



68th

ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM

**Organized by the Student Activities Committee of the New York
Section of the American Chemical Society**

Saturday, May 1st, 2021

9:00 a.m. – 12:30 p.m.

Register for the event at <http://newyorkacs.online/URS/>

Speaker

Dr. Paul G. Falkowski

**Institute of Marine and Coastal Sciences
Department of Chemistry and Chemical Biology
Rutgers University**

Paul G. Falkowski is the Bennett L. Smith Professor of Business and Natural Resources at Rutgers University. His research interests include evolution, paleoecology, photosynthesis, biophysics, biogeochemical cycles, symbiosis and sustainable energy. Born in 1951 and raised in New York City, Falkowski earned his B.S. and M.Sc. degrees from the City College of the City University of New York and his Ph.D. from the University of British Columbia. He has received numerous honors, including the 2018 Tyler Prize for Environmental Achievement (often described as the 'Nobel Prize for the Environment'), and is a member of the U.S. National Academy of Sciences. He has authored or coauthored over 360 papers in peer-reviewed journals and books. Together with John Raven, he is co-author of a textbook, Aquatic Photosynthesis (Princeton University Press), and the sole author of the popular science book, Life's Engines. He is the founding Director of the Rutgers Energy Institute and heads the Environmental Biophysics and Molecular Ecology program at Rutgers University.



Searching for the LEGOS of life

The black hole of chemistry is the origin of life. Over the past two centuries, many chemists have attempted to understand how molecules can both become replicative and catalytic, but we have, thus far failed to understand autocatalysis that can lead to a system of reactions far from thermodynamic equilibrium. In this talk I will discuss the distance between applied and theoretical chemistry, and most importantly, what questions each of us asked, and have answered, when we were six years old.

Speaker

Dr. Mandë Holford

Department of Chemistry
Hunter College – CUNY

Mandë Holford is an associate professor of chemistry at Hunter College and the Graduate Center, CUNY, with scientific appointments at the American Museum of Natural History and Weill Cornell Medicine. Her joint appointments reflect her interdisciplinary research, which combines chemistry and biology to discover, characterize, and deliver novel peptides from venomous marine snails as tools for manipulating cellular physiology in pain and cancer. She is a World Economic Forum New Champion Young Scientist, as well as the recipient of the prestigious Camille Dreyfus Teacher-Scholar Award and an NSF CAREER Award. Holford is active in science education, advancing public understanding of science, and science diplomacy. She cofounded several initiatives, including KillerSnails.com, an award-winning learning-games company that uses extreme creatures as a conduit to advance scientific teaching and learning, and RAISEW.org, an NSF project to increase women's involvement in science.



Venom to the Rescue: Advancing Biological and Chemical Diversity One Killer Snail at a Time

Animal venoms are comprised of a diversity of peptides that manipulate molecular targets such as ion channels and receptors, however, identifying bioactive peptides still remains a significant challenge. Breakthrough technological advancements have enabled interdisciplinary studies using genomics, transcriptomics, and proteomics to expand venom investigation to animals that produce small amounts of venom or lack traditional venom producing organs. One group of non-traditional venomous organisms that have benefitted from the rise of -omic technologies is the Terebridae (auger snails). A venomomics strategy has been applied to the discovery, characterization and optimization of Terebridae venom peptides, teretoxins. Venom peptides, like teretoxins, and the genes from which they are derived, are a resource for investigating biological processes pertaining to organismal evolution (adaptive radiation, diversification), gene development (duplication, neofunctionalization), and cellular physiology involving ion channels (activating/inhibitory ligands). This talk will demonstrate the scientific path *from mollusks to medicine* examining how venom evolved over time in the Terebridae and using this evolutionary knowledge as a roadmap for discovering and characterizing new compounds with therapeutic potential for treating pain and cancer.

SIGNIFICANT DATES FOR 68th URS

Deadline for Abstract Submission – **April 2, 2021**

Abstract acceptance notification – April 9, 2021

Deadline for Symposium Registration – April 16, 2021

2021 Co-chair

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