

Catherine L. Drennan

Professor of Chemistry and Biology, HHMI Professor
Massachusetts Institute of Technology, 77 Massachusetts Ave, 16-573a Cambridge, MA 02139
Office: 617-253-5622; Fax: 617-258-7847; cdrennan@mit.edu

EDUCATION

Vassar College, Poughkeepsie, New York

A.B., Chemistry, May, 1985

Research Advisor: Professor Miriam Rossi

University of Michigan, Ann Arbor, Michigan

Ph.D., Biochemistry, April, 1995

Research Advisor: Professor Martha L. Ludwig

PROFESSIONAL EXPERIENCE

Scattergood Friends School, West Branch, Iowa

High School Science Teacher (1985–1988)

University of Michigan

Research Fellow (1995–1996)

Project: Structural Studies of Vitamin B₁₂-Protein Interactions

Advisor: Professor Martha L. Ludwig

California Institute of Technology

Postdoctoral Scholar (1996–1999)

Project: Crystallographic Studies of Nickel-dependent Enzymes

Advisor: Professor Douglas C. Rees

Massachusetts Institute of Technology

Assistant Professor of Chemistry (1999–2003)

Cecil and Ida Green Career Development Assistant Professor (2000–2003)

Associate Professor of Chemistry (2004–2006)

HHMI Professor and Associate Professor of Chemistry (2006–2007)

HHMI Professor and Associate Professor of Chemistry and Biology (2007–2008)

HHMI Professor and Professor of Chemistry and Biology (2008–)

AWARDS

American Chemical Society Award for Excellence in Analytical Chemistry (1984)

Olive M. Lammert Prize for Excellence in the Study of Chemistry (1985)

Phi Beta Kappa (1985)

Adam A. & Mary J. Christman Fellowship for Outstanding Scholarship in Biochemistry (1990)

NIH Training Grant in Molecular Biophysics (1988–1991)

Rackham Graduate School Pre-doctoral Fellowship (1991–1992)

University of Michigan Outstanding Teaching Assistant Award (1991–1992)

Dziewiatkowski Award for Outstanding Ph.D. Dissertation in Biochemistry (1996)

University of Michigan Distinguished Dissertation Award (1996)

NIH Postdoctoral Fellowship (1997–1999)

Surdna Foundation Research Award (2000–2001)

Cecil and Ida Green Career Development Chair (2000–2003)

Searle Scholar (2001–2004)

Presidential Early Career Award for Scientists and Engineers (PECASE) (2002)

ASBMB-Schering-Plough Research Institute Scientific Achievement Award (2003)
Alfred P. Sloan Fellow (2003–2005)
Dean's Educational and Student Advising Award (2004)
Harold E. Edgerton Faculty Achievement Award (2004)
Everett Moore Baker Memorial Award for Excellence in Undergraduate Teaching (2005)
Howard Hughes Medical Institute Professor (2006)

PUBLICATIONS

Research Papers

Luschinsky (Drennan), C.L., Drummond, J.T., Matthews, R.G., and Ludwig, M.L. (1992) Crystallization and Preliminary Diffraction Studies of the Cobalamin-binding Domain of Methionine Synthase from *Escherichia coli*, *Journal of Molecular Biology* **225**, 557–560.

Drennan, C.L., Huang, S., Drummond, J.T., Matthews, R.G., and Ludwig, M.L. (1994) How a Protein Binds B₁₂: A 3.0 Å X-ray Structure of B₁₂-Binding Domains of Methionine Synthase, *Science* **266**, 1669–1674.

Drennan, C.L., Matthews, R.G., Rosenblatt, D.S., Ledley, F.D., Fenton, W.A., and Ludwig, M.L. (1995) Molecular Basis for Dysfunction of Some Mutant Forms of Methylmalonyl CoA Mutase: Deductions from the Structure of Methionine Synthase, *Proceedings of the National Academy of Sciences U.S.A.* **93**, 5550–5555.

Amaratunga, M., Fluhr, K., Jarrett, J.T., **Drennan**, C.L., Ludwig, M.L., Matthews, R.G., and Scholten, J.D. (1996) A Synthetic Module for the *metH* Gene Permits Facile Mutagenesis of the Cobalamin-Binding Region of *Escherichia coli* Methionine Synthase: Initial Characterization of Seven Mutant Proteins, *Biochemistry* **35**, 2453–2463.

Jarrett, J.T., **Drennan**, C.L., Amaratunga, M., Scholten, J.D., Ludwig, M.L., and Matthews, R.G. (1996) A Protein Radical Cage Slows Photolysis of Methylcobalamin in Methionine Synthase from *Escherichia coli*, *Bioorganic & Medicinal Chemistry* **4**, 1237–1246.

Jarrett, J.T., Amaratunga, M., **Drennan**, C.L., Scholten, J.D., Sands, R.H., Ludwig, M.L., and Matthews, R.G. (1996) Mutations in the B₁₂-Binding Region of Methionine Synthase: How the Protein Controls Methylcobalamin Reactivity, *Biochemistry* **35**, 2464–2475.

Drennan, C.L., Patridge, K.A., Weber, C. H., Metzger, A. L., Hoover, D. M., and Ludwig, M.L. (1999) Refined Structures of Oxidized Flavodoxin from *Anacystis nidulans*, *Journal of Molecular Biology* **294**, 711–724.

Hoover, D.M., **Drennan**, C.L., Metzger, A.L., Osborne, C., Weber, C.H., Patridge, K.A., and Ludwig, M.L. (1999) Comparisons of Wild Type and Mutant Flavodoxins from *Anacystis nidulans*. Structural Determinants of the Redox Potentials, *Journal of Molecular Biology* **294**, 725–742.

Drennan, C.L., Heo, J., Sintchak, M.D., Schreiter, E., and Ludden, P.W. (2001) Life on Carbon Monoxide: X-ray Structure of *Rhodospirillum rubrum* Ni-Fe-S Carbon Monoxide Dehydrogenase, *Proceedings of the National Academy of Sciences U.S.A.* **98**, 11973–11978.

Sintchak, M.D., Arjara, G., Kellogg, B.A., Stubbe, J., and **Drennan**, C.L. (2002) The Crystal Structure of Class II Ribonucleotide Reductase Reveals How an Allosterically Regulated Monomer Mimics a Dimer, *Nature Structural Biology* **9**, 293–300.

Doukov, T.I., Iverson, T.M., Seravalli, J., Ragsdale, S.W., and **Drennan**, C.L. (2002) A Ni-Fe-Cu Center in a Bifunctional Carbon Monoxide Dehydrogenase/Acetyl-CoA Synthase, *Science* **298**, 567–572.

Schreiter, E.R., Sintchak, M.D., Guo, Y., Chivers, P.T., Sauer, R.T., and **Drennan**, C.L. (2003) Crystal Structure of the Nickel-Responsive Transcription Factor NikR, *Nature Structural Biology* **10**, 794–799.

Berkovitch, F., Nicolet, Y., Wan, J.T., Jarrett, J.T., and **Drennan**, C.L. (2004) The Crystal Structure of Biotin Synthase, an S-Adenosylmethionine-Dependent Radical Enzyme, *Science* **303**, 76–79.

Nicolet, Y., and **Drennan**, C.L. (2004) AdoMet Radical Proteins – from Structure to Evolution – Alignment of Divergent Protein Sequences Reveals Strong Secondary Structure Element Conservation, *Nucleic Acids Research* **32**, 4015–4025.

Tirupati, B., Vey, J.L., **Drennan**, C.L., and Bollinger, J.M. Jr. (2004) Kinetic and Structural Characterization of Slr0077/SufS, the Essential Cysteine Desulfurase from *Synechocystis* sp. PCC 6803, *Biochemistry* **43**, 12210–12219.

Midelfort, K.S., Hernandez, H.H., Lippow, S.M., Tidor, B., **Drennan**, C.L., and Wittrup, K.D. (2004) Substantial Energetic Improvement with Minimal Structural Perturbation in a High Affinity Mutant Antibody, *Journal of Molecular Biology* **343**, 685–701.

Berkovitch F., Behshad, E., Kuo-Hsiang Tang, K-H., Enns, E.A., Frey, P.A., and **Drennan**, C.L. (2004) A Locking Mechanism Preventing Radical Damage in the Absence of Substrate, as Revealed by the X-ray Structure of Lysine 5,6-Aminomutase, *Proceedings of the National Academy of Science U.S.A.* **101**, 15870–15875.

Andrade, S. L. A., Cruz, F., **Drennan**, C. L., Ramakrishnan, V., Rees, D. C., Ferry, J. G., and Einsle, O. (2005) Structures of the Iron-Sulfur Flavoproteins from *Methanosarcina thermophila* and *Archaeoglobus fulgidus*, *Journal of Bacteriology* **187**, 3848–3854.

Higgins, L. J., Yan, F., Liu P., Liu, H.-W., and **Drennan**, C. L. (2005) Structural Insight into Antibiotic Fosfomicin Biosynthesis by a Mononuclear Iron Enzyme, *Nature* **437**, 838–844.

Delaney, J.C., Smeester, L., Wong, C., Frick, L. E., Taghizadeh, L., Wishnok, J. S., **Drennan**, C. L., Samson, L. D., and Essigmann, J. M. (2005) AlkB Reverses Etheno DNA Lesions Caused by Lipid Oxidation *in vitro* and *in vivo*, *Nature Structural & Molecular Biology* **12**, 855-860.

Blasiak, L.C., Vaillancourt, F.H., Walsh, C.T., and **Drennan**, C.L. (2006) Crystal Structure of the Non-haem Iron Halogenase SyrB2 in Syringomycin Biosynthesis, *Nature* **440**, 368-371.

Schreiter, E.R., Wang, S. C., Zamble, D.B., and **Drennan**, C.L. (2006) NikR-operator Complex Structure and the Mechanism of Repressor Activation by Metal Ions, *Proceedings of the National Academy of Science U.S.A.* **103**, 13676-13681.

Frick, L.E., Delaney, J.C., Wong, C., **Drennan**, C.L., and Essigmann, J.M. (2007) Alleviation of 1,*N*⁶-Ethanoadenine Genotoxicity by the *Escherichia coli* Adaptive Response Protein AlkB, *Proceedings of the National Academy of Science U.S.A.* **104**, 755-760.

Yeh, E., Blasiak, L.C., Koglin, A., **Drennan**, C.L., and Walsh, C.T. (2007) Chlorination by a Long-lived Intermediate in the Mechanism of Flavin-dependent Halogenases, *Biochemistry* **46**, 1284-1292.

Doukov, T.I., Hemmi, H., **Drennan**, C.L., and Ragsdale, S.W. (2007) Structural and Kinetic Evidence for an Extended Hydrogen Bonding Network in Catalysis of Methyl Group Transfer: Role of an Active Site Asparagine Residue in Activation of Methyl Transfer by Methyltransferases, *Journal of Biological Chemistry* **282**, 6609-6618.

Chobot, S.E., Hernandez, H.H., **Drennan**, C.L., and Elliott, S.J., (2007) Direct Electrochemical Characterization of Archaeal Thioredoxins, *Angewandte Chemie International Edition* **46**, 4145-4147.

Ryan, K.S., Howard-Jones, A.R., Hamill, M.J., Elliott, S.J., Walsh, C.T., and **Drennan**, C.L., (2007) Crystallographic Trapping in the Rebeccamycin Biosynthetic Enzyme RebC, *Proceedings of the National Academy of Science U.S.A.* **104**, 15311-15316.

Hubbard, P.A., Padovani, D., Labunska, T., Mahlstedt, S.A., Banerjee, R., and **Drennan**, C.L., (2007) Crystal Structure and Mutagenesis of the Metallochaperone MeaB: Insight into the Causes of Methylmalonic Aciduria, *Journal of Biological Chemistry* **282**, 31308-31316.

Phillips, C.M., Schreiter, E.R., Guo, Y., Wang, S.C., Zamble, D.B., and **Drennan**, C.L. (2008) Structural Basis of Metal Specificity for Nickel Regulatory Protein NikR, *Biochemistry* **47**, 1938-1946.

Ryan, K.S., Balibar, C.J., Turo, K.E., Walsh, C.T., and **Drennan**, C.L. (2008) The Violacein Biosynthetic Enzyme VioE Shares a Fold with Lipoprotein Transporter Proteins, *Journal of Biological Chemistry Published on-line January 2, 2008: 10.1074/jbc.M708573200*

Doukov, T.I., Blasiak, L.C., Seravalli, J., Ragsdale, S.W., and **Drennan**, C.L. (2008) Xenon In and at the End of the Tunnel of Bifunctional Carbon Monoxide Dehydrogenase/Acetyl-CoA Synthase, *Biochemistry* **47**, 3474-3483.

Reviews and Commentaries

Luschinsky (Drennan), C.L., Dunham, W.R., Osborne, C., Patridge, K.A., and Ludwig, M.L. (1991) Structure Analysis of Fully Reduced *A. nidulans* Flavodoxin, in *Flavins and Flavoproteins 1990*, Curti, B., Ronchi, S., and Zanetti, G., Eds., Walter de Gruyter: Berlin, 409-413.

Ludwig M.L., and **Luschinsky** (Drennan), C.L. (1992) Structure and Redox Properties of Clostridial Flavodoxin, *Chemistry and Biochemistry of Flavoenzymes*, vol. III, Müller, F., Ed., CRC Press: Boca Raton, 427-466.

Drennan, C.L., Matthews, R.G., and Ludwig, M.L. (1994) Cobalamin-dependent Methionine Synthase: the Structure of a Methylcobalamin-binding Fragment and Implications for Other B₁₂-dependent Enzymes, *Current Opinion in Structural Biology* **4**, 919-929.

Ludwig, M.L., **Drennan**, C.L., and Matthews, R.G. (1996) The Reactivity of B₁₂ Cofactors: The Proteins Make a Difference, *Structure* **4**, 505-512.

Drennan, C.L., Dixon, M.M., Hoover, D.M., Ludwig, M.L., Jarrett, J.T., Goulding, C.W., and Matthews, R.G. (1998) Cobalamin-dependent Methionine Synthase from *E. coli*: Structure and Reactivity, in *Vitamin B₁₂ and B₁₂ Proteins*, Kräutler, B., Arigoni, D., and Golding, B.T., Eds., Wiley-VCH, Weinheim FRG, 133-156.

Marsh, E.N.G. and **Drennan**, C.L. (2001) Structure and Mechanism of the Adenosylcobalamin-dependent Isomerases, *Current Opinion in Chemical Biology* **5**, 499-505.

Drennan, C.L. and Peters, J.W. (2003) Surprising Cofactors in Metalloenzymes, *Current Opinion in Structural Biology* **13**, 220-226.

Drennan, C.L., Doukov, T.I., and Ragsdale, S.W. (2004) The Metalloclusters of Carbon Monoxide Dehydrogenase/Acetyl-CoA Synthase: A Story in Pictures, *Journal of Biological Inorganic Chemistry* **9**, 511-515.

Drennan, C.L. and Tolman, W. B. (2007) New Vistas in Bioinorganic Chemistry, *Current Opinion in Chemical Biology* **11**, 113-114.

Schreiter, E.R. and **Drennan**, C.L. (2007) Ribbon-Helix-Helix Transcription Factors: Variations on a Theme, *Nature Reviews in Microbiology* **5**, 710–720.

Taylor, E.V. and **Drennan**, C.L. (2007) Bringing the Excitement of Biological Research into the Chemistry Classroom at MIT, *ACS Chemical Biology* **2**, 515-517.

Phillips, C.M. and **Drennan**, C.L. (2008) Nickel Regulatory Transcription Factor, NikR, Handbook of Metalloproteins, *accepted*.

Blasiak, L.C. and **Drennan**, C.L. (2008) Non-heme Iron Halogenases, Handbook of Metalloproteins, *accepted*.

SELECTED ORAL PRESENTATIONS

2000

Biochemistry Seminar, California Institute of Technology, Pasadena, CA

Biochemistry Department Seminar, University of Wisconsin, Madison, WI

Laboratory of Molecular Biology Seminar, University of Illinois, Chicago, IL

Chemistry Department Seminar, University of Massachusetts, Dartmouth, MA

Department of Chemistry Seminar, Wellesley College, Wellesley, MA

Chemistry Seminar, Williams College, Williamstown, MA

GRC on Metals in Biology, Ventura, CA

GRC on Molecular Basis of Microbial One-Carbon Metabolism, New London, CT

5th European Symposium on Vitamin B₁₂ and B₁₂-Proteins, Marburg, Germany

2001

Lectures in Chemical Science (LICS) Series, Harvard University, Cambridge, MA

Structure and Mechanism in Biological Pathways, Keynote Address, Pennsylvania State University, State College, PA

Department of Chemistry and Biochemistry Seminar, University of Delaware, Newark, DE

Department of Chemistry Seminar Series, Tufts University, Somerville, MA

Department of Chemistry Seminar Series, Dartmouth College, Hanover, NH

Inorganic Chemistry Seminar Series, Boston College, Chestnut Hill, MA

International Conference on Biological Inorganic Chemistry, Florence, Italy

2002

Molecular Biophysics Seminar, Columbia University, New York, NY

Molecular Biosciences Seminar, Iowa State University, Ames, IA

Physical Chemistry Seminar Series, Brandeis University, Waltham, MA

Joint Inorganic-Structural Biology Seminar, Purdue University, West Lafayette, IN

Biochemistry Seminar Series, University of Illinois, Urbana, IL

Younger Chemists Association Seminar, Philadelphia, PA

Department of Chemistry Seminar Series, Temple University, Philadelphia, PA

Department of Chemistry Seminar Series, Vassar College, Poughkeepsie, NY

GRC on Molecular Basis of Microbial One-Carbon Metabolism, New London, CT

GRC on Nitrogen Fixation, New London, NH

GRC on Enzymes, Coenzymes, and Metabolic Pathways, Meriden, NH
American Chemical Society National Meeting, Boston, MA
Enzymes in Deoxyribonucleotide Synthesis, Stockholm, Sweden
XIX Congress & General Assembly of the Int. Union of Crystallography, Geneva, Switzerland

2003

Structural and Quantitative Biology Seminar Series, University of California, Berkeley, CA
Inorganic Chemistry Seminar Series, University of Utah, Salt Lake City, UT
Department of Chemistry Seminar Series, Utah State University, Logan, UT
Inorganic Chemistry Seminar Series, University of Washington, Seattle, WA
Department of Chemistry Seminar Series, Swarthmore College, Swarthmore, PA
Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY
Department of Chemistry, Ithaca College, Ithaca, NY
Department of Microbiology, University of Iowa, Iowa City, IA
Biological Engineering Seminar Series, MIT, Cambridge, MA
Department of Physiology and Biophysics, Boston University, Boston, MA
Symposium in Honor of Jenny Glusker, Philadelphia, PA
Seminar at New England Biolabs, Beverly, MA
Seminar at Ajinomoto, Tokyo, Japan
225th American Chemical Society National Meeting, New Orleans, LA
ASBMB-Schlering-Plough Award Lecture, 94th Annual Meeting of the American Society for
Biochemistry and Molecular Biology, San Diego, CA
GRC on Metals in Biology, Ventura, CA
GRC on Purines, Pyrimidines, and Related Substances, Newport, RI
GRC on Inorganic Chemistry, Newport, RI
GRC on Enzymes, Coenzymes & Metabolic Pathways, Meriden, NH
American Chemical Society National Meeting, NYC, NY
International Conference on Biological Inorganic Chemistry, Cairns, Australia
3rd Symposium on Chemical Biology of Metal Sensors with Switching Function, Kyoto, Japan

2004

Dept. of Chemistry Student Hosted Colloquium Series, Stanford University, Palo Alto, CA
Inorganic Chemistry Seminar, University of California, Berkeley, CA
Inorganic Chemistry Seminar, University of Pennsylvania, Philadelphia, PA
Inorganic Chemistry Seminar, Princeton University, Princeton, NJ
Inorganic Chemistry Seminar, Michigan State University, East Lansing, MI
Inorganic Regional Meeting, Boston College, Chestnut Hill, MA
Biochemistry and Biophysics Seminar, California Institute of Technology, Pasadena, CA
Biochemistry Seminar Series, Emory University, Atlanta, GA
Biochemistry Seminar, University of Miami School of Medicine, Miami, FL
Molecular Biology Seminar, University of California, Los Angeles, CA
Seminar, National Institutes of Health, Bethesda, MD

Seminar, Massachusetts General Hospital, Boston, MA
Searle Scholars Meeting, Chicago, IL
Seminar, Stockholm University, Stockholm, Sweden
Seminar, Uppsala Biomedical Center, Uppsala, Sweden
GRC on Protein Derived Cofactors, Radicals, and Quinones, Ventura, CA
GRC on Environmental Bioinorganic Chemistry, Bates College, ME
Third German-American Symposium, Frontiers of Chemistry, Kloster-Seeon, Germany
77th Annual Japanese Biochemistry Society Meeting, Yokohama, Japan
4th Symposium on Metal Sensors, Yokohama, Japan

2005

Frontier in Chemistry Lecture Series at Case Western Reserve University, Cleveland, OH
Biochemistry Seminar, University of Nebraska, Lincoln, NE
Biochemistry and Molecular Biophysics Seminar, University of Arizona, Tucson, AZ
Inorganic/Organic Chemistry Seminar, University of Chicago, Chicago, IL
Organic Chemistry Seminar, Harvard University, Cambridge, MA
American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA
American Crystallographic Association Annual Meeting, Orlando, FL
Steenbock Symposium on Fe-S Proteins: Biogenesis, Structure and Function. Madison, WI
Bürgenstock Conference on Stereochemistry, Bürgenstock, Switzerland
International Conference on Biological Inorganic Chemistry, Ann Arbor, MI
GRC on Vitamin B₁₂, Oxford, UK
Biochemistry Seminar, University of Pierre and Marie Curie, Paris, France
MIT on the Road, San Francisco, CA

2006

Christopher Mathews Named Lecturer, Oregon State University, Corvallis, OR
Harvard Chemical Biology Initiative Symposium, Cambridge, MA
Department of Biochemistry and Molecular Pharmacology, Harvard Medical School, MA
Lucy Pickett Lecturer, Mount Holyoke College, South Hadley, MA
Life Sciences Institute Seminar, University of Michigan, Ann Arbor, MI
Department of Biology and Biochemistry Seminar, University of Montana, Missoula, MT
Department of Chemistry Seminar, Montana State University, Bozeman, MT

2007

20th Enzyme Mechanisms Conference in St. Pete Beach, FL
Merck/AAA Lecture, Vassar College, Poughkeepsie, NY
Boston University Women in Chemistry Lecture, Boston, MA
Meet the Author, Wellesley College, Wellesley, MA
K-12 Outreach Presentation to MIT Alumnae, Cambridge, MA (broadcast live to nine cities)
Campus Preview Weekend Keynote Faculty Address, MIT, Cambridge, MA
American Society for Biochemistry and Molecular Biology Annual Meeting, Washington, DC

Biochemistry Colloquium, Texas A&M University, College Station, TX
Symposium in Honor of Rowena Matthews, Ann Arbor, MI
Yale Chemical Biology Symposium, New Haven, CT
Boston Museum of Science, Women in Science Series, Boston, MA
European Symposium on Organic Chemistry, Dublin, Ireland

2008 (planned)

David E. Green Lecture, University of Wisconsin, Madison, WI
Trends in Enzymology, St. Malo, France
Biochemical Society's 65th Harden Conference, St Martin's College, Ambleside, UK
Cornell University Baker Symposium on Frontiers in Biophysical Chemistry, Ithaca, NY

GRADUATE STUDENTS SUPERVISED

Michael Sintchak (November 1999– April 2004)
Fred Berkovitch (Ph.D. 2004)
"Snapshots of Radical Enzyme Catalysis: The Crystal Structures of Biotin Synthase and Lysine 5,6-aminomutase"
Eric R. Schreiter (Ph.D. 2005)
"Crystallographic Studies of Metal-Responsive Transcription Factor NikR"
Luke J. Higgins (Ph.D. 2005)
"Structural Analysis of Hydroxypropylphosphonic Acid Epoxidase: A Fosfomycin Biosynthetic Enzyme"
Laura Phillips (M.S. 2007)
"Crystallographic Studies of 5'deoxyadenosyl Radical Enzymes"
Jessica Vey (Ph.D. 2007)
"Structural Insight into the Assembly of Iron-Sulfur Clusters and their Function in Radical Generation"
Leah C. Blasiak (Ph.D. 2008)
"Crystallographic Studies of Enzymatic Halogenation of Natural Products"
Hector H. Hernandez (November 2000–present)
Cintyu Wong (November 2003–present)
Christine M. Phillips (November 2004–present)
Jun Wang (November 2004–present)
Yan Kung (November 2005–present)
Katherine Snoda Ryan (November 2005–present)
Ramon Salsas Escat (June 2006–present)
William Hillmann (November 2006–present)
Christina Stock (November 2007–present)
Peter Goldman (November 2007–present)

POSTDOCTORAL SCHOLAR TRAINING

Tzanko Doukov (February 2000–November 2003)
Geoffrey Stamper (August 2000–August 2001)
Yvain Nicolet (November 2002–February 2004)
Paul Hubbard (April 2004–September 2007)
C. Ainsley Davis (October 2004–present)
Dan Yun (September 2005–present)

UNDERGRADUATE RESEARCH TRAINING

Gitrada Arjara (July 1999–May 2002)
Pei-Lin Hung (September 1999–May 2000)
Caprice Gray (January 2000–May 2000)
Trish McAndrew (June 2000–August 2000)
Serdar Uysal (June 2000–September 2000)
Herman Lelie (January 2001–May 2003)
Jennifer Lee (September 2001–May 2004)
*Melva James (June 2001–August 2001)
Nicholas Warner (January 2002–May 2002)
Yayi Stephanie Guo (February 2002–August 2002, September 2004–May 2005)
Eric Makhni (February 2002–May 2002)
Fairuz Ahmed (June 2002–August 2002, January 2003–August 2003)
Stephen Moran (June 2002–August 2002)
Orlando Jaquez (September 2002–May 2005)
Eva Enns (February 2003–May 2003)
Sarah Mahlstedt (February 2003–December 2005)
Ryan Callery (June 2003–August 2003)
*Leonie Hayles (June 2003–August 2003)
Yvonne Lee (September 2003–May 2004)
Kuan-Chi Lai (January 2004–February 2004)
Jennifer Caplin (June 2004–August 2004; September 2005–December 2005)
Alexandra Grassian (June 2004–August 2004)
Eric Jewett (June 2004–August 2004)
Danya Machnes (June 2004–August 2004; June 2005–August 2005)
Nicole De Nisco (January 2005–June 2007)
Rojas Folkers (January 2005–January 2006)
Katherine Jarrell (January 2005–August 2005)
Pareesh Agarwal (February 2005–May 2005)
*Collins Boston (June 2005–August 2005)
Sarah Wacker (June 2005–August 2005)
Marissa Lee (February 2006–August 2006)
Gwenn Miller (February 2006–May 2006)
Kaitlyn Turo (June 2006–August 2006; June 2007–September 2007)
Sarah King (February 2007–June 2007)
*Daniel Gilmer (June 2007–August 2007)
Johan Nakuci (June 2007–August 2007)
Andrew VanBenschoten (January 2008–present)
Sarah Whitesides (January 2008–present)
Tamara R Litwin (January 2008–present)

*Part of MIT Summer Research Program (MRSP) for under-represented minority students

LIST OF COURSES TAUGHT

5.111 Principles of Chemical Science (1999–2005, 2007) One of Two Lecturers
5.52 Advanced Biological Chemistry (2000) Team Taught Problem-Set Based Course
5.50 Enzymes: Structure and Function (2000) Guest Lecturer
5.921 Seminar in Biological Chemistry (2001) Coordinator of Program
5.922 Seminar in Biological Chemistry (2002) Coordinator of Program
5.78 Practical Macromolecular Crystallography (2002–2005) Instructor of Lecture Course

5.08 Biological Chemistry II (2003) Guest Lecturer
STS.067 Scientific Visualization across Disciplines (2004, 2005) Guest Lecturer
6.971 Introduction to Molecular Simulations (2005–2006) Guest Lecturer
7.71/5.78J Biophysical Chemistry Techniques (2006–present) One of Two Lecturers

EDUCATIONAL ACTIVITIES

Education and Professional Development Committee of American Society for Biochemistry and Molecular Biology (ASBMB) (1996–2002)

Organizer and Panel Moderator for "How to Start and Maintain a Strong Undergraduate Biochemistry Program," ASBMB Education Satellite Meeting, San Francisco (1997)

Organizer of first ASBMB-sponsored undergraduate poster competition (1997), second (1998), third (1999), fourth (2000), fifth annual competitions (2001)

Undergraduate ASBMB Travel Grant Committee (1998–2001)

Organizer of Panel Discussion, "How to Get a Job in Academia," ASBMB Meeting (2000)

Editorial Board of *Biochemistry and Molecular Biology Education* (2000–2005)

Martin Luther King Breakfast Planning Committee, MIT (2000–2004)

Chemistry Curriculum Committee, MIT (2001–2004)

P.I., NIH-funded Undergraduate Summer Research Program at MIT (2001–2005)

Faculty Undergraduate Mentor, MIT Summer Research Program (MRSP) for under-represented minority undergraduate students (2001, 2003, 2005)

Organizer of chemistry component of MIT High School Teacher Conference (2002–present)

Faculty Advisor for MIT Undergraduate Biochemistry Association (MUBA) (2003–present)

Admissions Committee for Diversity Initiative Weekend at MIT (CONVERGE) (2004)

Department of Chemistry Mediator (counselor for graduate students) (2005–present)

OpenCourseWare Secondary Education Steering Committee (2006–2007)

HHMI Professorship (2006–present)

MIT Graduate Student Alumni Presentation on K-12 Educational Outreach Activities (2007)

New England Science Writers One Million Dollar Professor Event, Waltham, MA (2007)

Thesis Committee Chair: Zachary Hendsch (1999–2001); Greg Carven (2000–2004); Daniel Kopp (2000–2003); Matthew Sazinsky (2001–2004); Thomas Malia (2001–2006); Jiamin Tian (2001–2004); Zarixia Zavala-Ruiz (2002–2004); Deborah Perlstein (2002–2005); Elsa Quinones Arocho (2004–2005); Kathryn Armstrong (2004–2007); Tsan Chou Scott Chen (2005–2006); Mary Farbman (2005–present); Chia-Hung Wu (2005–present); Christian Schubert (2006–present)

Thesis Committee Member: Amy Barrios (2000); Jennifer Zarutskie (2001); Dongwhan Lee (2001); Alex Akhiezer (2002); Jelena Antonic (2002–present); Mary O'Reilly (2002–2006); Shaun Hillier (2002–2005); Aaron Hoskins (2003–2006); Yongwon Jung (2003–2005); Daniel Jarosz (2003–2007); David Shechner (2003–present); Mala L. Radhakrishnan (2004–2007); Dong Wang (2004); Marc Caporini (2005–present); Michael McCormick

(2005–present); Mark Chen (2005–present); Greg Lohman (2006); Peter Bernhardt (2006–present); Angelyn Larkin (2006–present); Sarah Slavoff (2006–present)

Undergraduate Academic Advising: Jyoti Agarwal (January 2001–February 2002); Mitchell Berger (September 2000–September 2002); Deborah Dryer (January 2001–May 2003); Aparna Dave (January 2002–December 2003); Andrew Goldsweig (September 2000–May 2003); Monica Hsiao (September 2000–May 2003); John Shogo Miyagi (September 2000–May 2003); Emma Jane Poulton (September 2000–May 2003); Gitanjali Singh (September 2000–May 2003); John Bergin (May 2003–June 2007); Tendai Chizana (May 2003–June 2006); Emily Fenn (May 2003–June 2006); Leighanne Gallington (May 2003–February 2004); Prathima Nandivada (May 2003–June 2006); Aayesha Siddiqui (May 2003–August 2004); Rachel Tundel (May 2003–June 2006); Stephen Fredette (September 2003–June 2006); Sue Zheng (September 2003–September 2004); Melanie Worley (September 2004–February 2005); Tulasi Khandan (September 2004–June 2006)

PROFESSIONAL ACTIVITIES

Member, Strategic Planning for ASBMB (1996, 2000)

Associate Member, The Penn State Astrobiology Research Center, NASA Astrobiology Research Institute (1999–present)

Host, T.Y. Shen Lectures, Department of Chemistry, MIT (1999–2004)

Biol. Chemistry Admissions Committee, Dept. of Chemistry, MIT (2001–2002; 2005–2006)

Faculty Search Committee, Department of Chemistry, MIT (2001–2002, 2007)

Opponent Ph.D. Thesis Defense, Uppsala, Sweden (2004)

Ad hoc Reviewer for *Accounts of Chemical Research*, *Angewandte Chemie*, *Biochemistry*, *Chemistry and Biology*, *Chemical Reviews*, *Inorganic Chemistry*, *Journal of the American Chemical Society*, *Journal of Bacteriology*, *Journal of Biological Chemistry*, *Journal of Inorganic Biochemistry*, *Journal of Molecular Biology*, *Nature*, *Nature Structural and Molecular Biology*, *Science*, and *Proceedings of the National Academy of Science*

Ad hoc Grant Reviewer for Engineering and Physical Sciences Research Council United Kingdom; Petroleum Research Fund

Session Chair, Gordon Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA, January, 2001; GRC on Vitamin B₁₂, ME, July, 2003 and 2007; 19th Enzyme Mechanism Conference, CA, January 2005; GRC on Metals in Biology, CA, January 2007.

Panel Discussions

"Women in Chemistry Career Panel," MIT (Spring, 2000)

"Transition to Faculty Life," MIT (August, 2002)

"Academic Career *versus* Industrial Career," MIT (May, 2003)

"Why Choose an Academic Career?" MIT (June, 2003)

"Scientific Publishing", ASBMB Annual Meeting (2004)

"Building Strong Academic Programs through Gender Equality", DC (Jan, 2006)

Member, Biotechnology Training Program at MIT (2001–present); Center for Environmental Health Sciences at MIT (2002–present); Computational and Systems Biology Initiative at MIT (2003–present)

Organizing Committee, 19th Enzyme Mechanisms Conference (2003–2005)

U.S. National Committee for the Int. Union of Biochemistry and Mol. Biology (2003–present)

Publications Committee, ASBMB (2003–2006)

Communications Committee, American Crystallographic Association (2003–present)

Strategic Planning Committee for Department of Chemistry, MIT (2004, 2007)

American Chemical Society Executive Director's 2010 Committee (2004–present)

MIT Nominations Committee (2005–2007)

Chair, MIT Nominations Committee (2007–2008)

Corporation Joint Advisory Committee on Institute Wide Affairs (2005–present)

Planning Committee for MIT Interdepartmental Graduate Program in Microbiology (2007)

Editorial Advisory Board for the *Journal of Biological Inorganic Chemistry* (2007)

Vice-Chair Elect GRC on Vitamin B₁₂ (2007)