



The Fourth Annual

**August M. Watanabe
Symposium in
Biotechnology**

Indiana University
Bloomington
Saturday, October 12, 2013
Chemistry 122



August M. Watanabe

Dr. August M. Watanabe was a renowned physician, researcher, professor, entrepreneur and venture capitalist. He was the founding Chairman 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 Chairman 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. He also 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, Watanabe co-authored more than 100 scientific publications and book chapters and 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.

The Fourth Annual Watanabe Symposium in Biotechnology

- 7:30 – 8:30 am Coffee & Breakfast Drinks
- 8:30 – 8:40 am Welcome: Professor David Giedroc
- Introduction: Professor Richard DiMarchi
- 8:45 – 9:30 am **Professor William DeGrado**
“Analysis of Proton Channels: From the Structure and Mechanism of Viral Proton Channels to the de Novo Design of a Zinc-Proton Antiporter”
- Introduction: Professor Mike VanNieuwenhze
- 9:30 – 10:15 am **Professor Shariar Mobashery**
“How Staphylococcus aureus Became Methicillin-Resistant Staphylococcus aureus (MRSA)”
- Introduction: Professor Charles Dann III
- 10:15 – 11:00 am **Professor David Giedroc**
“Fighting Over Metals: Transition Metal chemistry at the Host-microbial Pathogen Interface”
- 11:00 – 1:00 pm Poster Session & Lunch
(Neal Marshall Black Cultural Center)
- Introduction: Professor Jeffrey Zaleski
- 1:00 – 1:40 pm **Professor Thomas J. Meade**
“Seeing is Believing: Coordination Chemistry of Molecular Imaging Probes”
- Introduction: Dr. John Mayer
- 1:40 – 2:20 pm **Professor Jane Aldrich**
“Novel Opioid Peptides: New Approaches for an Old Target”
- Introduction: Professor Yan Yu
- 2:20 – 3:00 pm **Professor Lane Baker**
“Unconventional Pipetting for Bioanalysis”
- 3:00 pm Closing: Professor Richard DiMarchi



Professor William DeGrado

Professor

Department of Pharmaceutical Chemistry
University of California at San Francisco

Professor DeGrado's research focuses on small molecule and protein design as an approach to understanding macromolecule structure and function.

One primary research interest is in the de novo design, in which one designs proteins beginning from first principles. This approach critically tests the understanding of protein folding and function, while also laying the groundwork for the design of proteins and biomimetic polymers with properties unprecedented in nature. The DeGrado lab also studies the structure and function of a number of pharmacologically interesting systems. Professor DeGrado received his B.A. from Kalamazoo College (1977) and his Ph.D. from the University of Chicago (1981), both in chemistry. He then worked in industry for fourteen years with DuPont Merck Pharmaceuticals. He was on the faculty at University of Pennsylvania for 15 years, and then in 2011 he accepted his current position at UCSF.

Professor Shahriar Mobashery

Navari Family Professor in Life Sciences
Department of Chemistry and Biochemistry,
University of Notre Dame



Research interests of the Mobashery lab center on bioorganic, organic synthesis, protein chemistry, enzymology and computational sciences. The research carried out in the laboratory employs a multidisciplinary approach to solve problems at the interface of chemistry and biology. The research interests in the group encompass studies of resistance to antibiotics and the means to circumvent them, development of novel antibiotics, and investigations of complex microbial systems such as the outer membrane and the cell wall. The group is also interested in the molecular mechanisms of cancer metastasis and its intervention. Professor Mobashery received B.S. degrees in Biological Sciences (1980) and Chemistry (1981). His Ph.D. was granted in chemistry by the University of Chicago (1985). He carried out postdoctoral research at the Rockefeller University as a NIH Fellow (1986-88). He joined the faculty at Wayne State University in 1989, and later joined the faculty at Notre Dame in 2003 as the Navari Family Professor in Life Sciences.



Professor David Giedroc

Professor and Chair
Department of Chemistry
Indiana University

Work in the Giedroc laboratory is broadly focused on understanding the biophysical chemistry of infectious disease. His group seeks a molecular level understanding of microbial transition metal homeostasis relevant to the host pathogen interface, with a particular emphasis on zinc-, manganese- and copper-specific metalloregulation and metal trafficking in cells. Sulfur assimilation and hydrogen sulfide homeostasis in *Staphylococcus aureus* and RNA structure and function in mammalian coronavirus replication are also of current interest. Dr. Giedroc is interested in macromolecular structure and regulation, and uses the tools of biophysical chemistry, bioinorganic chemistry, chemical biology, and NMR structure determination. Professor Giedroc received his B.S. from Penn State University (1980), and his Ph.D. from Vanderbilt University (1984), both in Biochemistry. He completed a Postdoctoral fellowship at Yale University (1984-88) and then joined the faculty at Texas A&M University. He joined the faculty at Indiana University in 2007.

Professor Thomas Meade

Eileen Foell Chair in Cancer Research and
Professor of Chemistry
Biochemistry and Molecular & Cell Biology,
Neurobiology & Physiology and Radiology
Northwestern University



Professor Thomas Meade's research focuses on bioinorganic coordination chemistry and its application in research that include biological molecular imaging, electron transfer processes and the development of electronic biosensors for the detection of DNA and proteins. He has received numerous awards and founded three biotech companies, Clinical Micro Sensors, PreDx and Ohmx which are developing hand-held devices for protein and DNA detection and bioactivated MR contrast agents for in vivo imaging of cancer. Professor Meade received his B.S. in Chemistry from Arizona State University (1980); his M.S. in Biochemistry (1982) and his Ph.D. in Inorganic Chemistry (1985) were both granted from The Ohio State University. After completing a NIH postdoctoral fellowship in radiology at Harvard Medical School, he was a postdoctoral fellow at Caltech. In 1991 he joined the Division of Biology and the Beckman Institute at Caltech, and in 2003 he joined the faculty at Northwestern University.



Professor Jane Aldrich

Professor

Department of Pharmaceutical and
Medicinal Chemistry

University of Kansas at Lawrence

The focus of the Aldrich lab is the design and synthesis of peptides and peptidomimetic analogs. This research involves the examination of structure-activity relationships, primarily of opioid peptides, and the exploration of synthetic methodologies to prepare novel peptide and peptidomimetic analogs. Another major focus in the Aldrich laboratory is the design, synthesis, and evaluation of labeled peptide derivatives. This includes peptides containing a label such as a fluorescent group that can be used for detection and reactive functionalities (affinity labels) that can be used to covalently attach the peptides to their targets in order to study receptor-ligand interactions at the molecular level. Professor Aldrich received her B.S. from Michigan State University (1976) and her Ph.D. from the University of Michigan (1983). She completed a NIH postdoctoral fellowship at the University of Minnesota (1986).

Professor Lane Baker

Associate Professor

Department of Chemistry

Indiana University, Bloomington, IN



The Baker lab is interested in the electrochemical methods for analysis and imaging. The lab is interested in both understanding the fundamentals of electrochemical processes at small scale and exploiting emergent phenomena for new applications in sensing, separations, and imaging. The lab is also investigating new sampling and emitting techniques for electrospray ionization mass spectrometry (ESI-MS), matrix-assisted laser desorption/ionization (MALDI), and other MS methods. Professor Baker received his B.S. from Missouri State University (1996) and his Ph.D. from Texas A&M University (2001), both in chemistry. He was a National Research Council Postdoctoral Associate at the Naval Research Laboratory (2001-04) and also a Postdoctoral Associate at the University of Florida (2004-06). He joined the faculty at Indiana University in 2006.

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