



BIOLOGICAL CHEMISTRY DIVISION AMERICAN CHEMICAL SOCIETY

NEWSLETTER

Secretary: J. P. Richard

<http://www.biochemdivision.org>

August 2006

Message from the Chair Richard Armstrong

The Division of Biological Chemistry has had a very good year in 2006. This follows six years of a concerted effort to enhance our impact on the biological chemistry community through increased funding of meetings related to our discipline, the expansion of our travel awards for students and postdoctoral fellows, and the development of a new web site.

The ACS meeting in San Francisco promises to be an outstanding one with respect to the scientific program for the Division. In addition to our regular symposia for the Pfizer, Eli Lilly and Repligen Awards the division is excited to host the symposia for the 2005 Alfred Bader Award honoring Alan Fersht and the 2006 Francis P. Garvan-John M. Olin Medal honoring the contributions of Lila Gierasch. These two sessions on protein folding will be held back-to-back on Sunday September 10. We are very pleased that these two ACS national award winners chose the Division of Biological Chemistry for their award symposia. Karen Allen and the rest of the program committee have also done an exceptional job of organizing the program. I hope you can join us and take advantage of the meeting in San Francisco.

Although this has been a good year for the Division, biological chemistry and allied scientific disciplines have had several difficult years with respect to the funding of basic research. The doubling of the NIH budget was great for science. The growth in the budget also produced a growth in applicants for funding which now cannot be sustained with the essentially flat budgets of the last couple of years. The pressure on the peer review system has been enormous with the number of grant applications doubling to about 43,000 in the last few years.

In addition to the restricted funding is the fact that the NIH reorganized their scientific review groups two years ago. An unintended consequence of this reorganization is that several sub-disciplines in biological chemistry are now underrepresented in the review groups at NIH. Computational chemistry as it relates to proteins and enzymes, mechanistic enzymology and RNA catalyzed reactions have been particularly impacted. A group of about 70 scientists who attended the Gordon Research Conference on Enzymes Coenzymes and Metabolic Pathways signed a letter to the director of the Center for Scientific Review expressing concern about the situation. The point of this is that if you feel your particular sub-discipline is not adequately represented on study sections, write the CSR; they value your input. It is also very important for all of us to participate in the peer review process when asked.

This is my last year as Chair of the Division. So, I would like to thank all the councilors and executive committee members that I have had the pleasure of working with the last two years. Their representation at Council and their advice is valuable, much appreciated and very important for the health of the Division. I would especially like to thank John Richard (secretary), Peter Tipton (past treasurer), Eugene Mueller (treasurer) and program chairs Vernon Anderson and Karen Allen, for their hard work on behalf of the Division during my tenure. These officers are the backbone of the Division and its programs. All the membership is in their debt.

Finally, please welcome Carol Fierke as the new Chair of the DBC in 2007. Carol has been active in the Division, for example serving as program chair a few years ago. She is a terrific scientist with superb organizational skills. I believe the DBC will flourish under her leadership.

DIVISION AWARDS FOR 2007

Eli Lilly Award in Biological Chemistry: Professor Anna K. Mapp, Department of Chemistry, University of Michigan.

For outstanding research in biological chemistry of unusual merit and independence of thought and originality.

The 2007 Eli Lilly Award recognizes Professor Anna Mapp's development and implementation of novel chemical and biological strategies to provide molecular-level insight into how genes are regulated at the transcriptional level. This program has led to publications that have been described as nothing short of spectacular. Viewed from a broad perspective, Mapp's work has provided several examples of how the assembly of relatively weak multi-protein complexes may be mimicked by small organic molecules that reproduce the weak interactions at the protein interface. This protocol is likely to be widely adopted in other laboratories.

The exquisite level of detail required to control the transcription of cellular genes has created an imposing barrier to determining the mechanism for the regulation of gene transcription. Professor Mapp has made remarkable progress towards unraveling the mechanism for this regulation through the development of novel approaches to construct artificial transcription factors. In a seminal paper with Minter and Brennan, Mapp describes the synthesis and screening of a small library of functionally diverse isoxazolidine-based "activation domains", and the identification of three compounds that activate transcription at a level similar to a potent natural protein activator. This work at the interface of chemistry and biology combines seamlessly, in a single laboratory, the development of new methodology for the stereo- and enantiocontrolled preparation of a library of isoxazolidines and whole cell work to characterize the biological activity of methotrexate-isoxazolidine conjugates.

Professor Mapp has developed strategies for increasing the functional potency and specificity of transcriptional regulators. Mapp's initial studies identified two artificial transcriptional activation domains by screening synthetic peptide libraries for binding to the yeast transcription protein Med15 (Gal11). Her more

recent work has demonstrated that the transcriptional potency of the Med15 ligand is increased through dimerization. These artificial activation domains up-regulate transcription via specific Med15 binding interactions, but do not function in mammalian cells that lack Med15. This specificity stands in contrast to most natural or artificial activation domains that function across all eukaryotic cell types.

In summary Anna Mapp is carrying out groundbreaking and creative research that ranges from the enantiocontrolled synthesis of chiral heterocycles to the breakthrough studies of the mechanism of transcriptional activation. Her work has broad implications for understanding and manipulating transcriptional control and in the future may lead to transcription-based therapeutics

Pfizer Award in Enzyme Chemistry: Professor: Professor Neil Kelleher, Department of Chemistry, University of Illinois,.

For outstanding work in enzyme chemistry where the presence of enzyme action is unequivocally demonstrated.

The 2007 Pfizer Award recognizes Professor Neil Kelleher's pioneering developments in the use of mass spectrometry. These allow for: (1) The examination of covalent intermediates of natural product synthesis catalyzed by polyketide, non-ribosomal polypeptide, and lantibiotic synthases; and (2) The characterization of posttranslational modifications of proteins. The methodologies developed and applied by Professor Kelleher have significantly broadened the experimental possibilities for exploring the mechanism of enzyme catalysis by large catalytic machines; and, they have expanded the scope of proteome analysis.

Professor Kelleher brings to the study of enzyme mechanism and protein structure strong organizational skills and a unique training in biochemistry, molecular biology and separations chemistry. These skills have positioned him to make important contributions in the area of post-translational modifications of proteins and their role in the regulation of cellular events. As a proof of concept of his "Top Down" approach to study protein modifications through direct determination of the mass of *intact* proteins,

Kelleher has examined post-translational modification of histones from Hela cells. This choice allows the examination of a wide variety of covalent modifications including methylation, acetylation, phosphorylation and ubiquitination. Kelleher published his first data on this approach in 2003, and is continuing the development of methodologies needed to monitor post-translational modifications of proteins *in vivo*.

The second area where Kelleher's use of mass spectrometry has made a profound impact is in the development of methods to identify the intermediates of complex enzyme-catalyzed reactions and to determine the kinetic order for their formation. This work is exemplified by Kelleher's beautiful paper on yersiniabactin biosynthesis. This work probes the role of the protein-complex that catalyzes the synthesis of this complex siderophore by identifying the covalent reaction intermediates and characterizing the time course for their formation and subsequent conversion to yersiniabactin. Kelleher has developed methodologies to study the "tailoring" reactions of amino acids that have been loaded onto the carrier domain of non-ribosomal peptide synthases. These modifications include chemically interesting transformations such as halogenation reactions, and the crosslinking of the tyrosine residues of vancomycin.

Kelleher has been generous in sharing the technology he has developed with the community that studies enzyme mechanisms. This has led to numerous collaborations. For example, Kelleher's important supporting role in Wilfred van der Donk's breakthrough characterization of the biosynthesis of lantibiotics by post-translational modification of a ribosomally synthesized peptide has created new opportunities in the engineering of lantibiotics.

Repligen Award in Chemistry of Biological Processes: Professor Michael Marletta, University of California, Berkeley.

For outstanding contributions to the understanding of the chemistry of biological processes with particular emphasis on structure, function and mechanism.

The 2007 Repligen Award recognizes Professor Mike Marletta's demonstration that

nitric oxide is an intermediate of formation of nitrite and nitrate in macrophages, his characterization of the mechanism for the formation of NO from arginine catalyzed by nitric oxide synthase, and his elucidation of the mechanism for the regulation of guanylate cyclase by nitric oxide. This work places Marletta in the forefront of the the world's finest mechanistic biochemists.

In 1985 few investigators knew anything about nitric oxide and none anticipated that this gas arose in mammalian systems from the amino acid arginine. In 1985 Professor Marletta demonstrated that mouse macrophages produce nitrite and nitrate and this led to the discovery of nitric oxide in mammals. The detection of nitric oxide caused Marletta to turn his attention to unraveling the biosynthetic pathway for its formation. He showed that arginine is the precursor to nitric oxide and that a single enzyme, nitric oxide synthase (NOS), converts arginine to citrulline and nitric oxide. Marletta and coworkers expressed the gene for nitric oxide synthase from macrophages in baculovirus. Their studies on the mechanism of enzyme action showed that NOS was a heme protein with a heme reductase domain, and that the enzyme also uses flavin and pterin cofactors. The Marletta and Stuehr laboratories showed that N-hydroxyarginine forms as an intermediate of NOS-catalyzed formation of nitric oxide. A collaboration between Marletta and Edmondson led to the detection of an unusual pterin radical. The generation of this radical was shown to be kinetically competent and a mechanism to explain its role in catalysis of nitric acid formation was proposed. Finally, Marletta has investigated the mechanism for inhibition of NOS by N-methyl arginine, a mechanism based inhibitor. The results of these last studies have provided insight into the catalytic mechanism for the synthase and may assist in the design of inhibitors with therapeutic applications.

Marletta and coworkers have purified a nitric oxide activated guanylate cyclase. Efforts in the biochemistry community to understand the mechanism for enzyme activation have led to controversy because of difficulty in reconciling data from *in vivo* and *in vivo* studies. The results of work by members of Marletta's lab have played a key role in changing our understanding of this activation process. Marletta has investigated a functionally diverse set of guanylate cyclase-like heme domains. Some of these domains have been found to use O₂ as a

signaling reagent. Marletta and coworkers have characterized the relationship between these domains by determining the structural changes that convert a guanylate cyclase-like heme domain from an NO to an O₂ sensor. This domain now serves a paradigm for signaling with NO, O₂ and perhaps CO.

In summary, Michael Marletta's discoveries have led to an explosion in the field of NO research. His intellectual creativity and bold experimental outlook will continue to direct his research program to study challenging and medically important problems at the forefront of biological chemistry.

232th National Meeting of the American Chemical Society, San Francisco, CA, September 10 – Sept 14, 2006

Biological Chemistry Division Technical Program - Moscone Convention Center, Room 238. Karen Allen, Program Chair

Sunday, September 10, 2006

Morning Session. Alfred Bader Award Symposium: Protein Folding, Unfolding, and Misfolding. A. R. Fersht, *Organizer*, *Cosponsored with BIOT*

9:00 — Atomic-level view of folding/unfolding by combining experiment and theory. **V. Daggett**

9:45 — Protein unfolding and degradation in the cell. **A. Matouschek**

10:30 — Sequence dependence of amyloid formation and toxicity. M. T. Pastor, A. Esteras, N. Kummerer, V. Schubert, C. Dotti, M. Lopez de la Paz, **L. Serrano**

11:15 — Protein folding, misfolding and cancer: The tumor suppressor p53. **A. R. Fersht**

8:20 - 12:00 — **Frontiers in Single-Molecule Biophysical Chemistry and Imaging.** Section D Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

Afternoon Session. Francis P. Garvan-John M. Olin Medal Symposium: Protein Folding and Aggregation: From the Test Tube to the Cell. L. M. Gierasch, *Organizer*. *Cosponsored with BIOT*

1:30 — Secretion and folding of proteins on the surface of pathogenic bacteria. M. Junker, A. V. McDonnell, M. C. Finn, B. Berger, **P. L. Clark**

2:15 — Cellular mechanisms under control of the aging program ameliorate aggregate proteotoxicity thought to cause Alzheimer's and related neurodegenerative diseases. E. Cohen, J. G. Bieschke, R. M. Perciavalle, **J. W. Kelly**, A. Dillin

3:00 — Life on a knife edge: Tipping the balance between folding and aggregation. **S. E. Radford**

3:45 — Folding and aggregation of a β -rich protein in the test tube and in the cell. Z. Ignatova, B. Krishnan, **L. M. Gierasch**

1:20 - 5:00 — **Frontiers in Single-Molecule Biophysical Chemistry and Imaging.** Section D Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

4:30 - 6:30. Poster Session - Moscone Convention Center, Hall D. **Protein Structure and Folding Organizer**, T. Begley and K. N. Allen, *Organizers*.

60 Posters

Monday, September 11, 2006

Morning Session. Enzyme Mechanisms. K. N. Allen, *Organizer*.

9:00 — Bacterial catabolism of 1,3-dichloropropene: Divergent evolution within the tautomerase superfamily. **C. P. Whitman**, R. M. de Jong, G. J. Poelarends, W. H. Johnson Jr., B. W. Dijkstra

9:45 — Galactokinase: Catalysis and transcriptional regulation all in one fold. **H. M. Holden**, J. B. Thoden, D. J. Timson, R. J. Reece

10:30 — Conformation and dynamics in the proton pumping cycle of Cytochrome c Oxidase. **R. N. Armstrong**, L. S. Busenlehner, L. Salomonsson, P. Brzezinski

11:15 — Substrate specificity in the haloalkanoic acid dehalogenase superfamily. **K. N. Allen**, D. Dunaway-Mariano

8:00 - 12:00 — **Frontiers in Single-Molecule Biophysical Chemistry and Imaging.** Section G Grand Hyatt - Farallon Room.

Sponsored by PHYS, Cosponsored with BIOL

Afternoon Session. Chemical Biology D. Dunaway-Mariano, *Organizer*.

1:30 — Consideration of domain alternation in the adenylate-forming enzymes provides insight into the intermolecular transfer of substrates in non-ribosomal peptide synthetases. **A. M. Gulick**, E. J. Drake, A. S. Reger

2:15 — Swiveling mechanism in phosphotransfer reactions. **O. Herzberg**, K. Lim, A. Teplyakov, P. Reddy, A. Peterkofsky, D. Dunaway-Mariano

3:00 — Ligand *trans* effect governs conformation in cobalamin-dependent methionine synthase. A. S. Fleischhacker, **R. G. Matthews**

3:45 — Discovering new functions in the enolase superfamily. **J. A. Gerlt**

1:20 - 5:00 — Frontiers in Single-Molecule Biophysical Chemistry and Imaging. Section D Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

4:30 - 6:30. Poster Session - Moscone Convention Center, Hall D. **Sci-Mix: Biological Chemistry Travel Award Winners.** *Organizer,* T. Begley and K. N. Allen, *Organizers.* 25 Posters

Tuesday, September 12, 2006.

Morning Session. Eli Lilly Award Symposium: Chemical Approaches to Neuroscience and Other Complex Systems. L. C. Hsieh-Wilson, *Organizer*
Cosponsored with BIOT

9:00 — A role for chemistry in stem cell biology. **P. G. Schultz**

9:45 — The enzymatic regulation of endocannabinoid signaling. **B. F. Cravatt**

10:30 — Chemical-scale studies of neuroreceptors and ion channels. **D. A. Dougherty**

11:15 — Eli Lilly Award Presentation. **R. N. Armstrong**

11:25 — Chemical approaches to understanding neuronal signaling and growth. **L. C. Hsieh-Wilson**

8:20 - 12:00 — Frontiers in Single-Molecule Biophysical Chemistry and Imaging. Section D Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

Afternoon Session. Pfizer Award Symposium: Structure and Function of Macromolecular Assemblies. J. Berger, *Organizer*

1:30 — Structural basis for transcription repair coupling in bacteria. **S. A. Darst,** A. Deaconescu, A. L. Chambers, A. J. Smith, N. J. Savery, B. E. Nickels, A. Hochschild

2:15 — Pfizer Award Presentation. **R. N. Armstrong**

2:25 — Architecture and structural basis for ATP-dependent control of assembly and DNA remodeling by AAA+ replication initiation factors. **J. Berger,** J. P. Erzberger, M. L. Mott

3:10 — The SUMO pathway: Insights into ubiquitin and ubiquitin-like protein conjugation. **C. D. Lima,** D. Reverter, A. A. Yunus, A. C. Capili, J. Gareau, F. Mohideen

3:55 — Functional roles of structural intermediates in microtubule assembly and disassembly: Surfing the microtubule wave. **E. Nogales,** S. Westermann, H.-W. Wang, A. Avila-Sakar, D. G. Drubin, G. Barnes

1:20 - 5:00 — Frontiers in Single-Molecule Biophysical Chemistry and Imaging. Section D Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

4:30 - 6:30. Poster Session - Moscone Convention Center, Hall D. **Chemistry and Metabolism.** *Organizer,* T. Begley and K. N. Allen, *Organizers* 87 Posters

Wednesday, September 13, 2006.

Morning Session. Uncovering the Metabolome and Metabolic Defects. D. R. Tolan, *Organizer*
Cosponsored with ANYL, BIOT, and MEDI

9:00 — Integrating transcriptomics and metabolomics for probing selenium anticancer mechanisms. **T. W. M. Fan,** L. Bandura, A. N. Lane

9:45 — Pathway discovery through the association of metabolomics and mass isotopomer analysis. **H. Brunengraber,** J. Kelleher, C. H. Hoppel, V. E. Anderson, S. P. Previs, G. N. Stephanopoulos.

10:30 — Multiplex enzyme assay using tandem mass spectrometry for newborn screening of lysosomal storage diseases. **M. H. Gelb,** F. Turecek, C. R. Scott, D. Wang

11:15 — Using genomic expression data for discerning tissue-specific patterns of sugar metabolism: The resourcefulness of neurons. **D. R. Tolan,** V. A. Funari, K. Voevodski

Afternoon Session. Repligen Award Symposium: Enzymatic Catalysis and Transition States. V. L. Schramm, *Organizer*

Cosponsored with MEDI

1:30 —179. Contrasting strategies of transition state stabilization by enzymes. **R. Wolfenden,** G. K. Schroeder

2:15 —180. Hydrogen tunneling in enzymes: Linking the role of protein dynamics to catalysis. **J. P. Klinman**

3:00 —181. Dissecting the fundamental components of enzymatic catalysis: Electrostatic and geometrical catalysis. **D. Herschlag**

3:45 — Repligen Award Presentation. **R. N. Armstrong**

3:55 —182. Enzymatic transition states, immucillins and dynamics in catalysis. **V. L. Schramm**

1:20 - 5:00 — Afternoon Session. Frontiers in Single-Molecule Biophysical Chemistry and Imaging. Section C Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

4:30 - 6:30. Poster Session - Moscone Convention Center, Hall D. **Enzymes.** *Organizer,* T. Begley and K. N. Allen, *Organizers*

101 Posters

Thursday, September 14, 2006.

8:20 - 12:00 — Morning Session. Frontiers in Single-Molecule Biophysical Chemistry and Imaging. Section C Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

1:20 - 5:00 — Afternoon Session. Frontiers in Single-Molecule Biophysical Chemistry and Imaging. Section C Grand Hyatt - Plaza Ballroom East.

Sponsored by PHYS, Cosponsored with BIOL

Updated Website for the Division of Biological Chemistry

The Division has launched an updated Website at:

<http://www.biochemdivision.org>

The website was designed by Uli Iserloh of ISERLOH DESIGN with the assistance of the Division's secretary. The website will allow our members quick access to the following information.

- (1) The Division's newsletter.
- (2) Information about the ACS National and Regional meetings and Gordon Conferences relevant to Biological Chemistry.
- (3) Information about other Conferences of interest to our members
- (4) Information about the Divisions awards and the Award recipients.
- (5) Information about career opportunities in Biological Chemistry, including job openings and information about people who are seeking positions.

Members interested in posting information of any type on this web site should contact the Division's secretary at:

[\(biochdiv@chem.buffalo.edu\)](mailto:biochdiv@chem.buffalo.edu)

Regional Meetings.

The Division of Biological Chemistry provides grants to its members of up to

\$1500 to support the expenses of a one day symposium at any ACS Regional meeting. Members interested in organizing a symposium at a regional meeting in 2007 should provide an outline for the proposed program to:

James T. Stivers
Department of Pharmacology and Molecular Sciences
Johns Hopkins School of Medicine
725 North Wolfe Street, WBSB 314
Baltimore, MD 21205
jstivers@jhmi.edu

These proposals will be reviewed twice a year at the Division's Officer meetings, which are generally held during the Spring and Fall ACS meetings.

26th Enzyme Midwest Chemistry Conference September 30, 2006. Evanston, Illinois.

The Midwest Enzyme Chemistry Conference is a vibrant, informative, and fun meeting for people working in enzymology, broadly defined. The meeting includes a full day of talks and posters on topics including mechanistic enzymology, drug design, metabolic pathway discovery and engineering, structural biology, computational enzymology, and more.

<http://www.midwestenzyme.org/>

20th Enzyme Mechanisms Conference January 3 - 6, 2007. St. Petersburg Beach, Florida

The Enzyme Mechanisms Conference was founded in 1969 by Tom Bruice, Bill Jencks, and Myron Bender. The tradition of this biannual conference is to present the most recent advances in our understanding of the chemical mechanisms of enzyme-catalyzed reactions. The 2007 conference will be held at the Don CeSar Beach Resort on the island of St. Pete Beach right off the coast of St. Petersburg, Florida. The "Don" is 30 minutes from the Tampa

International Airport. The organizers have negotiated a special room rate of \$139/night with the hotel (single or double occupancy). The conference fee will be \$325 for conferees and \$250 for guests. The registration deadline is November 1, 2006. Additional information can be found at:

<http://www.utexas.edu/pharmacy/enzyme2007>.

The program will consist of lectures by the following people:

Allen (Boston Univ), Armstrong (Vanderbilt), Dijkstra (Groningen), Drennan (MIT), Fast (UT Austin), Fierke (Michigan), Gerlt (Illinois), Hilvert (ETH), Hsieh-Wilson (Cal Tech), Imperiali (MIT), Johnson (UT Austin), Klinman (Berkeley), Kohen (Iowa), Kozarich (ActiveX), Mulholland (Bristol), Raetz (Duke), Sjoberg (Stockholm), Thorson (Wisconsin), Thrall (GSK), van der Donk (Illinois), Walsh (Harvard), Wachter (Arizona State), Woodard (Michigan).

Poster contributions are strongly encouraged. Posters will be on display during the entire conference.

Division Election. The election this year will fill the following offices.

Chair (2 year term as Chair-Elect followed by 2 year term as Chair).

Program Committee Member (4 year term).

Nominating Committee Member (3 year term).

Executive Committee (Two for 3 year terms).

The division is grateful for the hard work of the nominating committee, Phillip A. Cole, Peter Tonge and Eric Brown, in identifying a slate of exceptional candidates. The strength of our Division depends upon the willingness of its members to offer their time to serve as officers. The Division is indebted to the following members who have agreed to stand for office this year.

NOMINEES FOR OFFICES

Mark the ballot sheet included with this Newsletter, and return this sheet in the attached envelope by October 15, 2006

**Chair Elect, 2007 - 2008
Chair, 2009 - 2010 (Vote for one)**

John S. Blanchard (b. 1954), Dan Danciger Professor of Biochemistry, Professor of Biochemistry, Albert Einstein College of Medicine, Bronx, NY. B.A., 1975, Lake Forest College; Ph.D., 1979, University of Wisconsin; NIH postdoctoral fellowship, 1980-1983, Albert Einstein College of Medicine; Asst. Prof. of Biochemistry, 1983-1988, Assoc. Professor of Biochemistry, 1988-1993, Professor of Biochemistry, 1993-present, Albert Einstein College of Medicine; Veteran's Administration, Basic Sciences Merit Review Committee, 1994-1997; Member Physical Biochemistry Study Section, 1993, 1995-2000; Enzymes, Coenzymes and Metabolic Pathways Gordon Conference, Co-Chair, 1998; ACS; Division of Biological Chemistry, Program Chair, Boston 2002; Editorial Board: Archives of Biochemistry and Biophysics (2000-present). *Areas of Research:* *Biochemistry:* Mechanistic Enzymology; Structure and Function of Microbial Proteins, Antibiotic Drug Resistance.

David E. Cane (b. 1944) Vernon K. Kriebel Professor of Chemistry and Professor of Biochemistry, Brown University, Providence, RI. B.A., 1966, Harvard University; A.M., 1967, Harvard University; Ph.D. 1971, Harvard University; NIH Postdoctoral Fellowship, 1971-1973, Eidgenössische Technische Hochschule, Zurich, Switzerland; Asst. Prof. of Chemistry, Brown University, 1973-1978; Assoc. Prof., 1978-1980; Professor of Chemistry, 1980-present; Professor of Biochemistry, 1991-present; Chair, Dept. of Chemistry, 1983-1989; Visiting Assoc. Prof., Univ. of Chicago, 1980; Visiting Prof., Technion, Haifa, Israel, 1994; Visiting Prof., Univ. California, San Francisco, 1998-1999; Visiting Prof. Univ. Louis Pasteur, 1999; Visiting scientist, Institut Pasteur, Paris, 2005; Alfred P. Sloan Research Fellow, 1978-1982; NIH Research Career Development

Award, 1978-1983; Japan Society for the Promotion of Science Fellow, 1983; NIH Fogarty International Center Senior International Fellow, 1989, 1999; Distinguished Visiting Fellow, Christ's College, Cambridge, 1989-1990; Guggenheim Fellow, 1990; Fulbright Scholar, 1990; Institut Universitaire de France, Fellow, 1999; Derek Brewer Visiting Fellow, Emmanuel College, 2004-2005; Simonsen Lecturer, Royal Society of Chemistry, 1990-1991; National Institutes of Health, MERIT Award, 1994-2004; Microbial Chemistry Medal of the Kitasato Institute, 1995; A. C. Cope Scholar Award of the ACS, 2000; Prelog Lecture and Medal, ETH Zurich, 2002; Fellow of the American Association for the Advancement of Science (AAAS), 2003; Repligen Award in Chemistry of Biological Processes, ACS Division of Biological Chemistry, 2005; Member, NIH Bioorganic and Natural Products Study Section, 1980-1984; Chair, NIH Scientific Review Group, Centers of Excellence in Chemical Methodologies and Library Development, 2002; Scientific Advisory Board, Kosan Biosciences, Inc., 1995 present; Co-Organizer, U. S. - Japan Biosynthesis Symposia, 1976, 1982, 1987, 1994; Gordon Research Conference on Natural Products, Chairman, 1982; Gordon Research Conference on Enzymes, Coenzymes, and Metabolic Pathways, co-Chairman, 1996; Alternate Counselor, ACS Division of Biological Chemistry, 1993-1998; Editorial Boards: Bioorganic Chemistry, 1983-2003; Journal of Antibiotics, 1983-present; Current Opinion in Chemical Biology, 1997-2005; Editorial Advisory Board, Chemical Reviews, 1987-1990; Editorial Advisory Board, Topics in Stereochemistry, 1996-present; Faculty of 1000, Biology, 2000-present; Associate Editor, Journal of Antibiotics, 2006-present; Associate Editor, Journal of Organic Chemistry, 1995-2003. *Areas of research:* Biochemistry and bioorganic chemistry: Enzymology - mechanisms and stereochemistry, molecular genetics, and structural biology of natural products biosynthesis. 235 research articles, reviews, books, and patents

C. Dale Poulter (b. 1942). John A. Widtsoe Distinguished Professor of Chemistry, University of Utah, Salt Lake City, UT. B.S., 1964, Louisiana State University; Ph.D., 1967, University of California, Berkeley; NIH Postdoctoral Fellow, 1967-69, University of California, Los Angeles; Asst. and Assoc. Professor of Chemistry, University of Utah,

1969-78; NIH Career Development Award, 1975; Alfred P. Sloan Fellow, 1975; Ernest Guenther Award, 1991; NIH Merit Award, 1995; A.C. Cope Scholar Award, 1998; Repligen Award, 2002; James Flack Norris Award, 2004; Fellow, American Association for the Advancement of Science, 1994; Fellow, American Academy of Arts and Sciences, 2005; member, NIH Medicinal Chemistry A Study Section, 1977-81; Co-chair, Gordon Research Conference on Enzymes, Coenzymes, and Metabolic Pathways, 1985; ACS Program Chair, Biological Division, 1987; Petroleum Research Fund Advisory Board, 1988-1990; Chair, 14th Winter Enzyme Mechanisms Conference, 1995; ACS Committee on Science, 1996-1999; Chair, ACS Division of Organic Chemistry, 1998; Councilor, ACS Biological Division, 1993-2000; ACS Committee on Professional Training, 1996-2005; ACS Advisory Committee on Graduate Education, 2000-2005; AAAS, Member-at-Large, Chemistry Section, 2001-2005; Associate Editor, Journal of Organic Chemistry, 1990-1995; Associate Editor, Organic Editor, Organic Letters, 1999-2001; Senior Editor, Journal of Organic Chemistry, 2000-2001; Editor-in-Chief, Journal of Organic Chemistry, 2001-present. *Areas of research:* Bioorganic chemistry; Biosynthesis; Mechanistic enzymology; Structure and function of prenyltransferases and isomerases.

Program Committee Member, 2007-2010. Chair, 2009 (Vote for one)

Suzanne Walker (b. 1960), Professor of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA. B.A. 1983, University of Chicago (English); Ph.D. 1992, Princeton University (Chemistry); Instructor of Chemistry (non-tenure track), Princeton University, July 1995-June 2001; Associate Professor of Chemistry (with tenure), Princeton University, July 2001-June 2003, Professor of Chemistry, Princeton University, July 2003-June 2004; Alfred P. Sloan Fellow (2002-2004); Camille Dreyfus Teacher-Scholar Award (2003); Member, Bioorganic and Natural Products Study Section, NIH, 1999, 2001-2004; NSF Career Awards Review Panel (2001); Member, President's Task Force on the Status of Women in the Natural Sciences and Engineering at Princeton University (2001-2003); Member, Women in Science and Engineering Task Force, Harvard University (2005); Editorial Boards:

Molecular Biosystems (2005-present), Current Opinion in Chemical Biology (2006-present); Editorial Advisory Boards: Organic and Biomolecular Chemistry (2003-present). *Areas of research*: Chemical Biology: the use of organic and biophysical chemistry, enzymology, molecular genetics, and cell biology to study essential metabolic pathways (primarily, but not exclusively, in bacteria), and to develop strategies to manipulate or inhibit them.

Gerard (Gerry) D. Wright (b. 1963), Professor and Chair, Department of Biochemistry and Biomedical Sciences, Director of the McMaster Antimicrobial Research Centre McMaster University, Hamilton, Ontario. BSc. 1986, University of Waterloo; PhD, 1990, University of Waterloo; NSERC Postdoctoral Fellowship, 1990-1992, Harvard Medical School; Asst., and Assoc., Biochemistry, McMaster University, 1993-2002; John Charles Polanyi Prize (Medicine), 1993; Medical Research Council of Canada Scholar 1995-2000; Canadian Institutes of Health research Scientist, 2000-2005, declined; Canada Research Chair, Tier 1 2001-2007; Van Cleave Lecturer, University of Regina, 2004; Shipley Symposium, Dept Microbiology and Molecular Genetics, Harvard Medical School, 2005; CIHR/MRC grant panel Biochemistry and Molecular Biology A. (1998-201, 2005), Chair, CIHR grant panel Biochemistry and Molecular Biology A, 2002-2003, CIHR grant panel New Investigators A, 2006-2009, Member Natural Products NIH Study Section, 2005; Instructor ACS Short Course on Antibiotics (2000-2002), Director, ACS Short Course on Antibiotics (2003-2006); Committee on new directions in the study of antimicrobial therapies: New classes of antimicrobials, National Research Council, 2005. Editorial Boards: Journal of Antibiotics, 2000-present, Chemistry and Biology, 2004-present. *Areas of research*: antibiotic resistance, natural product biosynthesis, chemical biology, enzymology.

Executive Committee Member, 2007 - 2009 (vote for two)

Thomas S. Leyh (b. 1956), Professor of Biochemistry, the Albert Einstein College of Medicine (AECOM), Bronx, NY; B.S., Muhlenberg College (1978); Ph. D., Dept. of Biophysics, University of Pennsylvania (1983); NIH Predoctoral Trainee (1981-1983); NIH

Postdoctoral Trainee (1985-1988); Assist. Prof. AECOM (1989-1994); Assoc. Prof. AECOM (1994-1999); Prof. AECOM (2000 – Present); Editorial Board Member, *Journal of Biological Chemistry* (1996-2002); NSF Grant Review Panel Member (1998-2002); NIH SEP Panel or *Ad Hoc* Study Section Member (1997-2001); Member NIH Biochemistry Study Section (2002-present); Chairman NIH Study Section (2004); NIH Workshop Organizer, Functional Genomics (2001); Member, ESCEC Commission (Developing a Protein-Function Database). *Areas of Research*: Biochemistry: All levels of protein function, including - structure, dynamics, ground- and transition-state structure and energetics, ligand-binding, allostery, the conformational coupling of energetics, and the higher-order organization of catalysis in the cell. The research centers on biomedically relevant issues in sulfur metabolism and isoprenoid biosynthesis.

Martin E. Tanner (b. 1963), Professor of Chemistry, University of British Columbia, Vancouver, British Columbia, Canada; B. Sc. 1985, University of Alberta; Ph.D. 1991 UCLA; NSERC Postdoctoral Fellow, 1991-92, Harvard University; Merck Frosst Centre for Therapeutic research Award, 2004; Bio-Méga/Boehringer Ingelheim Young Investigator Award for Organic Chemistry, 1997; Member, Canadian Institutes of Health Research (CIHR) Biochemistry and Molecular Biology Grant Selection Committee, 2003-2006. Ad Hoc member, Biochemistry Study section, NIH, 2000. Co-chair, Gordon Research Conference on Enzymes, Coenzymes and Metabolic Pathways, 2005; Chair, Biological/Medicinal Chemistry Division of the Canadian Society for Chemistry, 1998-99; Editorial Board Member, *Bioorganic Chemistry*, 2003-present. *Area of Research*: Mechanistic enzymology; Racemases and epimerases; Sugar nucleotide-modifying enzymes; Sialic acid biosynthesis.

Willem (Wilfred) A. van der Donk (b. 1966), William H. and Janet Lycan Professor of Chemistry; Professor – Institute for Genomic Biology, University of Illinois at Urbana-Champaign, Urbana, IL. B.Sc & M.Sc, 1989, Leiden University, The Netherlands; Ph.D., 1994, Rice University, Houston, Texas; Jane Coffin Childs Postdoctoral Fellow, 1994-1997, Massachusetts Institute of Technology; Assistant Prof., Associate Prof., Professor of Chemistry,

University of Illinois at Urbana-Champaign, 1994-present; Camille and Henry Dreyfus New Faculty Award, 1997; Burroughs-Wellcome New Investigator in the Pharmacological Sciences, 1998; Research Innovation Award from the Research Corporation, 1998; Beckman Young Investigator Award, 1999; 3M Non-Tenured Faculty Award, 1999; Cottrell Scholar of the Research Corporation, 2000; Alfred P. Sloan Fellowship, 2001; Camille Dreyfus Teacher-Scholar Award, 2002; Helen Corley Petit Scholar, 2003; Pfizer Award, American Chemical Society, Division of Biological Chemistry, 2004; Cope Scholar, American Chemical Society, 2006; *ad hoc* member NIH Physical Biochemistry & Bioorganic & Natural Products study sections; Co-chair symposium on vitamin B₁₂, 3rd Intl Conference on Porphyrins and Phthalocyanines, 2004; Vice-chair, vitamin B₁₂ Gordon Research Conference, 2005; Director NIH Chemistry-Biology Interface Training Grant, 2005-present. *Areas of research*: Mechanistic enzymology; Biosynthesis of antibiotics including phosphonates and lantibiotics; Bioorganic chemistry; Protein Engineering.

Zhong-Yin Zhang (b. 1962), Professor and Chair, Department of Biochemistry and Molecular Biology, Indiana University School of Medicine, Indianapolis, IN. B.S., 1984, Nankai University, China; Ph.D., 1990, Purdue University; postdoctoral fellow, 1990-1991, the Upjohn Company; research investigator, 1991-1994, The University of Michigan; Asst., Assoc. and Prof. of Molecular Pharmacology and of Biochemistry, Albert Einstein College of Medicine, 1994 – 2005; Sinsheimer Scholar, 1997-2000; Irma T. Hirschl Career Scientist Award, 1999-2003; Member, Biochemistry Study Section, NIH, 2000, 2001, 2003-2004; Member, Macromolecular Structure and Function-A (MSF-A) Study Section, NIH, 2004-2007; Editorial Boards: *Drug Design Reviews – Online*, (2003-present), *Current Protein & Peptide Science*, (2004-present); Senior Editor, *Chemical Biology & Drug Design*, (2005-present). *Areas of research*: *Chemical Biology*: Chemical approaches to protein phosphorylation and dephosphorylation; Mechanistic enzymology; Molecular recognition; Inhibitor design; Structure and function of protein tyrosine phosphatases.

Nominating Committee Member, 2007 - 2009 (vote for one)

Anna K. Mapp (b. 1970), Associate Professor of Chemistry, Associate Professor of Medicinal Chemistry, University of Michigan, Ann Arbor, MI. A.B. 1992, Bryn Mawr College; Ph.D., 1997, University of California, Berkeley; NIH postdoctoral fellowship, 1997-2000, Caltech; Assistant Professor of Chemistry, Assistant Professor of Medicinal Chemistry, University of Michigan, 2000-2006; Research Corporation Research Innovation Award, 2000-2005; Burroughs Wellcome Fund New Investigator in Toxicology, 2001-2005; March of Dimes Basil O'Connor Research Scholar, 2001-2004; Alfred P. Sloan Fellow, 2004-2006; NSF CAREER, 2005; GlaxoSmithKline Chemistry Scholar, 2006; Amgen Young Investigator, 2006; Class of 1923 Memorial Teaching Award, 2006; ACS Eli Lilly Award in Biological Chemistry, 2007; Ad Hoc Member, Bioorganic & Natural Products Chemistry Study Section, NIH, 2002; Editorial Advisory Board, *Molecular Biosystems*, 2004-present; Editorial Board, *ACS Chemical Biology*, 2005-present. *Areas of research*: Organic chemistry & chemical biology: Mechanistic studies of eukaryotic transcriptional regulation; small molecule control of macromolecular assembly; sigmatropic rearrangements; diastereoselective transformations.

Martha G. Oakley (b. 1965) Associate Professor of Chemistry, Indiana University Bloomington, IN. B.A., 1986, Carleton College; B.A. 1988, Oxford University; Ph.D., 1993, California Institute of Technology; Helen Hay Whitney postdoctoral fellowship, 1993-96, Whitehead Institute for Biomedical Research; Asst. Prof. of Chemistry, Indiana University, 1996 – 2003; Associate Chair, Dept. Chemistry, 2003-05; National Science Foundation Career Award, 1997-2001; Co-chair, Bioorganic Gordon Research Conference, 2004; Nominating Committee, Biological Chemistry Division, ACS, 2004. *Areas of research*: Structure and function of coiled coil proteins; Protein-phosphoinositide interactions.

Jin Zhang (b. 1972), Assistant Professor, Johns Hopkins University, Baltimore, MD. B.S., 1995, Tsinghua University, Beijing, China; Ph.D., 2000, The University of Chicago; postdoctoral fellowship, La Jolla Interfaces in Science and

Burroughs Wellcome Fund, 2000-03, University of California, San Diego; Asst. Prof., Department of Pharmacology and Molecular Sciences and the Solomon H. Snyder Department of Neuroscience, Johns Hopkins University School of Medicine, 2003 – present; Asst. Prof., Department of Oncology, Johns Hopkins University School of Medicine, 2004 – present; FAMRI Young Clinical Scientist Award, 2004 –

present; American Heart Association National Scientist Development Award, 2005 – present; 3M Non-tenured Faculty Award, 2006 – present. *Areas of research: Chemical Biology:* function and regulation of kinases and phosphatases; cellular dynamics of second messengers; fluorescent proteins and biosensors; live-cell fluorescence imaging.