

VIRGINIA W. CORNISH

Department of Chemistry
Columbia University
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Born 11/6/69
Louisville, KY

Married 9/25/00
Two children:
1/25/03
2/15/05

Education

- 1991-1996 **Ph.D. Bio-Organic Chemistry**
University of California, Berkeley, CA
- 1987-1991 **B.A. Biochemistry, *summa cum laude***
Columbia University, New York, NY

Academic and Research Experience

- 2007-present **Professor of Chemistry, Department of Chemistry, Columbia University, New York, NY**
- 2004-2007 **Associate Professor of Chemistry, Department of Chemistry, Columbia University, New York, NY**
- 1999-2004 **Assistant Professor of Chemistry, Department of Chemistry, Columbia University, New York, NY**
- 1996-1998 **National Science Foundation Post-Doctoral Fellow, Department of Biology, Massachusetts Institute of Technology, Cambridge, MA**
Advisor: Professor Robert T. Sauer
- 1991-1996 **National Science Foundation Pre-Doctoral Fellow, Department of Chemistry, University of California, Berkeley, CA**
Advisor: Professor Peter G. Schultz
- 1990-1991 **Undergraduate Research Assistant, Department of Chemistry, Columbia University, New York, NY**
Advisor: Professor Ronald C. Breslow

Fellowships and Awards

2007	Wyeth/Douglass Lecturer, Rutgers University
2007	Lenfest Distinguished Columbia Faculty Award
2007	Ott Lectureship, Grand Valley State University
2006	Lucy Pickett Lectureship, Mt. Holyoke College
2005	John Jay Award, Columbia College
2004	Paul Dowd Lectureship, University of Pittsburgh
2003	Sloan Foundation Fellowship
2001	BIMO Class of 1960 Speaker, Williams College
2001	Columbia College Young Alumni Achievement Award
2000	Beckman Young Investigator Award
2000	Burroughs-Wellcome Fund New Investigator Award
2000	National Science Foundation Career Award
1999	Camille and Henry Dreyfus New Faculty Award
1999	Columbia College Alumna Achievement Award
1996	National Science Foundation Post-Doctoral Fellow
1995	Howard Hughes Medical Institute Graduate Fellowship
1995	Outstanding Graduate Student Instructor Award
1994	American Chemical Society Division of Organic Chemistry Graduate Fellowship
1993	Outstanding Graduate Student Instructor Award
1991	National Science Foundation Predoctoral Fellowship
1990	Phi Beta Kappa

Honor Societies and Professional Affiliations

American Chemical Society
New York Academy of Sciences
Phi Beta Kappa
Protein Society

Publications

1. H.H. Chung, D.R. Benson, V.W. Cornish, P.G. Schultz. "Probing the Role of Loop 2 in Ras Function with Unnatural Amino Acids." *Proc. Natl. Acad. Sci. USA*, **90**, 10145-10149 (1993).
2. V.W. Cornish, D.R. Benson, C.A. Altenbach, K. Hideg, W.L. Hubbel, P.G. Schultz. "Site-Specific Incorporation of Biophysical Probes into Proteins." *Proc. Natl. Acad. Sci. USA*, **91**, 2910-2914 (1994).
3. V.W. Cornish, P.G. Schultz. "A New Tool for Studying Protein Structure and Function." *Curr. Opin. Struct. Biol.*, **4**, 601-607 (1994). (Invited Review).
4. V.W. Cornish, M.I. Kaplan, D.L. Veenstra, P.A. Kollman, P.G. Schultz. "Stabilizing and Destabilizing Effects of Placing β -Branched Amino Acids in Protein α -Helices." *Biochemistry*, **33**, 12022-12031 (1994).
5. D. Mendel, V.W. Cornish, P.G. Schultz. "Site-Directed Mutagenesis with an Expanded Genetic Code." *Ann. Rev. Biophys. Biomol. Struct.*, **24**, 435-462 (1995). (Invited Review).
6. V.W. Cornish, D. Mendel, P.G. Schultz. "Probing Protein Structure and Function with an Expanded Genetic Code." *Angew. Chem. Int. Ed. Engl.*, **34**, 621-633 (1995). (Invited Review).
7. V.W. Cornish, K.M. Hahn, P.G. Schultz. "Site-Specific Protein Modification Using a Ketone Handle." *J. Am. Chem. Soc.*, **118**, 8150-8151 (1996).
8. J.T. Koh, V.W. Cornish, P.G. Schultz. "An Experimental Approach to Evaluating the Role of Backbone Interactions in Proteins Using Unnatural Amino Acid Mutagenesis." *Biochemistry*, **36**, 11314-11322 (1997).
9. J.S. Thorson, V.W. Cornish, J.E. Barrett, S.T. Cload, T. Yano, P.G. Schultz. "Insertion of Unnatural Amino Acids Using Chemical Acylation Techniques." *Methods in Molecular Biology: Protein Synthesis: Methods and Protocols*, **77**, 43-73 (1998). (Methods).
10. Y. Webb, X. Zhou, L. Ngo, V.W. Cornish, J. Stahl, H. Erdjument-Bromage, P. Tempst, R. Rifkind, P. Marks, R. Breslow and V. Richon. "Photoaffinity Labeling and Mass Spectrometry Identify Ribosomal Protein S3 as a Potential Target for Hybrid Polar Cytodifferentiation Agents." *J. Biol. Chem.*, **274**, 14280-14287 (1999).

(independent publications)

11. H. Lin, W. Abida, R.T. Sauer, V.W. Cornish. "Dexamethasone-Methotrexate: An Efficient Chemical Inducer of Protein Dimerization *In Vivo*." *J. Am. Chem. Soc.*, **122**, 4247-4248 (2000). Featured in *Chem. & Eng. News*, **78**, 52 (2000).
12. H. Lin, V.W. Cornish. "In Vivo Protein-Protein Interaction Assays: Beyond Proteins." *Angew. Chem.*, 114, 895-899 (2001); *Ang. Chem. Int. Ed.*, **40**, 871-875 (2001). (Invited Review).
13. V.W. Cornish. "Probing Enzyme Complexity." *Chem. & Eng. News*, **79**, 64 (2001). *Young Investigator Featured in 125th Year Anniversary Issue*. (Invited Review).
14. B.T. Carter, V.W. Cornish. Book Review: Two-Hybrid Systems Methods and Protocols. Edited by Paul N. MacDonald. *ChemBioChem*, **3**, 476-477 (2002). (Invited Review).

15. B.T. Carter, H. Lin, V.W. Cornish. "Yeast n-Hybrid Systems for Molecular Evolution." In *Directed Molecular Evolution of Proteins*, S. Brakmann, K. Johnsson, Eds. Wiley-VCH Verlag, Weinheim, 2002. (Invited Review).
16. E.A. Althoff, V.W. Cornish. "A Bacterial Small-Molecule Three-Hybrid System." *Angew. Chem.*, **114**, 2433-2436 (2002); *Angew. Chem. Int. Ed.*, **41**, 2327-2330 (2002).
17. W. Abida, B. Carter, E. Althoff, H. Lin, V.W. Cornish. "Receptor-Dependence of the Transcription Read-Out in a Small-Molecule Three-Hybrid System." *ChemBioChem*, **3**, 887-895 (2002).
18. H. Lin, V.W. Cornish. "Screening and Selection Methods for the Large Scale Analysis of Protein Function." *Angew. Chem.*, **114**, 4580-4606 (2002); *Angew. Chem. Int. Ed.*, **41**, 4402-4425 (2002). (Invited Review).
19. H. Tao, V.W. Cornish. "Milestones in Directed Enzyme Evolution." *Curr. Opin. Chem. & Biol.*, **6**, 858-864 (2002). (Invited Review).
20. K. Baker, C. Bleczinski, H. Lin, G. Salazar-Jimenez, D. Sengupta, S. Krane, V.W. Cornish. "Chemical Complementation: A Reaction-Independent, High-Throughput Genetic Assay for Enzyme Catalysis." *Proc. Natl. Acad. Sci. USA*, **99**, 16537-16542 (2002). Featured in a commentary in *Proc. Natl. Acad. Sci. USA*, **99**, 16513-16515 (2002) and in *Chem. & Eng. News*, **81**, 24 (2003).
21. K. Baker, D. Sengupta, G. Salazar-Jimenez, V.W. Cornish. "An Optimized Dexamethasone-Methotrexate Yeast 3-Hybrid System for High-Throughput Screening of Small Molecule-Protein Interactions." *Anal. Biochem.*, **315**, 134-137 (2003).
22. A. Forster, Z. Tan, M.N.L. Nalam, H. Lin, H. Qu, V.W. Cornish, S. Blacklow. "Programming Peptidomimetic Syntheses by Translating Genetic Codes Designed *De Novo*." *Proc. Natl. Acad. Sci. USA*, **100**, 6353-6357 (2003). Featured in *Chem. Biol.*, **10**, 586-587 (2003) and in *Chem. & Eng. News*, **82**, 64-68 (2004).
23. S. Goldberg, W. Iannuccilli, T. Nguyen, J. Ju, V.W. Cornish. "Identification of Residues Critical for Catalysis in a Class C β -Lactamase by Combinatorial Scanning Mutagenesis." *Protein Science*, **12**, 1633-1645 (2003).
24. L. Miller, J. Sable, P. Goelet, M. Sheetz, V.W. Cornish. "Methotrexate Conjugates: A Molecular *In Vivo* Protein Tag." *Angew. Chem.*, **116**, 1704-1707 (2004); *Angew. Chem. Int. Ed.*, **43**, 1672-1675 (2004).
25. B.F. Gherman, S.D. Goldberg, V.W. Cornish, R.A. Friesner. "Mixed Quantum Mechanical/Molecular Mechanical (QM/MM) Study of the Deacylation Reaction in a Penicillin Binding Protein (PBP) Versus in a Class C β -Lactamase." *J. Am. Chem. Soc.*, **126**, 7652-7664 (2004).
26. D. Sengupta, H. Lin, S. Goldberg, J. Mahal, V.W. Cornish. "Correlation Between Catalytic Efficiency and the Transcription Read-Out in Chemical Complementation, a High-Throughput Assay for Enzyme Catalysis." *Biochemistry*, **43**, 3570-3581 (2004).
27. S. Lefurgy, V.W. Cornish. "Finding Cinderella After the Ball: a Three-Hybrid Approach to Drug Target Identification." *Chem. Biol.*, **11**, 151-153 (2004). (Invited Commentary).

28. K. Suwwan deFelipe, E.A. Althoff, B.T. Carter, V.W. Cornish. "Correlation Between Ligand-Receptor Affinity and the Transcription Readout in a Yeast Three-Hybrid System." *Biochemistry*, **43**, 10353-10363 (2004).
29. A.C. Forster, V.W. Cornish, S.C. Blacklow. "Pure Translation Display." *Anal. Biochem.*, **333**, 358-364 (2004).
30. Z. Tan, A. Forster, S. Blacklow, V.W. Cornish. "Amino Acid Backbone Specificity of the *E. coli* Translation Machinery." *J. Am. Chem. Soc.*, **126**, 12752-12753 (2004).
31. H. Lin, H. Tao, V.W. Cornish. "Directed Evolution of a Glycosynthase Via Chemical Complementation." *J. Am. Chem. Soc.*, **126**, 15051-15059 (2004). Featured in *Chem. & Eng. News*, **82:46**, 32 (2004).
32. L. Miller, V.W. Cornish. "Selective Chemical Labeling of Proteins in Living Cells." *Curr. Opin. Chem. Biol.*, **9**, 1-6 (2005). (Invited Review).
33. L. Miller, Y. Cai, M. Sheetz, V.W. Cornish. "In Vivo Labeling with Trimethoprim Conjugates: A Flexible Chemical Tag." *Nature Methods*, **2**, 255-257 (2005).
34. B.T. Carter, H. Lin, S.D. Goldberg, E.A. Althoff, J. Raushel, V.W. Cornish. "Investigation of the Mechanism of Resistance to Third-Generation Cephalosporins by Class C β -Lactamases Using Chemical Complementation." *ChemBioChem*, **6**, 2055-2067 (2005).
35. Z. Tan, S.C. Blacklow, V.W. Cornish, A.C. Forster. "De Novo Genetic Codes and Pure Translation Display." *Methods*, **36**, 279-90 (2005).
36. S. Lefurgy, V.W. Cornish. "Chemical Complementation." In Enzyme Assays: High-throughput Screening, Genetic Selection and Fingerprinting, J-L. Reymond, Ed. Weinheim, Germany: Wiley-VCH Verlag GmbH & Co. KGaA, pp. 183-219 (2006). (Invited Review).
37. V.W. Cornish. "Biological Chemistry: Catalytic Competition for Cells." *Nature*, **440**, 156-157 (2006). (Invited *News and Views*).
38. P. Peralta-Yahya, V.W. Cornish. "Bringing the Power of Genetics to Chemistry." In Chemical Biology, S.L. Schreiber, T. Kapoor, G. Weiss, Eds. Weinheim, Germany: Wiley-VCH Verlag GmbH & Co. KGaA, vol. 1, pp. 199-226 (2006). (Invited Review).
39. H. Tao, P. Peralta-Yahya, H. Lin, V.W. Cornish. "Optimized Design and Synthesis of Chemical Dimerizer Substrates for Detection of Glycosynthase Activity via Chemical Complementation." *Bioorg. Med. Chem.*, **14**, 6940-6953 (2006).
40. S. Gallagher, L.W. Miller, V.W. Cornish. "An Orthogonal Dexamethasone-Trimethoprim Yeast Three-Hybrid System." *Anal. Biochem.*, **363**, 160-162 (2006).
41. N.T. Calloway, M. Choob, A. Sanz, M.P. Sheetz, L.W. Miller, V.W. Cornish. "Optimized Fluorescent Trimethoprim Derivatives for In Vivo Protein Labeling." *ChemBioChem.*, **8**, 767-774 (2007).
42. B. Zhang, Z. Tan, L.G. Dickson, M.N.L. Nalam, V.W. Cornish, A. Forster. "Specificity of Translation for *N*-Alkyl Amino Acids." *J. Am. Chem. Soc.*, **129**, 11316-11317 (2007)
43. S.T. Lefurgy, R.M. de Jong, V.W. Cornish. "Saturation Mutagenesis of Asn152 Reveals a Substrate Selectivity Switch in P99 Cephalosporinase." *Protein Science*, *accepted*.
44. L.W. Miller, S. Brenner, V.W. Cornish. "In Vivo Protein Labeling with a Fluorogenic

Molecular Rotor Trimethoprim Analog." *submitted*.

45. J.E. Bronson, W.W. Mazur, V.W. Cornish. "Single Transcription Factor Logic Gates Using Chemical Complementation." *submitted*.
46. P. Peralta-Yahya, B. T. Carter, H. Lin, H. Tao. V.W. Cornish. "Directed Evolution of Cellulases via Chemical Complementation." *submitted*.
47. H.Tao, P. Peralta-Yahya, V.W. Cornish. "A New Glycosynthase Enzyme Cloned Using Chemical Complementation." *submitted*.

Invited Presentations

- 1996 Gillead Sciences
Foster City, CA, August 23
- 1997 Columbia University, Department of Chemistry
New York, NY, February 11
- University of Delaware, Department of Chemistry
Newark, DE, April 5
- 1999 Columbia University, Department of Biochemistry and Molecular Biophysics
New York, NY, February 12
- 2000 Columbia University, Department of Pharmacology
New York, NY, March 13
- Wesleyan University, Department of Chemistry
Middletown, CT, April 5
- National Science Foundation Physical Organic Workshop
Warner Springs, CA, June 24-27
- Columbia University, National Science Foundation 50th Anniversary Celebration
New York, NY, December 8
- 2001 SUNY Stony Brook, Department of Chemistry
Stony Brook, NY, February 12
- Swarthmore College, Department of Chemistry
Swarthmore, PA, March 8
- Columbia University, R.C. Breslow Symposium
New York, NY, March 24
- Wyeth-Ayerst Research
Princeton, NJ, April 2
- Columbia University, Department of Biochemistry and Molecular Biophysics
New York, NY, April 12
- New England Biolabs
Beverly, MA, April 26
- Diadexus
Santa Clara, CA, May 14
- Bio-Organic Gordon Research Conference
Andover, NH, June 19
- Rigel Inc.
South San Francisco, CA, August 17
- American Chemical Society Meeting
Chicago, IL, August 26

Rensselaer Polytechnic Institute, Department of Chemistry
Troy, NY, September 18

New York University, Department of Chemistry
New York, NY, October 16

Columbia University, Department of Chemistry, IAP Symposium
New York, NY, November 5

Rutgers University, Department of Chemistry
Piscataway, NJ, November 27

Williams College, Department of Chemistry
BIMO Class of 1960 Speaker
Williamstown, MA, November 30

2002 Clark Atlanta University
Atlanta, GA, January 14

University of Pennsylvania, Department of Chemistry
Philadelphia, PA, January 24

Hofstra University, Department of Chemistry
New York, NY, February 6

University of Illinois, Urbana-Champaign, Department of Chemistry
Urbana, IL, February 20

Hudson-Bergen Chemical Society
Jersey City, NJ, February 22

Pharmacopeia
Princeton, NJ, March 13

University of British Columbia, Department of Chemistry
Vancouver, British Columbia, Canada, April 19

University of Alberta, Department of Chemistry
Alberta, British Columbia, Canada, April 22

Biological Chemistry Symposium, Yale University, Department of Chemistry
New Haven, CT, May 17

National Science Foundation Organic Synthesis Workshop
Squam Lake, NH, June 27-July 1

Rockefeller University, Department of Pharmacology
New York, NY, September 3

Texas A&M, Department of Biochemistry
College Station, TX, October 2

University of Texas, Austin, Department of Chemistry
Austin, TX, October 4

- Stanford University, Department of Chemistry
Stanford, CA, October 16
- 2003 Princeton University, Department of Chemistry
Princeton, NJ, April 17
- University of California, Irvine, Department of Chemistry
Irvine, CA, April 30
- Harvard University, Department of Chemistry
Cambridge, MA, May 5
- University of California, Berkeley, Department of Chemistry
Berkeley, CA, May 13
- Proteins Gordon Research Conference
Plymouth, NH, June 22-27
- Hoffman-La Roche
Nutley, NJ, July 22
- American Chemical Society Meeting
New York, NY, September 7-11
- Conference Universitaire De Suisse Occidentale 3E Cycle En Chimie
Champéry, Switzerland, September 14-18
- Boston University, Department of Chemistry
Boston, MA, September 29
- University of Michigan, Department of Chemistry
Ann Arbor, MI, October 10
- Columbia University, Cancer Center Retreat
New York, NY, October 21
- University of Pennsylvania, Department of Biochemistry and Biophysics
Philadelphia, PA, November 26
- Massachusetts Institute of Technology, Department of Chemistry
Cambridge, MA, December 8
- University of California, Berkeley, Department of Chemistry
Berkeley, CA, December 16
- 2004 University of California, San Francisco, Biophysics and CCB Program
San Francisco, CA, January 22
- University of Kentucky, Department of Molecular and Biomedical Pharmacology
Louisville, KY, February 19
- NIH Chemical Genomics Symposium
Washington, DC, March 15-16
- Duke University, Department of Chemistry
Raleigh, NC, March 26

- University of Chicago, Department of Biochemistry & Molecular Biology
Chicago, IL, May 19
- Northwestern University, Department of Chemistry
Evanston, IL, May 20
- Beilstein Bozen Workshop "The Chemical Theatre of Biological Systems"
Bozen, Italy, May 24-28
- Bio-Organic Gordon Research Conference
Andover, NH, June 13-18
- Bioanalytical Sensors Gordon Research Conference
Oxford, UK, July 4-9
- Protein Society Meeting
San Diego, CA, August 14-18
- University of Delaware, Department of Chemistry
Newark, DE, September 27
- University of Kentucky, Department of Molecular and Biomedical Pharmacology
Louisville, KY, October 14
- NSF Workshop "Molecular Basis of Life Processes"
Oakridge, TN, October 28-30
- University of Pittsburgh, Department of Chemistry
Paul Dowd Lectureship
Pittsburgh, PA, November 8-9
- 2005 Albert Einstein College of Medicine, Department of Biochemistry
New York, NY, July 28
- Protein Society Symposium
Boston, MA, July 31-August 3
- New York Academy of Sciences "Frontiers of Biomedical Science Conference"
Shanghai, China, October 19-20
- Memorial Sloan-Kettering, Molecular Pharmacology & Chemistry Seminar Series
New York, NY, November 22
- City College of CUNY, Department of Biochemistry
New York, NY, December 7
- 2006 Mount Holyoke College, Department of Chemistry
Lucy Pickett Lectureship
South Hadley, MA, February 23
- University of Montreal, Department of Chemistry
Montreal, Canada, March 15

University of North Carolina, Department of Chemistry
Breslow Award Symposium
Chapel Hill, NC, March 26-30

Pennsylvania State University, Department of Chemistry
University Park, PA, April 6

University of Wisconsin, Madison, Department of Chemistry
Madison, WI, April 18

NSF Workshop, "Reconsidering the Textbook"
Washington, D.C., May 24-25

Schultz Group Symposium
San Diego, CA, June 2-4

Gordon Research Conference on Biocatalysis
Bryant University, Smithfield, RI, July 9-14

Jane Coffin Childs Fund Symposium
New Haven, CT, October 20-22

Wyeth, Pearl River
Pearl River, NY, November 2

New York University, Department of Chemistry
New York, NY, December 5

2007 Keystone Symposium on Integrative Basis of Cardiovascular Disease
Beaver Run Resort, Breckenridge, CO, January 22-27

Tufts University, Department of Chemistry
Boston, MA, January 30

Grand Valley State University, Department of Chemistry
Ott Lectureship
Allendale, MI, April 3-4

University of Chicago, Department of Chemistry
Chicago, IL, April 20

Columbia University, Department of Physiology
New York, NY, May 15

Advances in Biomolecular Engineering: Protein Engineering Symposium
New York Academy of Sciences and Polytechnic University
Brooklyn, NY, May 22

Alcon Pharmaceuticals
Fort Worth, TX, July 16

(Scheduled)

Drug Discovery Symposium, Center of Excellence in Biotechnology,
University of South Florida
Tampa, FL, October 25-26

SUNY Buffalo, Department of Chemical and Biological Engineering
Buffalo, NY, December 5

2008 Max Planck Institute for Plant Breeding Research
Cologne, Germany, January 16

Manchester Interdisciplinary Biocentre
Manchester, UK, January 17

The Scripps Research Institute, Department of Biochemistry
La Jolla, CA, April 25

Quantitative Molecular Biosciences Course
Co-organizer and Speaker
Spetses, Greece, September 10-18

2009 Douglass College, Rutgers University, Department of Chemistry
Wyeth/Douglass Lecturer
New Brunswick, NJ, February 23

Research Group (current group: 3 PostDoc, 8 Ph.D., 1 Tech, 3 Undergrad, 1 HS.)

Post-Doctoral Associates Lucas Dickson (Ph.D., Univ. Berne, SNF Fellow)
 Rene de Jong (Ph.D., Univ. Netherlands, HFSP Fellow)
 Richard Wombacher (Ph.D., Univ. Heidelberg)

Ph.D. Students Laura Wingle (Chemistry, NSF Fellow)
 Rohitha SriRamaratnam** (Chemistry)
 Mike Englander* (Integrated Program)
 Josh Avins (Chemistry)
 Jonathan Bronson (Chemistry, NSF Fellow)
 Phil Effraim (MD/PhD)
 Sarah Gallagher (Chemistry, NDSEG Fellow)
 Pamela Peralta-Yahya (Chemistry, Novartis Fellow)

*joint with Prof. Ruben Gonzalez/Chemistry

**joint with Prof. Brent Stockwell/Chemistry and Biological Sciences

Research Technicians Vanessa Mondol

Undergraduate Students Monnica Chan
 William Mazur
 Nathan Pirakitikulr

Teaching Experience

Department of Chemistry, Columbia University, New York, NY
 C3443: Organic Chemistry for Undergraduates (Fall 1999, Fall 2000, Fall 2001, Fall 2002, Fall 2003, Fall 2004, Fall 2005, Fall 2006, Fall 2007)

Departments of Chemistry, Biology, and Computer Science, New York, NY
 W4510-W4511: Molecular Systems Biology (multiple faculty) (Fall 2007-Spring 2008,)

Department of Chemistry, Columbia University, New York, NY
 G4312: Chemical Biology (Spring 2001, Fall 2001, Fall 2002, Fall 2004, Fall 2006)

Department of Chemistry, Columbia University, New York, NY
 G8312: Current Topics in Protein Chemistry (Spring 2001, Fall 2001, Fall 2002)

Department of Chemistry, Columbia University, New York, NY
 C3046: Intensive Organic Chemistry for Undergraduates (Spring 1999)

Department of Chemistry, University of California, Berkeley, CA
 Teaching Assistant, graduate course in Physical-Organic Chemistry
 Teaching Assistant, undergraduate course in Organic Chemistry

Department of Chemistry, Columbia University, New York, NY
 Teaching Assistant, undergraduate course in General Chemistry

Collaborations

Professor Steve Blacklow (Department of Pathology, Brigham Women's Hospital, Harvard Medical School) and Professor Tony Forster (Vanderbilt University)—ribosome chemistry

Professor Rich Friesner (Department of Chemistry, Columbia University)—computational analysis of selected protein variants

Professor Jingyue Ju (Columbia Genome Center and Department of Chemical Engineering, Columbia University)—high-throughput sequencing for protein engineering

Professor Mike Sheetz (Department of Biology, Columbia University)—DHFR tags

Current Support

National Institutes of Health RO1 Grant GM62867-06, 2007-2011, \$1.2M, Principal Investigator
renewed with 3.2% priority score

National Institutes of Health RO1 Grant GM0701754-01, 2004-2008, \$1.2M, Principal Investigator, Co-Principal Investigator, Prof. Mike Sheetz, Department of Biological Sciences, Columbia University

National Science Foundation Grant CHE 0350183, 2004-2008, \$540K

Consulting

Acidophil, LLC, Baltimore, MD

Service to Department

Admissions Committee, 1999-2002

Security Committee, 2000-2002

Language Committee, 1999-2001, 2003-2005

Advisor for Major in BioChemistry, 2003-present

Colloquium Coordinator, Spring 2001, Spring 2006

Undergraduate Committee, 2005-2006

Graduate Committee, 2005-2006

Safety Committee, 2003-2004

Space & Services Committee, 2006-present

Ad Hoc Committee on Undergraduate Curriculum, 2006-present

Ad Hoc Committee on Gender, 2006-present

Service to University

Faculty Member, Pharmacology Department Graduate Training Program, Biology Department Graduate Training Program, CUMC Integrated Graduate Training Program, Biophysics Graduate Training Program, M.D./Ph.D. Program

Columbia University Representative, Science Coalition “Day of Science”, 2000
Speaker, Columbia College Parents Day, 2001, 2002, 2007
Speaker, Columbia College Atlanta Alumni Organization, 2002
Faculty Representative, Columbia College Alumni Association Board of Directors, 2003-present
Committee on Honors, Awards, and Prizes, Columbia College, 2004-2006
Hamilton Award Selection Committee, Columbia College, 2005-2008
Faculty Representative, Columbia Advisory Council, Columbia Math, Science & Engineering
Secondary School, 2005-present
Faculty Representative, M.D./Ph.D. Program, Columbia University, 2007-present

Service to Field

Reviewer, *Angew. Chem.*, *ChemBioChem*, *Chem. & Biol.*, *J. Am. Chem. Soc.*, *ACS Chemical
Biology*, *Nature*, *Nature Biotechnology*, *Nature Methods*, *Nature Chemical Biology*,
Science, *Proc. Natl. Acad. Sci. USA*
Reviewer, NSF Organic Chemistry/Dynamics CAREER Panel, 2000, 2002
Reviewer, NIH BNP Study Section, 2002
Founder and Co-Chair, NYC Chemical Biology Discussion Group, New York Academy of
Sciences, 2003-present
Board of Governors, New York Academy of Sciences, 2004-2010
Editorial Advisory Board, *ChemBioChem*, Wiley VCH, 2004-present
Editorial Advisory Board, *Molecular BioSystems*, 2004-2007
Nominating Committee, Protein Society, 2006-2009
Reviewer, NIH Synthetic and Biological Chemistry B Study Section, 2006-2012
Reviewer, Beckman Young Investigator Panel, 2006, 2007
DOE GTL Bioenergy Centers Reviewer, 2007
Co-organizer, Quantitative Molecular Bioscience Course, Spetses, Greece, 2008