



BIOLOGICAL CHEMISTRY DIVISION AMERICAN CHEMICAL SOCIETY

NEWSLETTER

Secretary: J. P. Richard

August, 2004

Message from the Chair Vern Schramm

Richard N. Armstrong becomes Chair of the Division of Biological Chemistry following the Fall 2004 National Meeting of the American Chemical Society and will preside until the Fall 2006. Dr. Armstrong is Professor of Biochemistry and Chemistry at Vanderbilt University and since May 2003 has been Editor of *Biochemistry*, the primary journal for the Biological Chemistry Division. We welcome his leadership in science, publishing and for the Division of Biological Chemistry. We all know that the continued strength of the Division depends on participation. We welcome nominations for Division Officers and Division Research Awards. Nominations can be provided to the Chair or the Secretary of the Division at any time. Invitations and deadlines are published periodically in this newsletter.

NIH funding for 2004 reached an all-time high of \$28 billion, a 3.2% increase above the previous year. Doubling the NIH budget over the period 1998-2003 was accomplished by 15% increments in these years, an unprecedented opportunity to develop biomedical research. These are taxpayer dollars and with this increase, an expanded role for research priorities has been mandated at the NIH. For example, the NIH is now the lead agency for bioterrorism research with \$1.6 billion earmarked for centers and related research programs. Another \$2.8 billion is set aside for research contracts for specific development of reagents or technologies. These include generation of NIH-funded chemical libraries, a needless duplication of established commercial technology. Research priority in cooperative science projects has taken additional bites from the individual investigator research pool. Team research is part of the 'NIH Roadmap' and NIH director

Zerhouni says he hopes new NIH-sponsored projects will shed the idea of a single lead investigator, in favor of "team science".

These changes are expected to result in fewer non-defense investigator-initiated research grants in 2004 than in 2003. We see the results of this policy already with NIH grant applications having priority scores at 18th percentile not being funded. The NIH has predicted that current policies would cause the success rate for NIH grants to 'dip to 29 percent'. However, the NIH calculates success rate by a formula that includes multiple reviews of a specific project.

Unfortunately, these NIH incentives are creating additional barriers for the development of new scientists. Stringent funding lines mean fewer grants for assistant professors. The frontiers of biomedical research have been historically populated with brilliant young minds generating novel ideas, new technologies and breakthrough discoveries. New faculty require sufficient research support to develop a laboratory in which to make unexpected discoveries. The individual nature of discovery and creation makes it counterproductive for newly appointed assistant professors to join a team research effort where the tasks are assigned by a leadership group. Program and contract funding by NIH research dollars, no matter how important or well-intentioned, prevents those funds from nurturing new research investigators. A pipeline of new scientists is an absolute necessity for the success of biomedical research. We urge the NIH to provide the highest priority in its funding programs for individual research efforts. This is the optimal funding mechanism for the development years of young scientists.

DIVISION AWARDS FOR 2005

Eli Lilly Award in Biological Chemistry: Professor Dewey G. McCafferty, Department of Biochemistry and Biophysics, University of Pennsylvania School of Medicine.

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

Professor McCafferty has been described as a quintessential example of a new breed of chemical biologists, who are masters of the most advanced synthetic and analytical methods, and who show no fear in applying these methods to the most competitive and exciting problems in biology. His combination of intelligence, insight and professional courage has led to seminal contributions on three separate problems: The mechanism of action of new antimicrobial agents; the mechanism of action of sortase, a protein-peptidoglycan crosslinking enzyme; and, the role of histone modification in gene silencing.

McCafferty's laboratory is interested in ramoplanin, a promising new antibiotic which is active against a broad spectrum of Gram-positive bacteria, including vancomycin-resistant enterococci and vancomycin- and methicillin-resistant *Staphylococcus aureus*. His work - together with studies of Suzanne Walker at Princeton - have demonstrated that ramoplanin inhibits the synthesis of the precursors of the cell wall peptidoglycan by a mechanism that is different from that of inhibition by vancomycin. He has devised and patented a practical solid phase synthesis of ramoplanin aglycone, which may be used in methods for the rapid preparation of the drug and libraries of drug analogs.

Chemically homogeneous preparations of histones are essential for the evaluation of the role of modification of specific lysine residues in histone function. McCafferty has used his mastery of the art of peptide synthesis in addressing this daunting problem. He has synthesized homogeneous preparations of site-specific partially acetylated histones; and, the resulting proteins have been folded together to form an active H3/H4 tetramer. These synthetic histones were then combined with partner

histones, DNA and the chromatin assembly enzyme complex RSF to form functional chromatin and nucleosomal core particles. These syntheses are just one component in a set of tools that McCafferty is developing to use in evaluating the interplay between histone modification and the regulation of gene expression.

McCafferty's most recent work deals with an analysis of the mechanism of action of the sortase enzyme that is responsible for anchoring of cell-surface virulence factors and adhesion proteins to the matrix of the cell wall of Gram-positive bacteria. The information gained from an extensive characterization of the substrate specificity and catalytic mechanism of this enzyme has been used to design the first good mechanism-based enzyme inhibitors.

Pfizer Award in Enzyme Chemistry: Professor Nicole S. Sampson, Department of Chemistry, State University of New York at Stony Brook.

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

Professor Sampson has developed a sophisticated level of expertise in a broad range of experimental methods, including; molecular biology, chemical synthesis, computer modeling and other computational techniques and a broad range of spectroscopic methods. Sampson has integrated this expertise in developing a mature program of research on the mechanism of enzyme action. Her work has led to seminal insights into two distinct areas of modern enzymology: The role of protein dynamics in enzyme catalysis and the mechanism for enzyme catalysis at the lipid-water interface.

Sampson's work has focused on understanding the role of loop dynamics in enzyme catalysis for the classical proton transfer reaction catalyzed by the soluble enzyme triosephosphate isomerase and the oxidation reaction catalyzed by the membrane bound enzyme cholesterol oxidase. The flexible loop of triosephosphate isomerase closes like a lid over the phosphate group of substrate at the enzyme active site. Sampson has shown that the

loop hinges are critical to loop function, and that these hinges have evolved to minimize the conformational flexibility of the loop.

Professor Sampson contributed to the X-ray structure determination of cholesterol oxidase. This structure shows that the cholesterol binding pocket at the active site is inaccessible to substrate, and that a lid of some type has to swing open in order for cholesterol gain access to the active site.

Professor Sampson next probed the interactions at the protein-lipid interface by labeling the lipid binding surface of cholesterol oxidase with fluorescent probes and the membrane with fluorescent quenchers. The experimental results have shown that cholesterol esterase does not penetrate into the membrane, but rather resides on the surface. This has led to the working hypothesis that cholesterol oxidase and the membrane provide competing hydrophobic surfaces to interact with the hydrophobic residues of the flexible lid of enzyme; and, that the hydrophobic interactions with the membrane act to pry open the closed active site and allow for cholesterol to bind.

Repligen Award in Chemistry of Biological Processes: Professor David E. Cane, Department of Chemistry, Brown University.

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

David Cane has been described as "*the most accomplished and respected scientist in natural product biosynthesis in North America*". His receipt of the Repligen Award recognizes his seminal contributions to our understanding of how polyketides, terpenes and vitamin B6 are synthesized in microorganisms.

Professor Cane's work is distinguishable because of his choice of difficult and challenging problems, which he solves by elegant and straightforward approaches. Cane noted before most that studies of natural product biosynthesis were moving away from classical problems in chemistry and towards biology. He has met this challenge by familiarizing himself with biological

approaches and by using new techniques to advance problems that might otherwise have stagnated.

Professor Cane has made fundamental contributions to our understanding of the pathway and mechanism of terpene biosynthesis. He understands the great potential of molecular and structural biology, and has integrated these approaches with the conventional armory of labeling studies. The results of his work form the core of our understanding of the structure and mechanisms of enzymes that catalyze terpene cyclization. Cane's research in polyketide biosynthesis has followed a similar successful trajectory. He pioneered labeling studies of the biosynthesis of erythromycin. His collaboration with Chaiten Kosla has been at the intellectual forefront of one of the most exciting areas of biological chemistry. New vistas in the engineering of biosynthetic pathways have been opened by this work.

Finally, Cane has been singled out for his delivery of brilliant lectures that are intellectually rich and present a vision that is always exciting, clear and balanced with great wit. These presentations have inspired a generation of younger scientists. Many of these have chosen to dedicate themselves to investigating the chemistry and biology of natural product biosynthesis.

228th National Meeting of the American Chemical Society

Philadelphia, PA, August 22-26, 2003

Biological Chemistry Division Technical Program, Cynthia J. Burrows, Program Chair

Sunday, August 22, 2004

Morning Session. Mechanisms of RNA Interference and Gene Silencing, *Organizer: Allen W. Nicholson*

9:00 a.m. **Tariq M. Rana**, RNAi in human cells: Mechanism and therapeutic application.

9:45 a.m. **Bryan R. Cullen**, Inhibition of cellular and viral gene expression using RNA interference.

10:30 a.m. **Christian Tschudi**, Mechanism and biological function of RNA interference in trypanosomes.

11:15 a.m. **Thomas A. Volpe**, RNAi and heterochromatic gene silencing.

Afternoon Session. Small-Molecule Nucleic Acid Interactions, *Organizer, Peter A. Beal.*

2:00 p.m. **Anna K. Mapp**, Targeting the transcriptional machinery with artificial regulators.

2:45 p.m. **Yitzhak Tor**, Targeting RNA with small molecules.

3:30 p.m. **Peter A. Beal**, Small molecule recognition of duplex RNA.

4:15 p.m. **Ronald R. Breaker**, Genetic control by riboswitches and ribozymes.

Sunday Evening. Poster Session-Nucleic Acids, *Organizer, Cynthia J. Burrows.*

5:00 - 7:00 p.m. - 41 posters

Monday, August 23, 2004

Morning Session. Biochemistry of Cytochrome c Oxidase and Copper Transport. (Cosponsored with the Division of Inorganic Chemistry), *Organizer.* Eric L. Hegg

9:00 am: **Thomas V. O'Halloran**, Copper trafficking mechanisms: Oxygen chemistry in the maturation of SOD1 by its copper chaperone CCS.

Thomas V. O'Halloran, Yoshiaki Furukawa, Nina M. Brown.

9:45 a.m. **Bruce C. Hill**, Structure and function studies of BsSco: What is the role of Sco in the assembly of cytochrome c oxidase? Bruce C. Hill, Iveta Imriskova-Sosova, Qilu Ye, Zongchao Jia.

10:30 a.m. **Eric L. Hegg**, New insights into the biosynthesis of heme A. Eric L. Hegg, Kenneth R. Brown, Brienne Brown, Zhihong Wang.

11:15 a.m. **Shelagh M. Ferguson-Miller**, Cytochrome c oxidase: How electrons get in and protons get out.

Afternoon Session. Chemistry and Biology of DNA Damage in Cells, (Cosponsored with the Division of Chemical Toxicology), *Organizer,* Peter C. Dedon.

2:00 p.m. **Karlene A Cimprich**, Replication-dependent activation of the DNA damage checkpoint. Tony S. Byun, Muh-ching Yee, Karlene A Cimprich.

2:45 p.m. **Myron F. Goodman**, Biochemical basis of AID-initiated somatic hypermutation of immunoglobulin genes. Phuong Pham, Ronda Bransteitter, Peter Calabrese, Myron F. Goodman.

3:30 p.m. **Sheila S. David**, Functional consequences of MYH mutations associated with inherited colorectal cancer. Sheila S. David.

4:15 p.m. **Cynthia T. McMurray**, Hijacking mismatch repair to cause a DNA expansion mutation. Cynthia T. McMurray, Barbara Owen, Irina Kovtun, Teresa Wilson.

Monday Evening. Sci-Mix, *Organizer,* Cynthia J Burrows, joint with other divisions.

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

Tuesday, August 24, 2004

Morning Session. *Lilly Award* to Benjamin F Cravatt, Protein Function.

9:00 a.m. **Richard K. Bruick**, Regulation of the mammalian hypoxic response.

9:45 a.m. **Jonathan A. Ellman**, Chemical tools for establishing protease function.

10:30 a.m. **John A Gerlt**, How enzymes evolve: Insights from natural and unnatural promiscuity.

11:15 a.m. **Benjamin F. Cravat**, Enzymatic regulation of endogenous cannabinoid signaling and its therapeutic implications.

Tuesday Afternoon. Poster Session, Protein Function, Enzymology and Heme Biochemistry. Organizer, *Cynthia J. Burrows*.

12:00 – 2:00 p.m. - 46 Posters.

Afternoon Session. Genomic Approaches to Enzymology, (Cosponsored with the Biotechnology Secretariat), Organizers, *John A Gerlt and J. W. Kozarich*.

2:00 p.m. **Patricia C. Babbitt**, Active site templates for mechanistically diverse enzyme superfamilies. Patricia C. Babbitt, Benjamin J. Polacco, Elaine C. Meng.

2:45 p.m. **Tadhg P. Begley**, Comparative genomics in enzymology: Thiamin, cysteine and NAD biosynthesis. Tadhg P. Begley, Pieter C. Dorrestein, Kristin E. Burns, Keri L. Colabroy, Huili Zhai, Ethan C. Settembre, Andrei Osterman, Steven Ealick, Fred W. McLafferty.

3:30 p.m. **Matthew Bogyo**, Chemical probes for proteomic analysis of cysteine protease function. Matthew Bogyo, Doron Greenbaum, Douglas Hanahan, Johanna Joyce, Amos Baruch, Chrisite Hunter, Philip Vitorino.

4:15 p.m. **Jonathan S. Rosenblum**, Activity-based probes for biological discovery.

Tuesday Evening. Awards dinner.

Wednesday, August 25, 2004

Morning Session. Pfizer Award to Wilfred A. van der Donk. Antibiotic Biosynthesis.

9:00 a.m. **Ben Shen**, Biosynthesis of hybrid peptide-polyketide antibiotics.

9:45 a.m. **Chaitan Khosla**, Mechanistic relationships between type I and type II polyketide synthases.

10:30 a.m. **Christopher T. Walsh**, Glycosyl transferases in antibiotic maturation.

11:15 a.m. **Wilfred A. van der Donk**, Post-translational modifications in antibiotic biosynthesis.

Afternoon Session. Repligen Award to JoAnne Stubbe (Cosponsored by the Committee of Women Chemists).

2:00 p.m. **Perry A. Frey**, Role of the 5-deoxyadenosyl radical in enzymatic reactions.

2:45 p.m. **Brian M. Hoffman**, Characterizing the invisible: EPR and ENDOR studies of enzymatic intermediates.

3:30 p.m. **Daniel G. Nocera**, Mechanistic studies of proton-coupled electron transfer in model

and natural systems. Steven Y. Reece, Michelle C. Y. Chang, Cyril S. Yee, JoAnne Stubbe, Daniel G. Nocera

4:15 p.m. **JoAnne Stubbe**, Ribonucleotide reductases: Use of unnatural amino acids to understand the radical initiation process. Cyril Yee, Michelle Chang, Daniel G. Nocera, JoAnne Stubbe

Wednesday Evening. General Poster Session, Organizer, *Cynthia J. Burrows*.

5:00 – 7:00 p.m. - 120 Posters.

Thursday, August 26, 2004.

Morning Session. Molecular Recognition and Signal Transduction, Organizer, *Linda C. Hsieh-Wilson*

9:00 a.m. **Tom W. Muir**, Chemical biology of protein.

9:45 a.m. **Linda C. Hsieh-Wilson**, Chemical approaches to studying protein posttranslational modifications in the brain.

10:30 a.m. **Heidi Hamm**, Molecular basis of signaling mechanisms mediated by G proteins.

11:15 a.m. **Laura L. Kiessling**, Directing signal transduction pathways using multivalent ligands.

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 2004.

Protein-Nucleic Acid Interactions.

The 59th Northwest Regional Meeting. June 6-9, 2004, Logan UT.

Organizer, Sheila David.

Speakers - Peter A. Beal, Robert Batey, Peter F. Flynn, Nikolas H. Chmiel, Nancy C. Horton, Miles A. Pufall, Martin P. Horvath, David J. Keller, Kent D. Sugden, William B. Davis, Sheila David, Alison L. Livingston, Xiaobei Zhao, Mandy E. Hosford and Aym Berges.

Chemical Principles in Understanding Biology.

The 60th Southwest Regional Meeting, September 29 - October 2, 2004, Fort Worth Texas.

Organizer, Kevin Dalby.

Speakers - Walter L. Fast, M. T. Bedford, Thomas K. Harris, Lara K. Mahal, David E. Graham, and Rick Russell.

Biopolymers, Mimetics, and Beyond

The 33rd Northeast Regional Meeting. Oct. 31 - Nov. 3, Rochester NY.

Organizer, Richard Cheng.

Speakers - Bruce Armitage, Richard Cheng, Bing Gong, Mark Green, Neville Kallenbach, Kent Kirshenbaum, Gregory Tew, Douglas Turner.

NOMINEES FOR ELECTIONS

Mark ballot sheet, and return this sheet in the attached envelope by October 15, 2005

Chair Elect 2005-2006 (Vote for one)

Carol A. Fierke (b. 1955), Jerome and Isabella Collegiate Professor of Chemistry, Professor of Biological Chemistry, University of Michigan, Ann Arbor, MI. B.A., 1978, Carleton College; Ph.D., 1984, Brandeis University; NIH postdoctoral fellowship, 1984-87, Pennsylvania State University; Asst. and Assoc. Prof. of Biochemistry and Chemistry, Duke University, 1987 - 1999; American Cancer Society Junior Faculty Research Award, 1989-1991; Packard Foundation Fellowship, 1990-1995; American Heart Association Established Investigator, 1992-1997; Molecular Biochemistry Advisory Panel, NSF, 1993-1996; Member Physical Biochemistry Study Section, NIH, 1995, 1997-2001, 2002; Co-chair, Gordon Research Conference on Enzymes, Coenzymes and Metabolic Pathways, 1997; Winter Enzyme Mechanisms Conference Organizing Committee, 2001; Chair of the Nominating Committee, Biological Chemistry Division, ACS, 1992; Nominating Committee, Protein Society, 1995-1998; Nominating Committee, ASBMB, 1998-2001; Program Chair for ACS National Meeting, Biological Chemistry Division, 2003; Publications Committee, ASBMB, 2002-2005; U.S. National Committee for the International Union for Biochemistry and Molecular Biology, 2002-2005; Editorial Boards: *RNA* (1996-present), *Journal of the American Chemical Society* (2000-present), *Biochemistry* (2001-present). *Research Interests:* Mechanistic enzymology; Molecular recognition; Directed evolution; Structure and function of ribozymes and metalloenzymes. Metal homeostasis.

Gregory D. Reinhart (b. 1951), Professor and Head, Department of Biochemistry and Biophysics, Texas A&M University, College Station, TX. B.S., 1973, University of Illinois-Urbana; Ph.D., 1979, University of Wisconsin-Madison. Postdoctoral Fellow, 1979-1980, Research Associate, 1980-1981, Associate Consultant, 1981-1983, Mayo Foundation, Rochester, MN. Assistant Professor, 1983-1988,

Associate Professor, 1988-1995, Department of Chemistry and Biochemistry, University of Oklahoma-Norman. Professor, 1995-present, Head, 2000-present, Department of Biochemistry and Biophysics, Texas A&M University. Established Investigator, American Heart Association, 1988-1993. Member, Southern Regional Peer Review Committee, AHA, 1988-1991. Member, Physiological Chemistry Study Section, NIH, 1993-1997. Member, Biophysics Grant Review Panel, NSF, 2001-2004. Ad Hoc Member, BBCA Study Section, NIH, 1991; BCB Study Section, NIH, 1998; Committee of Visitors, MCB Division, NSF, 1998; Biochemistry Study Section, NIH, 2001. Chair, Special Emphasis Review Panel, NIH, 2000, 2001. Chair, Scientific Advisory Board, Laboratory for Fluorescence Dynamics, University of Illinois-Urbana, 1995-present. Symposium organizer, Biological Division, ACS, 1999. Member, Editorial Board, Journal of Fluorescence, 1999-2002. *Research Interests:* Mechanisms of allosteric influence on enzyme activity; role of protein dynamics in enzyme catalysis and regulation; single molecule behavior of enzymes.

Program Chair for 2007 (Vote for 1)

Tadhg P. Begley (b. 1955) Professor, Department of Chemistry and Chemical Biology, Cornell University, B.Sc., National University of Ireland, 1977; Ph.D., Caltech (with Peter Dervan); Postdoctoral fellow, University of Geneva (with Wolfgang Oppolzer); Postdoctoral fellow, MIT (with Chris Walsh); ACS Biological Chemistry Division Alt. Councilor (1998-2000); ACS Biological Chemistry Division Nominating Committee (2002-2004); NIH Bioorganic and Natural Products study section member (1999-2003); Co-Chair, Gordon Research Conference on Enzymes, Coenzymes, and Metabolic Pathways (2003); Co-Chair US-Japan Symposium on Natural Products Biosynthesis; Organizing Committee for the 18th Enzyme Mechanism Conference, Editorial Advisory Board, *Bioorganic chemistry*, Editorial Advisory Board, *Vitamins and Hormones*; Coauthor with John McMurry of the textbook *The organic chemistry of biological pathways*. *Research Interests:* Biosynthesis, mechanistic enzymology and functional genomics with a focus on the enzymology of complex reactions.

Jeffery W. Kelly (b. 1960) Lita Annenberg Hazen Professor of Chemistry, Dean and Vice President of Academic Affairs, The Scripps Research Institute; Assistant, Associate, and Full Professor of Chemistry, Texas A&M University, 1989-1997; Postdoctoral Fellow, The Rockefeller University, 1986-89; Ph.D. chemistry, University of North Carolina, 1986; B.S. chemistry, SUNY-Fredonia; 1982. Searle Scholar Award in Biomedical Sciences, 1991-1994; Camille and Henry Dreyfus Teacher Scholar Award, 1994; Texas A&M University Teacher Scholar Award, 1994-95; The Biophysical Society National Lecturer, 1999; The Protein Society-Dupont Young Investigator Award, 1999; State University of New York Alumni Distinguished Achievement Award, 2000; American Chemical Society Arthur C. Cope Scholar Award, 2001. Chairman, NIH Bioorganic and Natural Products Study Section 1998-2000 as well as several others, Co-Founder FASEB Summer Research Conference On "Amyloid and Other Abnormal Protein Assembly Processes", 1995, President elect, Protein Society 2004, Co-Organizer, Protein Society Meeting, Boston, 1999, Editorial boards-Protein Science, Bioorg. Med. Chem., Biopolymers and others. *Research Interests:* Understanding the chemistry and biology of protein folding and pathology associated with misfolding including neurodegeneration. Developing new approaches for manipulating both protein secretion efficiency and native state stability with purposefully-designed small molecules to ameliorate folding/misfolding diseases. Metabolite control of protein folding, misfolding & degradation.

Executive Committee, 2005-2007 (vote for two)

Mark Distefano (b. 1961) Associate Professor, Department of Chemistry, University of Minnesota; B.A. (Chemistry and Biochemistry) 1984, University of California Berkeley; Ph. D. 1989, Massachusetts Institute of Technology (with Chris Walsh); Damon Runyon-Walter Winchell Cancer Research Fellow, 1989-1992 (with Peter Dervan), California Institute of Technology; Visiting Scientist, Genentech Inc., 2001; Director of Graduate Studies, Department of Chemistry, University of Minnesota, 2001-present; American Cancer Society Junior Faculty Research Award, 1994-1997; NSF Early Career Development Award, 1994-1999; Co-Chair Gordon Research Conference in Bioorganic

Chemistry, 2001; George Taylor Distinguished Teaching Award, 2004. Research Interests: Protein design, protein engineering, enzyme reaction mechanisms, protein prenylation, enzymology, photoaffinity labeling, drug design, cancer research, antibiotics.

Costas Maranas (b. 1967), Professor, Department of Chemical Engineering, The Pennsylvania State University, BS, Chemical Engineering, Aristotle University, Greece, (1990); MA, Chemical Engineering, Princeton University (1992); Ph.D. in Chemical Engineering, Princeton University (1995); Allan P. Colburn Award for Excellence in Publication (2002), Web Editor Metabolic Engineering, NSF Panel Metabolic Engineering (2002), DOE Genomes to Life Panel (2002), NSF BES Career Panel (2001); *Research interests*: Modeling and optimization of directed evolution protocols for protein engineering, analysis and optimization of metabolic networks and biopathways, inference of gene regulatory networks, optimization theory and algorithms.

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 of Chemistry, Facultad de Química, Universidad de Santiago, Spain, 2003. 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.

Steven E. Rokita (b.1957), Professor, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD. B.S., 1979, University of California at Berkeley; Ph.D., 1983, Massachusetts Institute of Technology; NIH Postdoctoral Fellowship, 1984-1986, Rockefeller University. Catosinos Young Investigator for Cancer Research, 1988. Ad Hoc member, Bioorganic and Natural Products Study Section, NIH, 1993; Molecular Biochemistry Advisory Panel, NSF 1993-1996; Member, Bioorganic and Natural Products Study Section, NIH, 1997-2001. Advisory Board of Bioconjugate Chemistry, 1997-1999. Vice-Chair (1998) and Chair (1999), Bioorganic Chemistry Gordon Conference. Nominating Committee, Biological Chemistry Division, American Chemical Society, 2000. Alternative Councilor, Biological Chemistry Division, American Chemical Society, 2002- 2004. *Research Interests*: Bioorganic/biochemistry. Nucleic acid structure and reactivity; target promoted alkylation of DNA, excess electron transfer in DNA; biological and biomimetic reactions of nickel and copper; enzyme mechanisms of dehalogenation.

Councilors and Alternate Councilors 2005-2007 (vote for four) [The two candidates who receive the most votes shall serve as Councilors, and the others shall serve as Alternate Councilors].

Jason D. Kahn (b. 1962), Associate Professor, Chemistry and Biochemistry, University of Maryland, College Park; A.B. 1983, Harvard College, Ph.D. 1990, UC Berkeley. NSF Predoctoral Fellow 1984-1987. NIH Postdoctoral Fellow 1990-1993, Dept. of Chemistry, Yale University. NSF Career Award, 1997-2002. Membership committee, Biophysical Society. Biophysical Chemistry and Molecular Biology. *Research Interests*: Protein-DNA bending, looping, topology, and design; mechanisms of transcription and regulation; interactions of TBP and chromatin; thermodynamics of modified nucleic acids.

Sunyoung Kim (b. 1968), Assistant Professor, Biochemistry, Virginia Tech; B.S. 1991, University of Michigan; Ph.D. 1994, University of Michigan. Postdoctoral Fellow 1995-99 Biochemistry, Molecular Biology, and Biophysics, University of Minnesota. Paul D. Boyer Award, 1999. *Research Interests:* Biochemistry and biophysics; redox-active amino acids in biological electron transfer systems; *in vitro* protein evolution of protein homologues; inhibitors of mitotic motor proteins; ATP-coupled mechanotransduction.

Dewey G. McCafferty (b. 1967), Associate Professor, Biochemistry and Biophysics, University of Pennsylvania School of Medicine; B.S. 1990 Chemistry, North Carolina State University; Ph.D. Organic Chemistry 1995, Burroughs Wellcome Fellow, University of North Carolina at Chapel Hill; Judith Graham Pool Postdoctoral Fellow 1995-1997 Biological Chemistry and Molecular Pharmacology, Harvard Medical School. Ad Hoc Bioorganic and Natural Products Study Section (BNP), NIH 2000, 2004. Biochemistry Special Study Section (SSS-B), NIH 2001. International Journal of Peptide Research and Therapeutics Editorial Board, 2004-present. PolyMedix Scientific Advisory Board, 2003-present. *Research Interests:* Mechanistic enzymology (histone modifying enzymes; sortase transpeptidases, VanX); bacterial virulence mechanisms; peptide synthesis, bioorganic chemistry; mechanism of antibiotics/antibiotic resistance (ramoplanin, enduracidin).

Amy C. Rosenzweig (b. 1967), Associate Professor, Departments of Biochemistry, Molecular Biology, and Cell Biology and of Chemistry, Northwestern University; B.A. 1988, Amherst College; Ph.D. 1994, Massachusetts Institute of Technology; NIH Postdoctoral Fellow 1994-1997, Harvard Medical School and Dana Farber Cancer Institute; David and Lucile Packard Fellow, 1999; Camille and Henry Dreyfus Teacher-Scholar Award, 2001; MacArthur Fellow, 2003; Editorial Advisory Board, *Journal of Biological Inorganic Chemistry*, 2004-2007; Metallobiochemistry Study Section, NIH 2004; Co-chair, Midwest Enzyme Chemistry Conference, 2002. *Research Interests:* Structural biology and bioinorganic chemistry, metal uptake and transport, oxygen activation by metalloenzymes.

Nominating Committee 2005 (vote for three)

Peter A. Beal (b. 1967) Associate Professor, Chemistry, Univ. of Utah; B.S. (Chemistry), 1988, Univ. of North Dakota; Ph.D. 1994, California Inst. Technology. NIH Postdoctoral Fellow, 1994-1996, Department of Chemistry & Chemical Biology, Harvard Univ.; Camille Dreyfus Teacher-Scholar, 2002-2004. *Research Interests:* Molecular recognition of duplex RNA, synthesis of nucleoside and oligonucleotides enzymology.

Philip A. Cole (b. 1962), Marshall-Maren Professor and Director, Pharmacology and Molecular Sciences, Johns Hopkins University; B.S. 1984, Yale University, M.D., Ph.D. 1991, Johns Hopkins University. Medical Resident at Harvard Medical School, 1991-3, Howard Hughes Postdoctoral Fellow 1993-96, Biological Chemistry and Molecular Pharmacology, Harvard Medical School. Bioorganic and Natural Products Study Section, NIH 2002; NIH Chemical Biology Training Program Study Section 2003; Editorial Boards: Bioorganic Chemistry (2003-), Biomed Central-Biology (2002-), Letters in Drug Discovery (2004-). Scientific Advisory Boards: Memorial Sloan-Kettering Cancer Institute (2002-present), Structural Genomics (2002-present). Selected Awards: Damon Runyon Scholar Award (1996), Burroughs Wellcome Fund Award in Toxicology (1998), Ellison Medical Foundation Award for Aging Research (1998); *Research interests:* chemical biology; expressed protein ligation and protein semisynthesis-applications to cell signaling, rational design and application of protein kinase and acetyltransferase inhibitors; chemical rescue of mutant protein tyrosine kinases for cell signaling studies.

Deborah A. Kallick (b. 1951), Scientist, Human Biological Chemistry and Genetics, University of Texas Medical Branch, Galveston, Texas (2003-present); B.A. Chemistry 1980, University of Illinois at Chicago; Ph.D. 1986, University of Illinois at Chicago; Post Doctoral Fellow, Lawrence Berkeley Laboratory and Department of Chemistry, University of California, Berkeley (1986-1989); Post Doctoral Research Associate, University of California Department of Pharmaceutical Chemistry (1990); Assistant Professor, University of Minnesota, Department of Medicinal Chemistry (1990-1997); Visiting Scholar, F. Hoffman LaRoche Pharmaceutical company, Basel, Switzerland, fall 1993; Member, U.S. Army Strategic Material Command study

section on breast cancer (1995 – 1999); Associate Professor with tenure, University of Minnesota, Department of Medicinal Chemistry (1997-2001); Member, National Science Foundation study section on Molecular Biochemistry (1999); Senior Scientist, Incyte Genomics, Inc., Palo Alto, California (2000-2003); Co-chair, 'The Impact of Genomics on Drug Discovery' symposium, American Chemical Society (Boston), August 2002. *Research Interests:* Peptide-lipid interactions and structural biology; discovery of novel G protein coupled receptors; anti-viral drug discovery and development.

Ichiro Matsumura (b. 1966) Assistant Professor of Biochemistry, Emory University School of Medicine. B.S. Massachusetts Institute of Technology (1988), Ph.D. University of California, Berkeley (1995), Walther Cancer Research Institute Post-Doctoral Fellow (1996-97), NSF/Alfred P. Sloan Post-doctoral Fellow (1997-99), NIH BNP Study Section (2001), NIH BBA Study Section (2004). *Research Interests:* protein structure and function, molecular evolution, directed evolution, genetic circuits.

Peter J. Tonge (b. 1961), Professor, Department of Chemistry, University at Stony Brook, Stony Brook, NY. B.Sc., 1982, University of Birmingham, UK; Ph.D., 1986, University of Birmingham, UK. NATO Postdoctoral Fellow, 1986-1988, Institute for Biological Sciences, NRC, Canada. Research Associate, 1988-1993, Institute for Biological Sciences, NRC, Canada. Research Officer, 1993-1994, Institute for Biological Sciences, NRC, Canada. Staff Investigator, 1994-1995, The Picower Institute for Medical Research, Manhasset, NY. Assistant Professor, 1996-2000, Department of Chemistry, University at Stony Brook. Associate Professor, 2000-2004, Department of Chemistry, University at Stony Brook. Alfred P. Sloan Fellowship, 2001-2003. Member, Special Emphasis Study Section, NIAID, NIH, 1999; NIGMS, NIH, 2003. Ad Hoc Member, Biochemistry Study Section, NIH, 2000. Co-Chair-elect, Gordon Res. Conf. Bioorganic Chem., 2006. Areas of research: Quantitation of substrate strain in enzyme catalysis using vibrational and NMR spectroscopies; rational design of enzyme inhibitors; biosynthesis of fatty acids, mycobactin and menaquinone in *Mycobacterium tuberculosis*; mechanism of chromophore formation and fluorescence in fluorescent proteins.

Huimin Zhao (b. 1969), Assistant Professor, Chemical and Biomolecular Engineering, and Chemistry, University of Illinois at Urbana-Champaign. B.Sc., (Biology), 1992, University of Science and Technology of China; Ph.D., (Chemistry), 1998, California Institute of Technology. Project leader, The Dow Chemical Company, 1998-2000. Ad hoc member, NIH Biochemistry study section, 2003. NSF CAREER Award, 2004-2009. Editorial board, Applied Biochemistry and Biotechnology. *Research interests:* directed evolution, gene therapy, therapeutic protein engineering, metabolic engineering, biocatalysis, enzymology.

Proposed By-Law Changes for the Division of Biological Chemistry

At the Executive Officers/Annual Business Meeting of the Division in September 2003, changes were proposed to update the Divisional By-Laws. The changes are intended to bring them into conformity with current practice and to make improvements into the continuity of the Division officers and activities. Some of the changes reflect the use of web-based communication to replace surface mail. Continuity for annual science programming is proposed by changing the term-structure for program chair-elects. Changes in the Nominating Committee provides continuity by three-year rotating terms with one member replaced each year. A copy of the By-Laws, with the proposed changes highlighted, is available on the Division web page at <http://lysine.pharm.utah.edu/acsbio/acsbio.html>. Changes or amendments in the By-Laws requires a mail ballot from the membership. The mail ballot is included on the last page of this newsletter. Please read the proposed by-law changes from the web, vote your approval (or disapproval) and return this ballot, along with the ballot for Division Officers, for tally.

**The ballots on the next two pages should be mailed
in the attached envelope by October 15, 2004 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 15

Ballot

Chair Elect (Vote for 1)

Carol A. Fierke
Gregory D. Reinhart

Program Chair (Vote for 1)

Tadhg P. Begley
Jeffery W. Kelly

Executive Committee (Vote for 2)

Mark Distefano
Costas Maranas
John P. Richard
Steven E. Rokita

Councilors (vote for 2)

Jason D. Kahn
Sunyoung Kim
Dewey G. McCafferty
Amy C. Rosenzweig

Nominating Committee (vote for 3)

Peter A. Beal
Philip A. Cole
Deborah A. Kallick
Ichiro Matsumura
Peter J. Tonge
Huimin Zhao

Changes in the By-Laws of the Division of Biological Chemistry require a mail vote. Amendments shall be adopted if approved by a majority of those members of the Division who return valid ballots.

I have read and approve the proposed by-law changes as posted on the Division of Biological Chemistry web site <http://lysine.pharm.utah.edu/acsbio.html>

I do not approve the proposed by-law changes.