife Science from Universidad Nacional de Córdoba, also in Argentina. In 2012, he received his PhD from Colorado State University, where he worked with Dr. Cameron K. Ghalambor on evolutionary processes along environmental gradients. Since his PhD, he has been working with Dr. Axel Meyer, and partly supported by a prestigious Marie Curie Postdoctoral Fellowship, awarded in 2013.

FACULTY PROMOTIONS

THE DEPARTMENT OF BIOLOGICAL SCIENCES IS PROUD TO ANNOUNCE THE SUCCESSFUL PROMOTION OF THE FOLLOWING FACULTY MEMBERS



Dominic Chaloner; To Full Professor of the Practice

Dominic completed his BS and PhD at University College London and a postdoc at Michigan State University, where he received training as a field ecologist with considerable expertise in aquatic ecology. In 2000, he then started a postdoc at the University of Notre Dame in the lab of Gary Lamberti and has been here since, taking on the roles of Research and Teaching Professor. Since 2017, Dominic has had an important leadership role in the department, Director of Undergraduate Studies (DUS) for the Environmental Sciences major. As DUS, he provides academic and career advising to 70-80 students along with strategic planning, and outreach to prospective and incoming students as well as alumni. In addition to Dominic's promotion, his title was recently changed from Teaching Faculty to Professor of the Practice. This title better reflects his current responsibilities in both his teaching and research.



Xin Lu; To John M. and Mary Jo Boler Associate Professor

Dr. Xin Lu earned his B.S. in Biological Sciences from Tsinghua University in Beijing, China. Dr. Lu completed his doctoral studies under the direction of Dr. Yibin Kang at Princeton University. Dr. Lu did his postdoctoral research in the laboratory of Dr. Ronald DePinho, first at the Dana Farber Cancer Institute in Boston, MA and subsequently at the University of Texas MD Anderson Cancer Center in Houston, where Dr. DePinho was recruited to serve as President. As a postdoctoral researcher, Dr. Lu worked on rare as well as more prevalent cancers. Dr. Lu then joined the Department of Biological Sciences in January 2017 as the John M. and Mary Jo Boler Assistant Professor, a professorship affiliated with the Boler-Parseghian Center for Rare and Neglected Diseases.



Xuemin (Sheryl) Lu; To Associate Professor of the Practice

Sheryl has a background in cell and molecular biology, focused primarily on cancer and development/regeneration biology. Her research in these areas has employed genetic and genomics approaches. Importantly, Sheryl has a 50% appointment in the Department of Biological Sciences (BIOS) and a 50% appointment in the College of Science (CoS). Her time in BIOS focuses on addressing teaching needs in the department and participating in standing committees. Sheryl's teaching covers a breadth of the student body (from freshmen to upper classmen; from Biology and Neuroscience and Behavior to Pre-professional students), and ranges from mid-sized lecture classes to seminars focused on independent research. Her appointment in CoS requires her to act as Director of Undergraduate Research in the College and participate in undergraduate advising within the majors of Biology and of Neuroscience and Behavior, and beyond.



Jennifer Robichaud; To Full Teaching Professor

Jennifer is a parasitologist with training from the Center for Disease Control and Purdue University Veterinary Hospital. She has been a valuable member of the Department of Biological Sciences (BIOS) since 2008, expertly teaching each of her courses. This is doubly impressive because Jennifer has had a teaching overload for many years, teaching nearly 50% more than other teaching faculty in the BIOS. Additionally, Jennifer teaches mostly pre-med students, which are some of the most demanding and critical at Notre Dame. Jennifer also mentors students in the Masters of Global Health Program, the Biology Honors program, and the Mosquito Surveillance program. Additionally, Jennifer serves as the Director of Undergraduate Studies (DUS) for the Biology Majors starting this academic year



David Veselik; To Full Teaching Professor

David is a 1996 graduate of Notre Dame. After completing his Ph.D. research Georgetown University, David returned to Notre Dame as a postdoctoral fellow to study the role of Vitamin D receptor signaling in breast cancer. Since 2007, David has been a teaching professor in the Department of Biological Sciences (BIOS). In 2013, David took on an important leadership role in the department as the Director of Undergraduate Studies for Biological Sciences majors. He served in this role until earlier this year, when his years of hard work and dedication to the students of Notre Dame were rewarded with his new position as Assistant Dean of Undergraduate Advising in the College of Science (CoS) at Notre Dame.

SOCIETY OF FRESHWATER SCIENCE 2022 CAREER AWARD RECIPIENTS

Dr. Gary Lamberti and Dr. Jennifer Tank were honored as the 2022 Career Award Recipients at the Joint Aquatic Sciences meeting in Grand Rapids on May 17, 2022.

Award of Excellence



Gary Lamberti, Rev. Julius A. Nieuwland C.S.C. Professor of Aquatic Science

The SFS AoE is awarded to a single recipient for outstanding contributions to freshwater science. The scope of the award will reflect the broad interests and expertise exhibited in the Society.

"Gary has been a major influence in freshwater ecology for almost 4 decades, leaving an indelible mark on the field from his early, groundbreaking work on periphyton-herbivore interactions supported by creative and ingenious field manipulations, to his work on invasive species and contaminant transfer in the Great Lakes, to the role of migratory Pacific salmon subsidies in Alaskan streams, and most recently to his exploration of the impacts of toxins on stream ecosystem function in Great Lakes tributaries."

Environmental Stewardship Award



Jennifer Tank, Galla Professor

The recipient of the SFS ESA will be a Society member or non-member who has successfully translated scientific knowledge into the social/public arena through policy or regulatory reform, research that enhances freshwater ecosystem rehabilitation or conservation, or public outreach and science education that strengthens public support for managing freshwater ecosystems.

"Among Jen's most notable research accomplishments are the application of stream nutrient spiraling theory to understand how agricultural land use modifies the uptake and transformation of nutrients, and how the timing of nitrogen export from agricultural watersheds influenced the capacity of streams, reservoirs, and restored floodplains to process and remove that nitrogen."

UNIVERSITY LEADERSHIP

The Department of Biological Sciences is proud to highlight faculty members who have been appointed to leadership positions within the University of Notre Dame.



Patty Champion, Professor, has accepted the position of Director of Postdoctoral Affairs in the College of Science.



Hope Hollocher, Associate Professor, has accepted the position of Director of Academic Community Engagement in the Provost Office.



Mary Ann McDowell, Professor, has accepted the position of Associate Dean for Professional Development in the Graduate School.



Jennifer Tank, Galla Professor, was appointed by Fr. Jenkins as a Co-chair of the "Care for Our Common Home" Theme Advisory Committee (TAC) as part of the University's strategic planning process. The 14-member committee is one of the seven themes that will contribute to the University Strategic Framework, and will help set the direction of Notre Dame over the next decade.

FACULTY HIGHLIGHTS

Many faculty in the department of Biological Sciences lead in their disciplines through scholarship and service. Here is a sampling of faculty accomplishments and honors in the past academic year.

A study from Morris Pollard Professor **Crislyn D'Souza-Schorey's** lab with **James Clancy**, Research Assistant Professor, as primary author, was published in the March 1st issue of Cell Reports. The study shows that a fraction of extracellular double-stranded DNA (dsDNA) is enclosed within tumor microvesicles (TMVs). dsDNA inclusion in TMVs is regulated by ARF6 GTP/GDP cycling and occurs with the cytosolic DNAsensor, cGAS. TMVstransferdsDNA to recipient cells with consequences to recipient cell behavior.



Crislyn D'Souza-Schorey, Morris Pollard Professor, was named as one of two Editors-in-Chief of the Federation of American Societies of Experimental Biology (FASEB) BioAdvances journal.

In a paper published in eLife, **Ana Flores-Mireles**, Hawk Assistant Professor, and her research team demonstrated two different ways that liquid-infused silicone catheters inhibited pathogens such as bacteria and fungus from colonizing the devices and the inside of the bladder. In addition to preventing the adhesion of fibrinogen, the research team's modified catheter is more flexible than traditional ones.



Xin Lu, John M. and Mary Jo Boler Associate Professor, received a \$100,000 Exceptional Project Grant from the Breast Cancer Alliance for his project "Off-the-shelf". The Breast Cancer Alliance is a non-profit organization that supports breast cancer research, breast cancer-related training for medical professionals and efforts to increase access to cancer screenings and treatment for low-income women.



Patricia Champion, Professor, was appointed as an Editor at the Journal of Bacteriology for a five-year term. The journal is run by the American Society for Microbiology, and has been around for more than 100 years.

Michael Pfrender, Professor and Director of the Genomics and Bioinformatics Core Facility, was named as a 2021 Fellow of the American Association for the Advancement of Science (AAAS). AAAS Fellows are a distinguished cadre of scientists, engineers and innovators who have been recognized for their achievements across disciplines, from research, teaching, and technology, to administration in academia, industry and government, to excellence in communicating and interpreting science to the public.



Zach Schafer, Coleman Foundation Associate Professor of Cancer Biology, has recently taken on a new role as the Co-Chair of the chartered Metastasis & Microenvironment Study Section at the American Cancer Society.

Cody J. Smith, Elizabeth and Michael Gallagher Associate Professor, was appointed to the Public Library of Science (PLOS) Biology Editorial Board for the Developmental Neuroscience section.

