



BIOLOGICAL CHEMISTRY DIVISION AMERICAN CHEMICAL SOCIETY

NEWSLETTER

Secretary: J. P. Richard <http://lysine.pharm.utah.edu/acsbio/acsbio.html>

August 2005

Message from the Chair

Richard Armstrong

Shortly, the ACS Fall meeting will be underway. We have a great program put together by Vernon Anderson and the program committee. Preparation of the program is a great deal of work, so we all owe Vernon and the other committee members thanks for dedicating their time to this effort. The symposia for the Eli Lilly, Pfizer and Repligen awards are very exciting this year and I would like to take this opportunity to thank the corporate sponsors for their support in recognizing the best of the excellent scientists in the arena of biochemistry. I am also pleased to report that we had a record number of applications for travel awards from graduate students and postdoctoral fellows. This initiative is one key to keeping the Division's scientific program young and vigorous.

Most of you probably do not realize that the heavy lifting in the Division is borne by of the Secretary, John Richard, and the Treasurer, Peter Tipton. As usual both have done a splendid job this past year. Their organizational skills and dedication to the division are deeply appreciated.

Darrell Davis will be stepping down in 2006 from his volunteer position as the Division's webmaster. We are indebted to Darrell for his many years of excellent service in maintaining our website. This fall the Division will enlist the services of Iserloh Design in redesigning the website. This redesign will incorporate advances in web technology that will allow for rapid updating of material. It will include an employment clearinghouse on which members may post descriptions of open positions in their laboratories, and which might be expanded to include advertisements for industrial positions.

John Richard will be working for Iserloh Design on the website update. Note that it will be possible for our members to easily post material on this website. It is not clear to John what, if any, material our members might be interested in posting and reading. Please contact John Richard

[\[jrichard@chem.buffalo.edu\]](mailto:jrichard@chem.buffalo.edu) with your ideas here, and with other suggestions on what features you would like to see included in the redesigned website.

The coming year will be an interesting one with respect to the opportunities for scientific meetings. In addition to our regular fall program we, as a Division, have been invited to meet with the American Society for Biochemistry and Molecular Biology in April 2006 in San Francisco. This meeting marks the 100th anniversary of the ASBMB. We plan to sponsor some events at this meeting. I urge you to consider attending this meeting to enjoy the great science and celebrate this occasion with our sister society.

I am pleased to report that there has been movement on the issue of open access to the ACS journals, a topic that has been addressed in this newsletter several times before. The ACS has recently agreed to make access to papers free to the public one year after publication. This is a good start and a clear break with the past policy. This change came about in large part through members of the ACS expressing their concerns about open access to the governance of the Society. It is important for all of us to stay involved in policy issues of the ACS.

Finally, it is more important than ever to engage the funding agencies and congress on the importance of robust support for basic, investigator-initiated research and the training of new scientists. You are no doubt aware of the serious impact that recent budget and scientific policy decisions have had on the funding of individual research grants. It is likely that this problem will persist unless the scientific community makes a convincing case, which I believe it can, that scientific education and research is absolutely crucial to our national interest. Please stay engaged.

DIVISION AWARDS FOR 2006

Eli Lilly Award in Biological Chemistry: Professor Linda Hsieh-Wilson, Division of Chemistry and Chemical Engineering, California Institute of Technology.

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

The 2006 Eli Lilly Award recognizes Professor Hsieh-Wilson's development of an innovative, interdisciplinary program to characterize chemical modifications of carbohydrates at glycoproteins and to explore the role of these modifications in neurobiology. This program has been described as one of the most innovative and ambitious in the field of chemical biology.

Professor Hsieh-Wilson's research focuses on glycobiology and emphasizes the development of probes to characterize the contribution of glycoprotein modification to the development and function of the brain. Progress on this major frontier in neuroscience has been slow, because of the lack of simple, broad-ranged techniques to characterize glycoprotein modifications. Hsieh-Wilson's group has developed a general method for identifying posttranslational modifications of serine and threonine residues with β -N-acetylglucosamine (O-GlcNAc glycosylation) using a creative combination of enzyme engineering and chemical modification. This procedure involves enzymatic labeling of O-GlcNAc proteins with a ketone group, conjugation of this ketone to biotin, and detection of biotin-conjugates by chemiluminescence using streptavidin conjugated to horseradish peroxidase. This approach has provided the first proteome-wide analysis of O-GlcNAc proteins which includes 20 newly-identified glycosylated proteins from a neuronal preparation.

Professor Hsieh-Wilson has gone beyond the traditional cataloguing of proteins and has probed the deeper problem of defining the functional role of O-GlcNAc glycosylation in biological processes. Her laboratory was the first to show that the transcription factor CREB is O-GlcNAc glycosylated. This discovery is significant because CREB is a central regulator of biological processes such as glucose homeostasis, neuronal survival and memory storage. A second exciting implication of this work is that glycosylation and phosphorylation may work in opposition to regulate CREB activity. This suggests that a consideration of the dynamic interplay between different posttranslational modifications might be essential to the development of an understanding of the roles of these modifications in biology.

In parallel to her studies of O-GlcNAc glycosylation, Professor Hsieh-Wilson has

developed methods for the synthesis of chondroitin sulfate fragments with defined sulfation patterns. This is a major technical achievement that should provide the compounds needed to define the molecular basis of chondroitin sulfate's effect on neural cell development. For example, Hsieh-Wilson has used a set of compounds with a defined sulfation pattern to show that these sulfation patterns encode functional information in the brain. Her laboratory has identified a specific sulfation motif that interacts with growth factors and cytokines to regulate neuronal outgrowth. This finding has exciting implications for understanding the functional roles of these biopolymers.

Pfizer Award in Enzyme Chemistry: Professor: Professor James Berger, Department of Molecular and Cell Biology, University of California, Berkeley.

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

The 2006 Pfizer Award recognizes Professor Berger's contributions toward the delineation of the chemical mechanisms by which certain classes of enzymes couple the hydrolysis of ATP to the production of chemomechanical force. This work has focused mainly upon DNA- and RNA-dependent proteins and protein complexes that control chromosome replication, propagate molecular information and regulate the superstructure of nucleic acids.

Professor Berger has been described as a structural enzymologist in the most modern sense, who employs a wide range of biochemical and biophysical methods to link structure with function. He is perhaps best known for his structural work on type II DNA topoisomerases. His early work as a graduate student at Harvard has been eclipsed as an independent investigator at Berkeley, and has expanded to include a wide array of protein mediated DNA transactions.

Type II DNA topoisomerases are ubiquitous and essential enzymes that pass one DNA duplex through another to untangle chromosomes and promote cell division. Professor Berger has demonstrated in several seminal papers the mechanism by which topoisomerases move physically in opening large gaps in DNA duplexes, and how their catalysis of ATPase and nuclease reactions act in a cooperative manner to control DNA topology. Berger has provided similar insight into our understanding of hexameric helicases. These enzymes use the energy released in catalysis of hydrolysis of ATP to unwind duplex regions of DNA. This provides control over a number of cellular events ranging from DNA

replication to the regulation of gene expression.

Professor Berger is also interested in topoisomerases as validated targets for drugs that serve as antibiotics and anti-tumorigenic agents. His group produced the first images of topoisomerase II bound to dexrazoxane, a clinically used chemotherapeutic. This structure provides a rationalization for disparate drug resistance data and reveals the chemical mechanisms by which dexrazoxane acts as a mixed-type inhibitor of ATPase activity to block enzyme function.

Berger's second major area of research is focused on the dissection of the mechanisms that underlie the assembly of the replisome and the initiation of DNA replication. A critical step in the initiation of chromosomal replication is the binding of initiator proteins to target regions of DNA known as origins. These initiator proteins couple the hydrolysis of ATP to the recruitment and direct loading of helicases and polymerases onto chromosomal DNA. Work by Berger's group provided many of the structures for the proteins that control the early stages of this process in prokaryotic cells. In particular, coworkers in his lab were the first to determine structures for DnaA and cdc6/18, initiator proteins from bacterial and archeal cell sources, respectively. This work has led to a fascinating comparison of the structures of these proteins and of their possible common function.

Repligen Award in Chemistry of Biological Processes: Professor Vern Schramm, Department of Biochemistry, Albert Einstein College of Medicine.

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

The 2006 Repligen Award recognizes Professor Vern Schramm's contributions to the field of mechanistic enzymology. This work that was described by one prominent chemical biologist as "*the most impressive enzymology of the past two decades in terms of illumination of the principles of catalysis for several superfamilies, and in terms of how physical approaches to enzyme mechanism, married to structural biology and chemical synthesis of potent ligands can lead to specific inhibitors of therapeutically relevant enzymes.*"

The barrier within the protein catalyst of transition states for enzyme-catalyzed hydrolysis, phosphorylation and pyrophosphorylation reactions of nucleosides creates tremendous obstacles to the characterization of transition state structure. Professor Schramm's approach to the determination of transition state structure for the reactions catalyzed by AMP nucleosidase, purine

nucleoside phosphorylase and related enzymes integrates the experimental determination of isotope effects at multiple sites of the nucleoside substrate with quantum mechanical calculations of unique transition state structures that are consistent with the extensive set of isotope effect data. This work combines painstaking synthesis, precise measurements and rigorous calculations to provide some of the most detailed descriptions of the changes in substrate and enzyme structure that occur on proceeding from the Michaelis complex to the transition state for these enzyme catalyzed reactions.

In recent years Schramm has transformed the determination of the transition state structure for enzymatic reactions from a specialized intellectual exercise, to a general procedure which may be applied to the development of tight binding transition state analog inhibitors of enzymatic reactions for use as chemotherapeutic reagents. Schramm has used the information obtained about the structure and charge distribution of the transition states for purine nucleoside phosphorylase in the design and chemical synthesis of stable mimics of the transition state which show pico- to femtomolar inhibition constants. This process of rational inhibitor design has led to the development of *immucilin-H* a tight binding inhibitor for human purine nucleoside phosphorylase. *Immucilin-H* is currently in clinical trials for treatment of T-cell cancers and is, potentially, the first example of a new drug resulting from the rational design of a tight binding transition state analog.

Vern Schramm is noted for the thoughtful and decisive leadership he has provided on several fronts. He has served since 1987 as Chair of the Biochemistry Department at the Albert Einstein College of Medicine; and, has built this into a world-class Department with significant strengths in chemistry, enzymology and structural biology. Schramm's service within the National Institutes of Health, the American Chemical Society, and in the organization of national and international meetings is far too extensive to describe in this award summary. However, it has provided inspiration to those who know him well as one who leads by setting an exemplary example.

**230th National Meeting of the
American Chemical Society**

Washington, DC, August 28 – Sept 1, 2005

**Biological Chemistry Division Technical
Program, Vernon Anderson, Program
Chair**

Sunday, August 28, 2005

Morning Session. Mechanisms of RNA
Catalysis. *Organizer, M. Harris*

9:00 a.m. — Dissecting ribozyme mechanisms:
Lessons learned about RNA and catalysis. **D.
Herschlag**

9:45 a.m. — General acid catalysis and the
hepatitis delta virus ribozyme. **J. A. Piccirilli**

10:30 a.m. — Probing the function of RNA by
conformational restriction and nucleobase
protonation. **P. C. Bevilacqua**

11:15 a.m. — Crystal structure of a group I
intron splicing intermediate. **S. A. Strobel**

**Symposia Cosponsored with Other
Divisions.**

Charge Transfer Processes: Making
Connections, Interfacial ET and Devices.
Sponsored by PHYS, Cosponsored with BIOL

Frontiers in Photobiology, Novel Methods and
Approaches. *Sponsored by PHYS, Cosponsored
with BIOL*

New Frontiers in Ultrasensitive Analysis:
Nanobiotech, Single Molecule Detection, and
Single Cell Analysis. *Sponsored by ANYL,
Cosponsored with PHYS, and BIOL*

Afternoon Session. Studying the Metabolome.
Organizer, J. V. Sweedler

1:30 p.m. — Tools for differential
metabolomics. **F. E. Regnier*, S. Julka, J. Adamec**

2:15 p.m. — Metabonomic and integrative
systems biology investigations in experimental
disease states. **J. K. Nicholson**

3:00 p.m. — Metabolomics: A tool for gene
validation, gene discovery, hypothesis building, and
mechanistic understanding. **C. D. Broeckling, M.
Frag, D. Huhman, M. Naoumkina, B. Deavours,
Z. Lei, B. S. Watson, J. T. Smith, G. D. May, P.
Mendes, R. A. Dixon, L. W. Sumner***

3:45 p.m. — Neurometabolomics: Techniques
for studying the brain's chemistry neuron by
neuron. **J. V. Sweedler*, S. Rubakhin**

**Symposia Cosponsored with Other
Divisions.**

Charge Transfer Processes: Making
Connections Proton-Coupled Electron Transfer,
Sponsored by PHYS, Cosponsored with BIOL

Frontiers in Photobiology: Light-driven DNA
Repair, *Sponsored by PHYS, Cosponsored with
BIOL*

New Frontiers in Ultrasensitive Analysis:
Nanobiotech, Single Molecule Detection, and
Single Cell Analysis, *Sponsored by ANYL,
Cosponsored with PHYS, and BIOL*

Sunday Evening. Poster Session-Nucleic Acids
Biochemistry. *Organizer, Vernon Anderson*

4:00 - 6:00 p.m. - 56 posters

Monday, August 29, 2005

Morning Session. Mass Spectrometric
Analysis of Protein Interfaces. *Organizer, V. L.
Woods Jr*

9:00 a.m. — Characterization of protein
interfaces with enhanced amide H/D exchange
mass spectrometry (DXMS). **V. L. Woods Jr.**

9:45 a.m. — Amide hydrogen/deuterium-
exchange by mass spectrometry to study protein-
ligand and protein-protein interactions. **Y. Hamuro*,
S. J. Coales, M. R. Southern, B. Kraybill, K. S.
Molnar, P. C. Weber**

10:30 a.m. — Hydroxyl radical mediated alkyl
H/D exchange. **B. Wang, V. E. Anderson***

11:15 a.m. — Structural proteomics of
macromolecular complexes. **M. R. Chance**

**Symposia Cosponsored with Other
Divisions.**

New Frontiers in Ultrasensitive Analysis:
Nanobiotech, Single Molecule Detection, and
Single Cell Analysis, *Sponsored by ANYL,
Cosponsored with PHYS, and BIOL*

Afternoon Session. Antibiotics: Resistance
and New Approaches. *Organizer, D. Pei*

1:15 p.m. — Introductory Remarks.

1:20 p.m. — Searching the resistome for new
antibiotic resistance mechanisms. **G. D. Wright**

2:05 p.m. — Circumventing antibiotic
resistance. **S. Mobashery**

2:50 p.m. — Peptide deformylase and LuxS
as novel antibacterial drug targets. **D. Pei**

3:30 p.m. — Intermission.

3:40 — New antibiotic targets in "old" metabolic
pathways. **A. Osterman**

4:25 — Learning nature's strategies of making
antibiotics. **H -W. Liu**

Symposia Cosponsored with Other Divisions.

Ultrafast Electron Transfer Processes, *Sponsored by PHYS, Cosponsored with BIOL*

Frontiers in Photobiology: Uses of Photobiology, *Sponsored by PHYS, Cosponsored with BIOL*

Ions in Complex Physical, Chemical, and Biological Systems, *Sponsored by PHYS, Cosponsored with BIOL*

New Frontiers in Ultrasensitive Analysis: Nanobiotech, Single Molecule Detection, and Single Cell Analysis, *Sponsored by ANYL, Cosponsored with PHYS, and BIOL*

Monday Evening. Sci-Mix, Organizer, Vernon Anderson, joint with other divisions. This session will feature the recipients of the Division of Biological Chemistry Travel Awards

8:00 - 10:00 pm - 23 posters.

Tuesday, August 30, 2005

Morning Session. Adventures in Protein Chemistry, Lilly Award Symposium. *Organizer, D. G. McCafferty.*

9:00 p.m. — Biochemical characterization of kinesin motor protein inhibitors: A potential mechanism for antimetastatic chemotherapy in cancer.

L. Luo, J. D. Carson, D. Dhanak, J. R. Jackson, P. S. Huang, Y. Lee, R. Sakowicz, R. A. Copeland*

9:45 p.m. — De novo design of metalloproteins. **W. DeGrado**

10:30 p.m. — A fluoroquinolone resistance protein from *Mycobacterium tuberculosis* that mimics DNA. **S. S. Hegde, M. W. Vetting, S. L. Roderick, L. A. Mitchenall, A. M. Maxwell, H. E. Takiff, J. S. Blanchard***

11:15 p.m. — Presentation of Lilly Award.

11:20 p.m. — Biological chemistry of enzymes of epigenetic signaling and bacterial virulence and colonization. **D. G. McCafferty**

Symposia Cosponsored with Other Divisions.

Charge Transfer Processes: Making Connections, Interfacial Electron Transfer, *Sponsored by PHYS, Cosponsored with BIOL*

Ions in Complex Physical, Chemical, and Biological Systems Interfaces, *Sponsored by PHYS, Cosponsored with BIOL*

New Frontiers in Ultrasensitive Analysis: Nanobiotech, Single Molecule Detection, and Single Cell Analysis, *Sponsored by ANYL, Cosponsored with PHYS, and BIOL*

Polymers for Bioactive Surfaces: Controlled Interactions at Surfaces, *Sponsored by POLY, Cosponsored with BIOL*

Afternoon Session. Computational Approaches to Enzyme Mechanisms. *Cosponsored with PHYS, Organizer, N. G. J. Richards*

1:15 p.m. 79. Development and application of methods for determining reaction paths in enzymatic reactions. **W. Yang, A. Cisneros, Z. Lu, S. K. Burger, H. Liu, L. Xie**

2:00 p.m. — Computational studies of the metal center in nitrile hydratase. **N. G. J. Richards**

2:45 p.m. Kinetic isotope effects for enzyme-catalyzed methyl transfer. **G. D. Ruggiero, I. H. Williams*, M. Roca, V. Moliner, I. Tuñón**

3:30 p.m. Theoretical and computational studies of vectorial processes in biological systems. **Q. Cui**

4:15 p.m. — Using computer simulations to establish the key role of electrostatic prereorganization energy in enzyme catalysis. **A. Warshel**

Tuesday Afternoon. Poster Session, Lipids and Membranes, Metabolism and Chemical Biology. *Organizer, Vernon Anderson*

12:00 – 2:00 p.m. - 92 Posters.

Tuesday Evening. Awards dinner.

Wednesday, August 31, 2005

Morning Session. Function, Structure, Dynamics of Membrane-Associated Molecules. *Pfizer Award Symposium, N. Sampson, Organizer*

8:45 a.m. — Solution NMR approaches for the determination of high-resolution structures of integral membrane proteins. **J. H. Bushweller*, Y. Zhou, T. Cierpicki**

9:30 a.m. — Mechanistic studies on the ADP-heptose epimerase of lipopolysaccharide biosynthesis. **M. E. Tanner*, J. P. Morrison, J. A. Read, R. A. Ahmed, W. G. Coleman**

10:15 a.m. — Structural studies of cholesterol oxidase at 0.95Å resolution: What can we learn about enzyme chemistry from atomic resolution crystallography. **A. Vrielink*, P. I. Lario, A. Y. Lyubimov**

11:00 a.m. — Presentation of Pfizer Award.

11:05 a.m. — Cholesterol oxidase: Modulating catalysis at the membrane. **N. S. Sampson**

Symposia Cosponsored with Other Divisions.

Charge Transfer Processes: Making Connections, Biological Electron Transfer. *Sponsored by PHYS, Cosponsored with BIOL*

Ions in Complex Physical, Chemical, and Biological Systems: Bulk Thermodynamics. *Sponsored by PHYS, Cosponsored with BIOL*

New Frontiers in Ultrasensitive Analysis: Nanobiotech, Single Molecule Detection, and Single Cell Analysis. *Sponsored by ANYL, Cosponsored with PHYS, and BIOL*

Polymers for Bioactive Surfaces: Anti-microbial and Non-Fouling Surfaces. *Sponsored by POLY, Cosponsored with BIOL*

Afternoon Session. Frontiers in Biosynthesis: Assigning Biochemical Function in the Age of Genomics and Proteomics. *Repligen Award Symposium, D. E. Cane, Organizer*

1:30 p. m. — We know the sequence, we know the structure, but what's the chemistry? **C. Abell**

2:15 p.m. — Tryptophan catabolism: Gene identification and mechanistic studies. **T. P. Begley**

3:00 p.m. — New insights into the spatial and temporal organization of peptidoglycan biosynthesis. **S. Walker**

3:45 p.m. — Presentation of Repligen Award.

3:50 p.m. — Modular polyketide synthases: Biochemical and structural basis for the programming of macrolide antibiotic biosynthesis. **D. E. Cane**

Symposia Cosponsored with Other Divisions.

Charge Transfer Processes: Making Connections Single Molecule Studies of Electron Transfer. *Sponsored by PHYS, Cosponsored with BIOL*

Ions in Complex Physical, Chemical, and Biological Systems: Bulk Structure and Dynamics, *Sponsored by PHYS, Cosponsored with BIOL*

New Frontiers in Ultrasensitive Analysis: Nanobiotech, Single Molecule Detection, and Single Cell Analysis. *Sponsored by ANYL, Cosponsored with PHYS, and BIOL*

Polymers for Bioactive Surfaces: Controlled Interactions at Surfaces. *Sponsored by POLY, Cosponsored with BIOL*

Wednesday Evening. Poster Session, Enzyme and Protein Structure and Function *Organizer, Vern Anderson.*

5:00 – 7:00 p.m. - 107 Posters.

Thursday, September 1, 2005.

Morning Session. Symposia Cosponsored with Other Divisions.

Charge Transfer Processes: Making Connections, Biological Electron Transfer and Proton-Coupled Electron Transfer. *Sponsored by PHYS, Cosponsored with BIOL*

Ions in Complex Physical, Chemical, and Biological Systems: Biological Channels *Sponsored by PHYS, Cosponsored with BIOL*

Polymers for Bioactive Surfaces: Surfaces for Therapeutic Applications. *Sponsored by POLY, Cosponsored with BIOL*

Afternoon Session Symposia Cosponsored with Other Divisions.

Charge Transfer Processes: Making Connections, Ultrafast Electron Transfer and non-Marcus Processes. *Sponsored by PHYS, Cosponsored with BIOL*

Ions in Complex Physical, Chemical, and Biological Systems: Microsolvation and Confinement. *Sponsored by PHYS, Cosponsored with BIOL*

Polymers for Bioactive Surfaces: Anti-microbial and Non-fouling Surfaces. *Sponsored by POLY, Cosponsored with BIOL*

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 2005 should provide an outline for the proposed program to:

John P. Richard
Department of Chemistry
University at Buffalo, SUNY
Buffalo, NY 14260

The division has agreed to provide support for the following symposia in 2005.

Bioactive Lipids

Southeast & Southwest Regional Meeting, Nov 1 - 4, 2005 Memphis, Tennessee, Organizer, Abby Parrill.

Speakers: Timothy MacDonald, Duane Miller, Yusuf Hannun, H. Alex Brown, Alfred Merrill, Jr, Suzanne Barbour

Bioorganic Reaction Mechanisms

Pacificchem 2005. December 15 – 20, 2005, Honolulu, Hawaii, Organizer, Jeffrey Keillor.

Speakers: Eric Anslyn, Karine Auclair, Paul Berti, Stan Brown, Richard Cheng, Chris Easton, Tadashi Ema, Nobuyoshi Esaki, Jim Fishbein, Perry Frey, Jeffrey Keillor, Jack Kirsch, Judith Klinman, Ron Kluger, Hiromichi Ohta, Bruce Palfey, David Perrin, Charles Perrin, Ralph Pollack, Dale Poulter, John Richard, Nigel Richards, Vern Schramm, Takeshi Tsumuraya, Kellie Tuck, Stephen Withers.

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

- Secretary (3 year term).
- Treasurer (3 year term).
- Program Committee Member (4 year term)
- Nominating Committee Member (3 year term)
- Executive Committee (Two for 3 year terms).
- Councilors (Two for 3 year terms).

The division is grateful for the hard work of the nominating committee – Phillip A. Cole, Deborah A. Kallick and Peter Tonge - in identifying a slate of exceptional candidates for these offices. The strength of our Division within the ACS 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 ballot sheet, and return this sheet in the attached envelope by October 1, 2005

Secretary (Vote for one)

John P. Richard (b. 1953) Professor of Chemistry, University at Buffalo. B. S. in Biochemistry, 1974, Ohio State University; Ph. D. in Chemistry, 1979, Ohio State University. Postdoctoral Fellowship, 1979-1982, Brandeis University; Research Associate, 1982-1984, Fox Chase Cancer Center; 1984-1985, Herchel Smith Fellow, Cambridge University. NIH First Award, 1988 – 1993. Secretary, ACS Division of Biological Chemistry, 2003-2005. Walton Visitor Award, Science Foundation of Ireland, 2003. Visiting Professor, Universidad de Santiago, Spain, 2003. Visiting Professor, Ludwig-Maximilians-Universitaet Muenchen, Germany, 2004. Ad Hoc Member, Physical Biochemistry Study Section 2000, 2001. Co-Chair, Gordon Conference on Enzymes, Coenzymes and Metabolic Pathways, 2006. Editor of *Annual Reports on the Progress in Chemistry, Section B, Organic Chemistry* (1996-2002). Editorial Board, *Bioorganic Chemistry*, 1998-present. Editor, *Advances in Physical Organic Chemistry*, 2000-present. Section Editor, *Current Topics in Chemical Biology*, 2003. Guest Editor, *Journal of Physical Organic Chemistry*, 2004. Editorial Board, *Journal of Physical Organic Chemistry*, 2005-2008. *Research Interests*. Mechanism for organic reactions and their catalysis by enzymes: nucleophilic substitution at carbon; rearrangements of carbocation-anion pairs; proton and hydride transfer at carbon; aldol and Claisen condensations, hydrolysis of phosphate esters. Formation and stability of carbanions, carbocations and quinone methides in water and the mechanism for their stabilization in enzyme-catalyzed reactions.

Treasurer (Vote for one)

Eugene G. Mueller (b. 1965), Associate Professor of Chemistry and Biochemistry, University of Delaware, Newark, DE. B.S., 1987, University of Illinois at Urbana-Champaign; Ph.D., 1993, Harvard University; NSF postdoctoral

fellowship, 1993-94, California Institute of Technology; postdoctoral fellowship, 1994-95, Massachusetts Institute of Technology. Asst. Prof. of Chemistry and Biochemistry, University of Delaware, 1995 – 2001; Exxon Education Foundation Research Fellow, 1996-1998; Co-chair, Gordon Research Conference on Enzymes, Coenzymes and Metabolic Pathways, 2005; Organizer, Rustbelt RNA Meeting, 2002. *Research Interests.* Biochemistry: Mechanistic enzymology; RNA-protein recognition; Structure and function of RNA modifying enzymes; sulfur transfer.

Zhong-Yin Zhang (b. 1962), Robert Harris 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. Hirsch 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). *Research Interests.* Chemical Biology: Chemical approaches to protein phosphorylation and dephosphorylation; Mechanistic enzymology; Molecular recognition; Inhibitor design; Structure and function of protein tyrosine phosphatases.

Program Committee, 2006-2009 - Program Chair, 2008 (Vote for one)

W. Todd Miller (b. 1961), Professor of Physiology and Biophysics, Stony Brook University. Sc.B., 1983, Brown University; Ph.D., 1988, Rockefeller University; American Cancer Society postdoctoral fellowship, 1988-91, Massachusetts Institute of Technology; Asst. and Assoc. Prof. of Physiology and Biophysics, Stony Brook University, 1991-2003; Catosinos Young Investigator Award for Cancer Research, 1991-2; Member, Cell Biology panel, USAMRMC Breast Cancer Research Program, 1996-7; Carol Baldwin Breast Cancer Award, 2002, 2005;

Member, Medical Biochemistry Study Section, NIH, 1999-2003; Member, Physiological Chemistry Study Section, NIH, 2003-4. *Research Interests.* Biochemistry: Structure and function of oncogenic tyrosine kinases; kinase inhibitors; signal transduction.

James T. Stivers (b. 1957), Associate Professor of Pharmacology and Molecular Sciences, Associate Professor of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD. B.S., 1987, University of Washington; Ph.D., 1993, Johns Hopkins University; American Cancer Society postdoctoral fellowship, 1993-1996, Johns Hopkins University School of Medicine; Asst. Prof. and NIST Research Scientist, Center for Advanced Research in Biotechnology, 1996-2001; FASEB Young investigator Award, 1998; NIST Technical Achievement Award, 1999; Ad hoc member, NIH Physical Biochemistry Study Section, 2001; Ad hoc member, NIH Biochemistry Study Section, 2002; Member, NIH-GMS Program Project Grant Review Study Section, 2002; Member, NIH Special Review Panel, 2004; Member, NIH-GMS NRSA Postdoctoral Fellowship Review Study Sections, 2003-04; Guest editor, *Chemical Reviews* Special Issue on DNA Repair, 2005. *Research Interests.* Biochemistry: Chemical biology; Molecular design; NMR spectroscopy of nucleic acids and proteins; Rational design of small molecule inhibitors of DNA repair enzymes.

Executive Committee, 2006-2008 (vote for two)

Timothy P. Clackson (b. 1965), Senior Vice President and Chief Scientific Officer, ARIAD Pharmaceuticals Inc., Cambridge, MA. B.A Hons., 1987, University of Oxford, UK; Ph.D., 1991, University of Cambridge, UK; Postdoctoral fellow, Genentech Inc., Dept. of Protein Engineering, 1991-94; Senior, Staff, and Principal Scientist, Director, Vice President and Senior Vice President, Science and Technology, ARIAD Pharmaceuticals, Inc., 1994-2003; NATO Postdoctoral Research Fellowship, 1991-93; Co-chair, Gordon Research Conference on Bioorganic Chemistry, 2004; Member, Editorial Advisory Board, *Chemical Biology and Drug Design* (2005-). *Research Interests.* Drug discovery; Molecular recognition at protein-small molecule interfaces; Chemical tools for controlling

cell signaling and protein-protein interactions;
Chemical biology

Sheila S. David (b. 1962), Professor of Chemistry, University of Utah, Salt Lake City, UT. B.A. 1980 Saint Olaf College, Ph.D. 1989, University of Minnesota; NIH postdoctoral fellowship, 1990-1992, California Institute of Technology; Asst. Prof. Of Chemistry and Biochemistry, 1992-1996; Beckman Young Investigator, 1993-1996, A.P. Sloan Research Fellow, 1998-2002; Member, Bioorganic and Natural Products Study Section, NIH, 2001-2004; Member, Synthetic and Biological Chemistry A Study Section, NIH, 2005; Editorial Board: *Chemical Research in Toxicology* (2005-present). *Research Interests.* Biochemistry, Bioorganic and Bioinorganic Chemistry: mechanisms of DNA repair and mutagenesis, enzymology of base excision repair, metalloprotein-DNA interactions

Lila M. Gierasch (b. 1948), Professor and Head, Dept. of Biochemistry & Molecular Biology, University of Massachusetts Amherst, Amherst, MA. A.B. (chemistry) summa cum laude, Mount Holyoke College, 1970; Ph.D. (biophysics), Harvard University, 1975; D.Sc. honoris causa, Mount Holyoke College, 2002. Assistant Professor of Chemistry, Amherst College, 1974-79; Assistant Professor of Chemistry, University of Delaware, 1979-81; Associate Professor, 1981-84; Professor, 1984-88; Professor of Pharmacology and Robert A. Welch Professor of Biochemistry, University of Texas Southwestern Medical Center, 1988-94; Professor and Head, Department of Chemistry, University of Massachusetts, 1994-1999. Advisory board/committee: Biophysics and biophysical Chemistry Study Section, National Institutes of Health, 1983-87; Member, Physical Biochemistry Study Section, National Institutes of Health, 2004; Member, MSFB Study Section, National Institutes of Health, 2004-2008; International Union of Pure and Applied Chemistry, Commission on Biotechnology, member 1986-88, secretary 1988-90; U.S. National Committee for the International Union of Pure and Applied Biophysics, 1988-91, vice-chairman, 1992-95, chair, 1995-98; Gordon Conference on Proteins, Chair 1988; Gordon Conference on Molecular Membrane Biology, Vice-chair, 1992, Chair, 1994; American Association for the Advancement of Science Symposium on Protein Folding, co-organizer, 1988; Chair, FASEB Summer Conference 'Protein Folding in the Cell', 2002; Gordon Research Conferences Site & Selection Committee, 1996-

2001; FASEB Executive Board, 1996-1998; Damon-Runyon/Walter Winchell Scientific Advisory Board, 1994-98; Advisory Council, NIGMS, 1998-2002; Advisory Committee, Math & Physical Sciences Division, NSF, 1999-2003. Member, American Society of Biochemistry and Molecular Biology (Awards Committee, 1995-6; Nominating Committee, 1998-2000; Organizer of Satellite meeting, 1997; Council, 2004-2008); Protein Society; Biophysical Society (Program Chair, Annual Meeting, 1991; Chair, Publications Committee, 1990-92; President, 1995-6; Finance Committee, 1997-2000, 2003-6; Discussions Committee, 2004-6), American Chemical Society (Executive Council, Biological Division, 1994-96), American Peptide Society (Council, 1993-99). Recipient: A. P. Sloan Fellowship, 1984; Vincent du Vigneaud Award for Young Investigators in Peptide Chemistry, 1984; Mary Lyon Award, Mount Holyoke College, 1985; Guggenheim Fellowship, 1986; Distinguished Faculty Lectureship, University of Delaware, 1987; Fellow, American Association for the Advancement of Science, 1989; Chancellor's Medal, University of Massachusetts Amherst, 2002; Samuel Conti Faculty Fellowship, University of Massachusetts Amherst, 2002; Editorial Boards: Biochemistry (1992-1999); Proteins (1988-); Jour. Biol. Chem. (2000-2003); Biopolymers (1987-); Peptide Research (198-1993); Folding and Design/Structure (1996-); Chemistry & Biology (1993-); Journal of Peptide Research (1997-2005); Editor in chief, Peptide Science (2004-9). *Research Interests.* Biophysical chemistry: Protein folding in vitro and in vivo; protein localization; protein structure-function; molecular chaperones.

Albert S. Mildvan (b. 1932), Professor of Biological Chemistry and Chemistry, Johns Hopkins University, School of Medicine, Baltimore, MD since 1981, A.B., 1953, University of Pennsylvania, M.D., Johns Hopkins School of Medicine, 1957, Medical Intern, Johns Hopkins Service at Baltimore City Hospitals, 1958, Research Associate, National Heart Institute-Gerontology Division, 1958-60, NIH Postdoctoral fellow in Biochemistry, Institute for Animal Physiology, Cambridge 1960-62, NIH Postdoctoral fellow, Johnson Foundation, University of Pennsylvania 1962-65, Asst., Assoc., Professor, and Adjunct Professor of Physical Biochemistry, University of Pennsylvania, 1965-present, Associate and Senior Member, Fox Chase Institute for Cancer Research, 1968-1981, Established Investigator, American Heart Assn., 1965-70, Co-Chair, Gordon Conf. on

Enzymes, 1971, Chair, Enzymes Mechanisms Conference, 1971, Member of NSF Molecular Biol. Panel 1971-74, Council on Basic Science, American Heart Association, Personnel Committee, American Cancer Soc., 1975-1977, Council Member NIGMS 1986-90, Program Chair, Biol. Div., ACS, 1979-81, Councilor, ACS, Biol. Div., 1988-90., Exec. Comm., ACS, Biol. Div. 1993-95, Organizing Committee, International Meeting on Horizons in Hydrogen Bond Research, Berlin, 2003, Roskilde, 2005, Herbert Sober Prize, ASBMB, 1988, Frontier Lecture, Gordon Conference on Enzymes, 2002, R.R. Fisher Memorial Lecture, U. South Carolina 2004, Editorial Boards: *Arch. Biochem. Biophys.* 1968-92; *Biochemistry* 1972-77; *Biophysical J.* 1975-78; *J. Biol. Chem.* 1978-91. *Research Interests.* Physical Biochemistry: Solution structures and mechanisms of enzymes; Roles of metals in enzymes; Mathematical analysis of double mutations of enzymes; Enzyme flexibility and dynamics; Short-strong hydrogen bonds in biology.

Councilors and Alternate Councilors 2006-2008 (vote for two) [The two candidates who receive the most votes shall serve as Councilors, and the others shall serve as Alternate Councilors].

Squire J. Booker (b. 1965), Assistant Professor of Biochemistry and Molecular Biology, The Pennsylvania State University, University Park, PA. B.A., 1987, Austin College (Sherman, TX); Ph.D., 1994, The Massachusetts Institute of Technology; NSF-NATO postdoctoral fellowship, 1994-1995, Université René Descartes (Paris, France); NIH postdoctoral fellowship, 1996-1999, Institute for Enzyme Research, University of Wisconsin-Madison; Minnie Stevens Piper Scholar, 1983-1987; NSF Faculty Early Career Award, 2002-2007; Presidential Early Career Award for Scientists and Engineers, 2002; Member Molecular and Cellular Biochemistry Advisory Panel, NSF, 2002-2005; Member (Ad Hoc) R15 Biochemistry Study Section, NIH, 2004; Member (Ad Hoc) Biochemistry Study Panel, NIH, 2004; Member (Ad Hoc) Macromolecular Structure and Function A Study Panel, NIH, 2005; Co-chair of Penn State University Super Friday Forum, "Kinetics and Mechanism in Biological Pathways," 2001; Chair of Penn State University Super Friday Forum, "Structure and Mechanism in Biological Pathways," 2002. *Research Interests.*

Biochemistry: Mechanistic enzymology; bioinorganic chemistry; chemical biology.

Christine S. Chow (b. 1965), Professor of Chemistry, Wayne State University, Detroit, MI. A.B., Bowdoin College, 1987; M.A., Columbia University, 1988; Ph.D., California Institute of Technology, 1992; NIH postdoctoral fellowship, Massachusetts Institute of Technology, 1992-1994; Assistant and Associate Professor, Wayne State University, 1994-2004; Visiting Professor Fellowship, Kyoto University, 2004; NIH FIRST Award, 1997-2002; *Ad Hoc* Member of Study Section B, NIH, 2000 and 2002; *Ad Hoc* Member of the Bioorganic & Natural Products Study Section, NIH, 2001 and 2003; *Ad Hoc* Member of the Special Emphasis Panel in the "Rapid Response Grant Program on Bioterrorism-Related Research", NIH, 2002 and 2003; Member of the Bioorganic & Natural Products Study Section, NIH, 2003-2004; Member of the Synthetic and Biological Chemistry A Study Section, NIH, 2005-present. *Research Interests.* Biochemistry: Modified RNAs and DNAs; RNA structure probes; RNA-ligand interactions; RNA-targeting antibiotics; cisplatin-nucleic acid interactions.

Gary D. Glick (b. 1961), Werner E. Bachman Collegiate Professor of Chemistry, Professor of Biological Chemistry, University of Michigan, Ann Arbor, MI. B.A., 1983, Rutgers University; Ph.D., 1988, Columbia University (with W.C. Still); NIH postdoctoral fellowship, 1988-90, Harvard University (with J.R. Knowles); Assistant and Associate Professor of Chemistry, University of Michigan, 1990 - 1998; 1999-present, Professor of Chemistry and Professor of Biological Chemistry; Pegram Award, Columbia University, 1988; Arthritis Investigator Award, 1992-1995; American Cancer Society Junior Faculty Research Award, 1993-1996; National Science Foundation Young Investigator Award, 1993-1998; Camille-Dreyfus Teacher-Scholar Award, 1995-1998; Research Fellow of the Alfred P. Sloan Foundation, 1995-1997; University of Michigan Excellence in Research Award, 1998; Werner E. Bachmann Professorship, 1999; Member, Bioorganic and Natural Products Chemistry Study Section, NIH, 1998, 1999-2003; Ad Hoc Reviewer, National Institute of Allergy and Infectious Diseases, NIH, 2000; Department of Defense Peer Reviewed Research Reviewer, 2005; Member, Medical and Scientific Advisory Board, National Arthritis Foundation Michigan Chapter, 1999-2004; Scientific Founder, GMP|ImmunoTherapeutics Inc., 2003; Founder

and Director, University of Michigan Interdepartmental Chemical Biology Doctoral Program, 2004-present; Editorial Boards: *Current Protocols in Nucleic Acid Chemistry* (1997-2004), *Current Opinion in Chemical Biology* (2002, guest editor issue on therapeutics). *Research Interests.* Biochemistry: Protein-nucleic acid interactions; Molecular recognition by autoantibodies; Nucleic acid structure; Bioenergetics. Chemical Genetics: Small molecule probes and therapeutics for cancer and systemic autoimmune diseases

Paul J. Hergenrother (b. 1972), Assistant Professor of Chemistry, Affiliate-Department of Biochemistry, Member of Center for Biophysics and Computational Biology, University of Illinois, Urbana-Champaign. B.S., 1994, University of Notre Dame; Ph.D., 1999 University of Texas-Austin; American Cancer Society postdoctoral fellowship, 1999-2001, Harvard University; Assistant Professor of Chemistry, University of Illinois, Urbana-Champaign, 2001-present. NSF CAREER award, 2002-2007; Beckman Young Investigator Award, 2003-2006; Research Corporation Research Innovation Award, 2003-2004; Alfred P. Sloan Foundation Fellow, 2005; Member of Long Range Planning Committee, Medicinal Chemistry Division, ACS, 2005-2007; Consultant for Cubist Pharmaceuticals, 2005-present; Editorial Advisory Board, *Chemical Biology & Drug Design*, 2005-present. *Research Interests.* Using small molecules to identify novel targets for the treatment of cancer, neurodegeneration, and drug-resistant bacteria.

Nominating Committee 2005 (vote for one)

Eric D. Brown (b. 1963), Associate Professor, Canada Research Chair in Microbial Biochemistry, Department of Biochemistry and Biomedical Sciences, McMaster University, Hamilton, Ontario, Canada; B.Sc., M.Sc. and Ph.D., 1987, 1989 and 1992, University of Guelph; Natural Sciences and Engineering Research Council Post-doctoral Fellow, 1993-1995, Harvard Medical School; Research Scientist, 1995, Myco Pharmaceuticals; Research Scientist, 1996-1998, Astra Research Center Boston; Assistant Professor, 1998-2003, McMaster University; 1999-2004, Medical Research Council Salary Award; 2001-2006, Canada Research Chair Salary Award; 2005, Merck Frosst Prize for Meritorious Research, Canadian Society for Biochemistry, Molecular and

Cellular Biology; 2000-2002, panel member for Canadian Institutes of Health Research Doctoral Research Awards Panel A - Biomedical; 2002, panel member for the High Throughput Screening Study Section of the National Institute of Neurological Disorders and Stroke of the NIH; 2002-present, member of the Microbiology and Infectious Diseases Grant Review Panel of the Canadian Institutes of Health Research; 2003-present, member of the Society for Biomolecular Screening Academic Outreach Committee; 2003-present, member of the Management and Scientific Planning Committee of the Protein Engineering Network; 2004-present, Councillor and Board Member of the Canadian Society of Biochemistry and Molecular & Cell Biology; 2004-present, member of the Ontario Pharmaceutical Development Working Group; 2004-present, member of the Canadian Institutes of Health Research Working Group for the Canadian Chemical Biology Network. *Research Interests.* *Biochemistry* and *Bacteriology*; molecular mechanisms of protein function; antibacterial research; bacterial cell wall biosynthesis; essential physiology of bacteria; high-throughput small molecule screening; chemical genomics.

Michael D. Burkart (b. 1972), Assistant Professor, Department of Chemistry and Biochemistry, University of California, San Diego, CA. B.A., 1994, Rice University; Ph.D., 1999, The Scripps Research Institute; NIH postdoctoral fellow, 1999-2002, Harvard Medical School; Asst. Prof. of Chemistry and Biochemistry, UC San Diego 2002-; Ellison Medical Foundation, New Scholar Award in Global Infectious Disease, 2003-2007; NSF CAREER Award, 2004-2009; Hellman Fellow, 2004-2005; Chair, Trans-Atlantic Frontiers of Chemistry (ACS, Royal Society of Chemistry, and Gesellschaft Deutscher Chemiker), 2006. *Research Interests.* Biological Chemistry: Natural product biosynthesis; Mechanistic Enzymology; Inhibitor design and synthesis; Metabolic engineering.

Deadline - October 1, 2005

The ballot included with this newsletter should be mailed in the attached envelope by October 1, 2005 to

**John P. Richard
Secretary, Division of
Biological Chemistry
Department of Chemistry
University at Buffalo, SUNY
Buffalo, NY 14260**

Please note that, according to the rules of the American Chemical Society, voting is a privilege restricted to paid members of the Division of Biological Chemistry.

Deadline - October 1, 2005

Ballot

Secretary (Vote for 1)

John P. Richard

Treasurer (Vote for 1)

Eugene G. Mueller

Zhong-Yin Zhang

Program Chair (Vote for 1)

W. Todd Miller

James T. Stivers

Executive Committee (Vote for 2)

Timothy P. Clackson

Sheila S. David

Lila M. Gierasch

Albert S. Mildvan

Councilors (vote for 2)

Squire J. Booker

Christine S. Chow

Gary D. Glick

Paul J. Hergenrother

Nominating Committee (vote for 1)

Eric D. Brown

Michael D. Burkart