

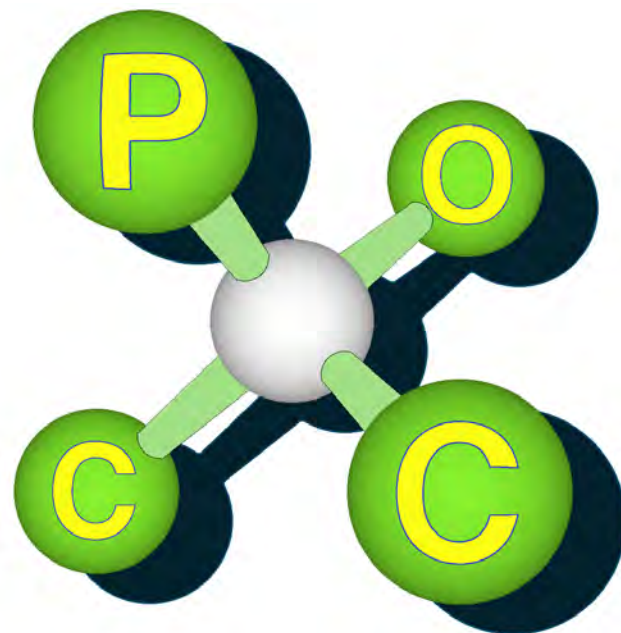
The POCC gratefully acknowledges support from:



UPenn Chemistry

**About the POCC:** Founded more than sixty years ago, The Philadelphia Organic Chemists' Club is one of the oldest independent chemistry clubs in the United States. Its central purpose is to facilitate interaction between scientists from academia and the many chemical and pharmaceutical companies in the greater Philadelphia area. Monthly POCC seminars are held in the Carolyn Hoff Lynch Lecture Hall at the University of Pennsylvania. Information about the POCC can be found at: <http://www.pocclub.org/>

## The Philadelphia Organic Chemists' Club



## 31ST BIENNIAL POCC SYMPOSIUM & POCC AWARD HONORING PROF. MARISA KOZLOWSKI

Thursday, 28 October 2010  
Department of Chemistry  
University of Pennsylvania  
Philadelphia, PA

# PROGRAM

1:00 Registration, Lynch Room, Department of Chemistry,  
University of Pennsylvania

1:30 **Prof. Stephen Waters**  
The University of Vermont  
*Strategies for the Synthesis of Nitrogen Heterocycles  
and Alkaloid Natural Products*

2:30 **Dr. Mary Mader**  
Eli Lilly  
*Design of Potent and Selective 2-  
Aminobenzimidazole-Based p38 MAP Kinase  
Inhibitors with Excellent in Vivo Efficacy*

3:30-4:00 Coffee break

4:00 **Prof. Scott Miller**  
Yale University  
*Asymmetric Catalysis with Amino Acids and  
Peptides: Structure-Function Studies*

5:15 – 5:45 Reception: Nobel Hall, University of  
Pennsylvania

5:45 – 7:45 Banquet: Donaldson Room, second floor of  
Weightman Hall, 235 S. 33rd Street

8:00 **POCC Award: Prof. Marisa Kozlowski**  
The University of Pennsylvania  
*Enantioselective Catalysis: From Design to  
Application*

## POCC 2010 - 2011 Officers:

Chair: *Patrick Walsh*  
Chair-Elect: *Andrew B. Benowitz*  
Secretary: *Nicole C. Goodwin*  
Assistant Secretary: *Frederick (Simon) Golec, Jr.*  
Treasurer: *Joseph M. Karpinski*

## The Philadelphia Organic Chemists' Club Awardees

1990 Amos B. Smith, III (University of Pennsylvania)  
1993 Conrad J. Kowalski (SmithKline Beecham)  
1994 Madeleine M. Joullié (University of Pennsylvania)  
1995 Bruce Maryanoff (RW Johnson Pharmaceuticals)  
1996 Ralph F. Hirschmann (University of Pennsylvania)  
1997 William Nugent (DuPont)  
1998 Gilbert Stork (Columbia University)  
1999 Cynthia Maryanoff (RW Johnson Pharmaceuticals)  
2000 Frank Mallory (Bryn Mawr College)  
2002 Franklin A. Davis (Temple University)  
2005 Pat N. Confalone (E.I. du Pont de Nemours)  
2006 Jeffery Winkler (University of Pennsylvania)  
2007 Ahmed Abdel-Magid (Johnson & Johnson PRD)  
2008 Scott McN. Sieburth (Temple University)  
2009 Christopher Dinsmore (Merck Research)



## Prof. Marisa Kozlowski

The University of Pennsylvania

### Enantioselective Catalysis: From Design to Application

The major focus of Professor Kozlowski's research is the development of methods for the design of asymmetric catalysts. Two clear challenges in the area of asymmetric synthesis are the rapid identification of appropriate catalysts for given processes and the development of oxidative transformations that increase structural complexity. The successful use of database mining, functionality mapping, theoretical calculations of selectivities, and QSAR techniques has permitted the identification or design catalysts for several transformations including asymmetric biaryl coupling, Michael addition, lithiation/substitution, organometal addition, and Claisen rearrangement reactions. The new catalysts developed for oxidative C-C and C-N bond formation have substantial potential for biomimetic synthetic approaches to a variety of natural products such as the perylenequinone natural products, compounds with photodynamic anticancer activity. In addition, such transformations are appealing in that C-H bonds are directly transformed to C-C bonds with an inexpensive oxidant, molecular oxygen.

Marisa Kozlowski was born in Hamburg, Germany, but raised in the town of Liverpool in upstate New York. She received an A. B. in Chemistry from Cornell University in 1989 and a Ph.D. from the University of California at Berkeley in 1994 for work on the rational design of enzyme inhibitors under the direction of Paul Bartlett. After studying asymmetric catalysis in the laboratories of David A. Evans at Harvard University as a National Science Foundation postdoctoral fellow, she joined the faculty at the University of Pennsylvania in 1997 and currently holds the rank of Professor of Chemistry. The major focus of Professor Kozlowski's research is the development of methods for the design of asymmetric catalysts. Two clear challenges in the area of asymmetric synthesis are the rapid identification of appropriate catalysts for given processes and the development of the cost-effective catalysts for large-scale applications. Professor Kozlowski's contributions have been recognized by a DuPont Young Investigator Award in 1998, an NSF CAREER Award in 2001, an Alfred P. Sloan Research Fellowship, the Kahn Award for Distinguished Teaching by an Assistant Professor at the University of Pennsylvania, an American Cancer Society Beginning Research Scholar Award in 2002, and an ACS Travel Progress Award in 2007. In addition to over 60 independent publications, Professor Kozlowski coauthored with Professor Patrick Walsh the book "Fundamentals of Asymmetric Catalysis," available from University Science Books. She is currently Secretary-Treasurer of the Division of Organic Chemistry of the American Chemical Society and Vice-chair of the American Cancer Society CDD Study Section.



## Prof. Stephen Waters

The University of Vermont

### Strategies for the Synthesis of Nitrogen Heterocycles and Alkaloid Natural Products

Research contributions from Professor Waters' laboratory have thus far centered on tactics for the efficient assembly of N-heterocyclic scaffolds and, to an equal extent, target-driven total synthesis of biologically active alkaloid natural products. This seminar will describe recent advances in a research program aimed at the total synthesis of several structurally unusual members of the *Lycopodium* and *Aspidosperma* families of alkaloids. Also addressed will be progress related to the development of multi-component, stereocontrolled strategies for the synthesis of functionalized pyrrolidine and indolizidine ring systems.

Stephen P. Waters was raised in southwestern Pennsylvania and received his B.S. degree in Chemistry (summa cum laude) from the University of Pittsburgh. He received his Ph.D. from the University of Pennsylvania under the mentorship of Marisa C. Kozlowski. After postdoctoral studies at Memorial Sloan-Kettering Cancer Center with Samuel J. Danishefsky, he began a faculty appointment in 2007 at the University of Vermont where his research interests are primarily founded in N-heterocyclic chemistry.



## Dr. Mary Mader

Eli Lilly

**Design of Potent and Selective 2-Aminobenzimidazole-Based p38 MAP Kinase Inhibitors with Excellent in Vivo Efficacy**

We report the design and discovery of a 1-isopropylsulfonyl-2-aminobenzimidazole-based series of potent and highly selective p38- $\alpha$  inhibitors. The lead compound had low-nanomolar activity in both ATP competitive enzyme binding and inhibition of TNF- $\alpha$  release in macrophages. As the series was optimized, key compounds showed excellent pharmacokinetic properties and oral activity in the rat collagen induced arthritis model compared with other p38 reference compounds. The expansion of the SAR to include 1-alkyl benzimidazoles and 1-alkyl imidazopyridines will also be described.

Mary M. Mader, Ph. D., is currently a research advisor and group leader at Eli Lilly and Company. Mary joined Lilly in 2000, having risen to the rank of associate professor at Grinnell College in Grinnell, IA. Her project experience at Lilly has been concentrated on kinase inhibitors, including those described in the presentation today. She earned her bachelor's degree in chemistry in 1985 from The Ohio State University and received her doctorate in organic chemistry from the University of Notre Dame in 1991. As a NIH post-doctoral fellow at the University of California – Berkeley, her luckiest break was sharing a lab with Prof. Kozlowski, and witnessing Marisa's excellence in experimental design and persistence in the face of significant synthetic challenges.



## Prof. Scott Miller

Yale University

**Asymmetric Catalysis with Amino Acids and Peptides: Structure-Function Studies**

Our studies of organic reactions with catalytic amino acids and peptides have treated us to a number of surprises, and exposed us to a number of daunting and unmet challenges. This lecture will recount the discovery and use of peptides containing proteinogenic and non-natural amino acids for a variety of asymmetric bond formations. The connections between peptide sequence and stereoselectivity will be explored in a range of mechanistically distinct reactions. Likewise, applications to the synthesis and selective modification of complex molecules, including biologically active natural products, will be described. Prospects for generalizations and eventual design of catalysts from first principles will be evaluated.

Scott J. Miller was born on December 11, 1966 in Buffalo, NY. He received his B.A. (1989), M.A. (1989) and Ph.D. (1994) from Harvard University, where he worked in the laboratories of Professor David Evans as a National Science Foundation Predoctoral Fellow. Subsequently, he traveled to the California Institute of Technology where he was a National Science Foundation Postdoctoral Fellow in the laboratory of Robert Grubbs until 1996. For the following decade, he was a member of the faculty at Boston College, until joining the faculty at Yale University in 2006. In 2008, he was appointed as the Irénée duPont Professor of Chemistry, and in 2009, the Chairperson of the Chemistry Department.

Professor Miller's research program focuses on problems in asymmetric catalysis. His group employs strategies that include catalyst design, the development of combinatorial techniques for catalyst screening, and the application of these approaches to the preparation of biologically active agents.

Scott Miller's awards and honors include: National Science Foundation CAREER Award (1999); Cottrell Scholar Award (1999) and Research Innovation Award (1998) of Research Corporation; Alfred P. Sloan Research Fellowship (2000), Camille Dreyfus Teacher-Scholar Award (2000); DuPont Young Professor Award (2000); Novartis Chemistry Lectureship Award (2000); GlaxoSmithKline Chemistry Scholar Award (2000); Lilly Grantee Award (2000); Merck Chemistry Council Awards (2001-2008); Pfizer Award for Creativity in Organic Chemistry (2003); Arthur C. Cope Scholar Award of the American Chemical Society (2004); Robert Burns Woodward Visiting Scholar at Harvard University (2005); Boehringer-Ingelheim Cares Foundation Award (2006); Yoshimasa Hirata Memorial Gold Medal of Nagoya University (2009).

Professor Miller has served in an advisory capacity for a number of public and private concerns, including the Board of Chemical Sciences and Technology of the National Academies, and as a member of numerous review panels for various funding agencies, including the National Institutes of Health Study Section "Synthetic and Biological Chemistry B," which he chaired from 2009-2010.