Sponsored by:

DiMarchi Family Foundation

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Thank you for joining us for the Fourteenth Annual August M. Watanabe Symposium.

We appreciate your participation in helping to commemorate this special event.

Counseling and Psychological Services (CAPS)

2025

The Fourteenth Annual August M. Watanabe Symposium in Chemical Biology

Saturday, April 12, 2025

Harry G. Day Lecture Hall

Chemistry C122

Indiana University, Bloomington

Hosted by

IU QCB

Watanabe Symposium in Chemical Biology

All events will be held in Chemistry C122 unless otherwise indicated.

8:15 – 8:50 am **Coffee & Breakfast Refreshments,** Chemistry C127

8:50 – 9:00 am **Richard DiMarchi,** Distinguished Professor and Linda & Jack Gill Chair in Biomolecular Science, Indiana University
Welcome and Opening Remarks

9:00 – 9:45 am **Tania Lupoli,** Assistant Professor, Department of Chemistry, New York University
"Defined Glycan Ligands to Detect Rare Sugar-binding Proteins"
Introduction: Emma McRae (Giedroc Group)

9:45 – 10:30 am **Marc Morais**, Professor, Department of Molecular and Cellular Biochemistry, Indiana University
"Looking Under the Hood: The Machano-chemistry of a Viral dsDNA Packaging Motor "
Introduction: Lauren Augusta (Fuqua Group)

10:30 – 11:15am **Bradley Moore**, Distinguished Professor, Skaggs School of Pharmacy & Pharmaceutical Sciences, Scripps Institution of Oceanography, University of California, San Diego
"Mining the Specialized Chemistry of the Ocean's Living Wonders to Improve Human Health "
Introduction: Jane Joncha (Jacobson Group)

11:15-11:30 am **Break,** walk to the IMU Frangipani Room

11:30 – 1:45 pm **Poster Session and Lunch,** IMU Frangipani Room

2015

Marvin H. Caruthers • Trevor Douglas* •
Samuel H. Gellman • Chad M. Rienstra • Megan Thielges* •
James R. Williamson • Zhong-Yin Zhang

2014

Catherine Drennan • Daniel Kearns • Philip Low •
Michael Weiss • Yan Yu* • Xiaowei Zhuang

2013

Jane Aldrich • Lane Baker* • William DeGrado •
David Giedroc* • Thomas Meade • Shahriar Mobashery

2012

Kate Carroll • Stephen Jacobson* • Tom Kodadek •
Scott McLuckey • Peter Schultz • JoAnne Stubbe

2011

Jon Clardy • Andrea Cochran • Nicola Pohl* •
Douglas C. Rees

2010

Jeffery W. Kelly • Laura L. Kiessling •
Thomas V. O'Halloran • Ronald T. Raines

indicates past or present affiliation with Indiana University

Thirteen Years of Watanabe

2024

Matthew Bogyo • Hui-Chen Lu* • J. Martin Bollinger • Alan Palkowitz • Kay Choi* • Eranthie Weerapana

2023

Matthew Disney • Michelle Chang • J.P. Gerdt* • Robert Doyle • Jen Heemstra • William Roush

2022

M.G. Finn • Elizabeth Nolan • Jared Lewis* • Ann McDermott • Jonathan Schlecbach*• Michael Stowell

2019

David Clemmer* • R. Graham Cooks • Richard DiMarchi* • Jirong Lu • Tom Muir • Jackie Papkoff • Michael Sofia

2018

Paul Ahlquist • Stephen Harrison • Tuli Mukhopadhyay* • Priscilla Yang • Z. Hong Zhou • Adam Zlotnick*

2017

Stephen D. Bell* • Angela M. Gronenborn • Taekjip Ha • Jody Puglisi • Robert T. Sauer • Michael VanNieuwenhze*

2016

George Barany • M. Kevin Brown* • Scott E. Denmark • Margaret M. Faul • Steve Hitchcock • Tom Snaddon* • Paul A. Wender

1:45 – 2:00 pm	**Walk back to the Chemistry Building,** C122
2:00 – 2:45 pm	**Jonathan Douros,** Senior Scientific Director **Patrick Knerr,** Vice President, Metabolic Translational Research Indiana Biosciences Research Institute *"Leveraging the Nuances of Biased Agonism to Optimize GLP-1 Analogues"* Introduction: Averi McFarland (Winkler Group) and Andrew Bach (Snaddon Group)
2:45 – 3:30 pm	**Ricardo Vázquez,** Assistant Professor, Department of Chemistry, Indiana University *"Conjugated Oligoelectrolytes for Biophysical Sensing Using Time-Resolved Spectroscopy and Microscopy"* Introduction: Oscar Medrano (Vázquez Group)
3:30—4:00 pm	**Coffee Break,** Chemistry C127
4:00—4:45 pm	**Lara K. Mahal,** Canada Excellence Research Chair in Glycomics, Professor of Chemistry, Director of the Glycomics Institute of Alberta (GIA), University of Alberta *"Breaking Paradigms: How Studying Glycan Regulation Upended our Understanding of MicroRNA"* **Zoom Link:** https://iu.zoom.us/j/85926903509 Introduction: Patrick Laughlin (Zlotnick Group)
4:45—5:00 pm	**Jared Lewis**, Professor, Department of Chemistry, Indiana University *Closing Remarks*

Dr. August M. Watanabe was a renowned physician, researcher, professor, entrepreneur and venture capitalist. He was the founding Chairperson of BioCrossroads and developed the initial strategic plan that established the organization. Dr. Watanabe was Executive Vice President of Science and Technology and a member of the Board of Directors at Eli Lilly and Company from 1996 to 2003. He joined Lilly in 1990 and became President of Lilly Research Laboratories in 1994. Under his leadership Lilly launched 11 important new pharmaceutical products.

Prior to joining Lilly, Dr. Watanabe was a full-time faculty member of the Department of Medicine at the Indiana University School of Medicine from 1971 to 1990. In 1978, he became the youngest Professor of Medicine at the university, and from 1983 to 1990, he was the Chair of the Department of Medicine. Dr. Watanabe served as co-founder of Marcadia Biotech, partner in Twilight Venture Partners, and a director of Ambrx, Endocyte, QuatRx and Kalypsys. He was also a senior advisor to Frazier Healthcare Ventures.

Dr. Watanabe remained active in the community, serving as a director of the Indiana University Foundation, the Regenstrief Foundation, Christel House International and the Indianapolis Symphony Orchestra. During his academic and research career, Dr. Watanabe co-authored more than 100 scientific publications and book chapters. He served on the editorial boards of scholarly journals and as an officer in several national academic organizations, including the American College of Cardiology and the American Heart Association. Dr. Watanabe received his B.S. from Wheaton College and his M.D. from the Indiana University School of Medicine.

Jared Lewis

Professor, Department of Chemistry, Indiana University

Jared Lewis was born and raised in Effingham, Illinois. He obtained his B.S. in chemistry from the University of Illinois (2002, Prof. Eric Oldfield), earned his Ph.D. in chemistry from the University of California, Berkeley (2007, Prof. Jonathan Ellman and Prof. Robert Bergman), and conducted postdoctoral studies at Caltech (2010, Prof. Frances Arnold). Prof. Lewis started his independent career at the University of Chicago in 2011, moved to Indiana University as an Associate Professor in 2018, and was promoted to Professor of Chemistry in 2023. His group engineers enzymes and develops new protein engineering tools to enable selective chemical transformations.

Ricardo Javier Vázquez

Assistant Professor, Department of Chemistry, Indiana University

Ricardo Javier Vázquez, an emerging scientist from Puerto Rico, pursued his doctoral studies at the University of Michigan, Ann Arbor, under Professor Theodore Goodson III's guidance. His research utilized time-resolved spectroscopy and non-linear optics to explore important properties in organic optoelectronic materials. Post-Ph.D., Prof. Vázquez undertook postdoctoral studies with Prof. Guillermo C. Bazan at the National University of Singapore, focusing on water-soluble organic optoelectronic materials for bioimaging and energy applications. Now, at the Chemistry Department at Indiana University Bloomington, Prof. Vázquez's independent career bridges organic materials and measurement science to address problems regarding precision in life science, energy transduction, optoelectronics, and bioelectronics.

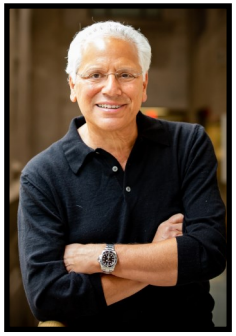
Lara K. Mahal

Canada Excellence Research Chair in Glycomics, Professor of Chemistry, Director of the Glycomics Institute of Alberta (GIA), University of Alberta

Lara K. Mahal is the Canada Excellence Research Chair in Glycomics, a Professor of Chemistry and the Director of the Glycomics Institute of Alberta (GIA) at the University of Alberta. An expert in glycomics and chemical glycobiology, she developed lectin microarray technology, which provides a high-throughput method for glycomics now widely applied to understand systems from clinical cancer research to host-pathogen interactions. More recently, her work on microRNA regulation of glycosylation is overturning dogma on how these non-coding RNA work. She obtained her Ph.D. in Chemistry at UC Berkeley (2000) as the first student of Prof. Carolyn Bertozzi (Nobel Laureate, 2022). She was a Jane Coffin Childs Postdoctoral Fellow in the laboratory of Prof. James Rothman (Nobel Laureate, 2013) at Sloan-Kettering Institute from 2000-2003. She started her first independent position as an Assistant Professor in Chemistry at the University of Texas at Austin in 2003. Post-tenure in 2009, Professor Mahal moved to New York University, where she was faculty member from 2009-2019. In September 2019, she joined the faculty of the University of Alberta as the Canada Excellence Research Chair in Glycomics. In 2022, she founded the Glycomics Institute of Alberta. She has published >100 papers and received numerous awards including the Arnold and Mabel Beckman Foundation Fellowship (2004), NSF Career Award (2007), Alfred P. Sloan Foundation Fellowship (2008), National Institutes of Health Director's New Innovator Award (2008), the Horace Isbell Award for Carbohydrate Chemistry from the American Chemical Society (2017), and the ASTech Award in Medical Research (2024).

Richard DiMarchi

Distinguished Professor, Linda & Jack Gill Chair in Biomolecular Science, Indiana University



Richard DiMarchi is a Distinguished Professor of Chemistry and Gill Chair in Biomolecular Sciences at Indiana University, where he previously served as chairman of the Chemistry Department. Dr. DiMarchi is a member of the National Academy of Medicine and the National Inventors Hall of Fame. He is a former Group Vice President at Eli Lilly and later at Novo Nordisk. He is recognized for his contributions to the discovery and development of rDNA-derived Humalog®, rGlucagon®, and Forteo®. His academic research has broadened the understanding of glucagon physiology and the discovery of single molecule multimode agonists for the treatment of diabetes and obesity. He is a former decade-long chairman of the Peptide Therapeutics Foundation and is widely recognized as an international spokesperson for macromolecular medicines. Professor DiMarchi is co-inventor on more than one hundred U.S. patents and co-author to more than two hundred and fifty peer-reviewed scientific publications. He was identified as a top-five translation researcher by Nature Biotechnology for the years 2014 and 2015. Since 2003, he has co-founded six successful biotech companies (Ambrx, Marcadia, Calibrium, MB2, Assembly, MBX). In the last decade Professor DiMarchi has received the 2011 Merrifield Award for career contributions in peptide sciences, the 2014 German National Erwin Schrödinger-Preis, the 2015 Meienhofer Prize, the 2015 Max Bergmann Medal, and the 2016 ACS Alfred Burger career award in medicinal chemistry.

Tania Lupoli

Assistant Professor, Department of Chemistry, New York University

Tania Lupoli was born and raised in New York, and graduated from NYU in 2005 as a chemistry major. After training in Chemistry / Chemical Biology and Microbiology departments, she returned to NYU Chemistry in the summer of 2018 to use interdisciplinary approaches to answer lingering questions in the field of infectious disease. Over the last several years, her group has developed probes and methods to study protein folding and glycan synthesis in bacterial cells.

Marc Morais

Professor, Department of Molecular and Cellular Biochemistry, Indiana University

Marc Morais was born and raised in New Hampshire, where he attended The University of New Hampshire and graduated with a degree in Chemistry and Biochemistry. After a short stint working for the biotech company Genzyme in Boston, he attended graduate school at the Boston University School of Medicine, Department of Physiology and Biophysics, where he studied mechanistic enzymology under the guidance of Dr. Karen Allen. He then joined Dr. Michael Rossmann's laboratory at Purdue University as a post-doctoral fellow. There, Dr. Morais used cryo-electron microscopy and X-ray crystallography to understand how virus capsids self-assemble. Dr. Morais began his independent PI career as an assistant professor in the Department of Biochemistry and Molecular Biology at the University of Texas Medical Branch at Galveston, Texas. In late 2022, Dr. Morais moved his lab to Indiana University, where he is a professor in the Department of Cellular and Molecular Biochemistry. The Morais lab uses a combination of structural, biochemical, biophysical, and computational tools to continue to study the principles by which virus capsids self-assemble, and to better understand the mechano-chemistry of molecular motor sand machines.

Bradley Moore

Distinguished Professor, Skaggs School of Pharmacy & Pharmaceutical Sciences, Scripps Institution of Oceanography, University of California, San Diego

Bradley Moore is a biosynthetic chemist and a pioneer in the field of natural product genome mining. He specializes in reading and writing the genetic code of marine life from bacteria and plankton to marine plants and animals to understand and develop new ocean-based materials, medicines and molecular tools. Prof. Moore is a Distinguished Professor at the University of California, San Diego, with joint appointments in the Skaggs School of Pharmacy and Pharmaceutical Sciences and the Scripps Institution of Oceanography where he is the Director of the Center for Marine Biotechnology and Biomedicine. He has published >270 peer-reviewed articles, trained nearly 100 graduate students and postdoctoral fellows, and has been recognized with numerous awards and honors by the National Institutes of Health, the American Chemical Society, the American Academy of Microbiology, the American Society for Pharmacognosy, and the Royal Society of Chemistry. For nearly 20 years, he has been an editor for several scientific journals, and earlier this year he became the Editor-in-Chief of the Journal of Natural Products.

Jonathan Douros

Senior Scientific Director, Indiana Biosciences Research Institute

Jonathan Douros, Ph.D., is a pharmacologist specializing in incretin therapeutics and metabolic disease. As Senior Scientific Director at the Indiana Biosciences Research Institute (IBRI), he is dedicated to translating high-impact basic research into early drug discovery projects.

Dr. Douros is a native of the Raleigh/Durham region of North Carolina where he attended Shaw University. He went on to perform his doctoral training at North Carolina State University studying the role of leptin to regulate metabolic stress responses in the tilapia. After receiving his Ph.D. in 2015, Dr. Douros went on to a postdoctoral fellowship under Dr. David D'Alessio at Duke University assessing the improvements in islet function following bariatric surgery. At Duke, he was able to collaborate with leading incretin biologists and pharmacologists in industry who fostered an appreciation for early drug discovery. In 2020, Dr. Douros joined the Novo Nordisk Research Center Indianapolis, where he led in vivo pharmacology efforts with a primary focus in the type 2 diabetes and obesity therapy areas. In 2022, he took the position of associate director of biology and pharmacology leading a team of nine Ph.D. scientists working on drug discovery projects across multiple therapy areas including metabolic and rare diseases.

Jonathan lives in Indianapolis with his wife and daughter. Most of his time outside of work is spent with his family and having his cardiovascular function tested by the N.C. State Wolfpack.

Patrick Knerr

Vice President, Metabolic Translational Research, Indiana Biosciences Research Institute

Patrick Knerr, Ph.D., is a peptide medicinal chemist experienced in the design and optimization of peptide-based therapeutics for metabolic diseases. He obtained his Ph.D. in Chemistry at the University of Illinois Urbana-Champaign, working in the laboratory of Prof. Wilfred van der Donk. He began his professional career with DuPont Crop Protection in Newark, Delaware, before joining the Novo Nordisk Research Center Indianapolis in 2016 under the direction of Prof. Richard DiMarchi. At the NNRCI, he led medicinal chemistry efforts toward the discovery of several long-acting incretin analogs reaching clinical testing for type 2 diabetes and obesity indications, prior to assuming site director responsibilities in 2022. In 2024, he joined the IBRI and leads both its drug discovery efforts in metabolic diseases and its biomolecular production capabilities.