Curriculum Vitae: **Huimin Zhao**

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I. PERSONAL HISTORY AND PROFESSIONAL EXPERIENCE

A. Educational Background

University of Science and Technology of China (USTC), B.S., Biology, June 1992
California Institute of Technology, Ph.D., Chemistry, June 1998

B. List of Academic Positions since Final Degree

Centennial Endowed Chair of Chemical and Biomolecular Engineering, UIUC, 2008-date
Professor, Chemical and Biomolecular Engineering, UIUC, August 2008-date
Associate Professor, Chemical and Biomolecular Engineering, UIUC, August 2006-date
Assistant Professor, Chemical and Biomolecular Engineering, UIUC, July 2000-August 2006
Faculty, Institute for Genomic Biology, UIUC, March 2004-date
Affiliate, Chemistry, UIUC, January 2004-date
Affiliate, Center for Biophysics and Computational Biology, UIUC, December 2000-date
Affiliate, Bioengineering, UIUC, December 2000-date
Affiliate, Biotechnology Center, UIUC, December 2000-date
Affiliate, Biochemistry, UIUC, August 2007-date

C. Other Professional Employment

Project Leader, Industrial Biotechnology, The Dow Chemical Company, San Diego, CA, April 1998 - May 2000

D. Honors, Recognitions, and Outstanding Achievements

Fellow of the American Institute for Medical and Biological Engineering (AIMBE), 2009-date
Centennial Endowed Chair of Chemical and Biomolecular Engineering, UIUC, 2008-date
Engineering Council Award for Excellence in Advising, UIUC College of Engineering, 2008
Young Investigator Award, American Chemical Society (ACS) Division of Biochemical Technology, 2008
University Scholar, UIUC, 2007
Outstanding Overseas Young Chinese Scholars Award, 2007
Helen Corley Petit Scholar, UIUC College of Liberal Arts and Sciences, 2006
DuPont Young Professor Award, 2005
Xerox Award for Faculty Research, UIUC College of Engineering, 2005
W. H. Peterson Award for Best Poster Presentation, ACS Division of Biochemical Technology (to R. Woodyer), 2005
Beckman Fellow, UIUC Center for Advanced Study, 2005

NSF CAREER Award, 2004
Excellence in Teaching Award, UIUC School of Chemical Sciences, 2004
Collins Scholar, UIUC College of Engineering, 2001
Dow Chemical Company Special Recognition Award, 1999 and 2000

E. Invited Lectures and Invited Conference Presentations since Last Promotion

1. "Directed Evolution of Biocatalysts." The Dow Chemical Company, Midland, MI, October 20, 1997.
2. "Directed Molecular Evolution." Shanghai Institute of Biochemistry, Chinese Academy of Science, Shanghai, China, May 20, 2000.
3. "Directed Molecular Evolution." Institute of Life Sciences, Fudan University, Shanghai, China, May 22, 2000.
4. "A Dehalogenase Based Process for Epichlorohydrin Production." IBC Sixth Annual World Congress on Enzyme Technologies, San Diego, CA, February 28, 2001.
5. "Directed Evolution of Enzymes and Pathways for Bioprocess Development." Bristol-Myers Squibb, New Brunswick, NJ, March 12, 2001.
6. "Directed Molecular Evolution: Technology and Applications." Department of Pharmacology, University of Florida, Gainesville, FL, February 5, 2002.
7. "Directed Molecular Evolution." Cabot Corporation, Boston, February 26, 2002.
8. "Outrunning Nature: *in vitro* Evolution of Enzymes." Biotechnology Research Institute, Canadian National Research Council, Montreal, Canada, March 28, 2002.
9. "Directed Evolution of Enzymes and Industrial Biocatalysis." Green Chemistry Workshop, University of Illinois, Urbana, IL, April 19, 2002.
10. "Directed Evolution of Superior Biocatalysts." Maxygen, Redwood City, CA, May 6, 2002.
11. "Directed Evolution and Biocatalysis." Department of Energy (DOE) Workshop on Catalysis, Gaithersburg, Maryland, May 14, 2002.
12. "Directed Evolution of Enzymes, Pathways and Genomes." U.S. Army Research Office (ARO) Workshop on Bio-Fuel Cells, Washington, DC, July 1, 2002.
13. "Directed Evolution of Human Manganese Superoxide Dismutase." ACS Annual Meeting, Boston, MA, August 21, 2002.
14. "Biomolecular Engineering in the Post-genomic Era." Molecular and Chemical Biology Symposium, University of Illinois, Urbana, IL, January 17, 2003.
15. "Directed Evolution of Enzymes and Multi-enzyme Complexes." Strategic Research Institute's First Annual Meeting on "Enzymes and Biocatalysis for Drug Discovery and Development." San Diego, CA, January 30, 2003.
16. "Biosynthesis of Thermally Stable Energetic Compounds through Rational Design and Directed Evolution." Office of Naval Research's Coolfont V meeting, Coolfont, West Virginia, April 13, 2003.
17. "Biocatalysts Engineering Through Rational Design and Directed Evolution." Schering-Plough, Union, NJ, August 5, 2003.
18. "Biocatalysts Engineering Through Rational Design and Directed Evolution." Cargill, Minneapolis, MN, September 9, 2003.
19. "Biomolecular Engineering in the Post-Genomic Era." Department of Food Science and Human Nutrition, University of Illinois, Urbana, IL, September 25, 2003.

20. "Protein Engineering of Phosphate Dehydrogenase for the Development of a Novel NAD(P)H Regeneration System." ACS Annual Meeting, Anaheim, CA, March 28, 2004.
21. "Biomolecular Engineering for Biomedical Applications." Department of Biomedical Engineering, University of Irvine, Irvine, CA, April 1, 2004.
22. "Protein Engineering of Nanomachines." Beckman Institute, University of Illinois, Urbana, IL, April 14, 2004.
23. "Directed Evolution of Human Estrogen Receptors for Fun and Profits." Symposium on the Evolution of Biomolecular Structure, Michigan State University, East Lansing, MI, June 4, 2004.
24. "Directed Molecular Evolution for Fun and Profit." Monsanto, St. Louis, MO, July 7, 2004.
25. "Biocatalyst Development through Rational Design and Directed Evolution." Roquette, Lestrem, France, November 15, 2004.
26. "Protein Stabilization by Directed Evolution." DARPA/HHS Protein Preservation Workshop, Fairfax, VA, January 12, 2005.
27. "Biocatalyst and Bioprocess Development via Biomolecular Engineering." Kraft, Glenview, IL, January 31, 2005.
28. "Directed Evolution: Technology and Applications." Dow AgroSciences, Indianapolis, IN, February 7, 2005.
29. "Biomolecular Engineering for Fun and Profit." Department of Chemical and Biological Engineering, University of Wisconsin, Madison, WI, February 8, 2005.
30. "Directed Molecular Evolution for Fun and Profit." Argonne National Laboratories, Argonne, IL, February 17, 2005.
31. "Biomolecular Engineering of Genetic Switches and Biological Catalysts." Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, February 24, 2005.
32. "Biomolecular Engineering of Genetic Switches and Biological Catalysts." Department of Chemical and Environmental Engineering, University of California, Riverside, CA, February 25, 2005.
33. "Development of a Novel Enzymatic NAD(P)H Regeneration System." The Tenth Institute of Biological Engineering, University of Georgia, Athens, GA, March 4-6, 2005.
34. "Biomolecular Engineering for Biocatalyst and Bioprocess Development." Symposium on Biocatalysis, ACS Annual Meeting, San Diego, CA, March 13, 2005.
35. "Biomolecular Engineering of Genetic Switches and Biological Catalysts." Department of Chemical and Biological Engineering, Northwestern University, Evanston, IL, April 14, 2005.
36. "Development of a Novel Enzymatic NAD(P)H Regeneration System for Industrial Biocatalysis." Biochemical Engineering XIV, Harrison Hot Springs, BC, Canada, July 14, 2005.
37. "Directed Evolution of Proteins and Pathways." U.S. Government's Science and Technical Expert Partnership (STEP) Program Workshop on Synthetic Biology, McLean, VA, July 27, 2005.
38. "Biomolecular Engineering for Fun and Profit." Department of Chemical and Biomolecular Engineering, University of Illinois, Urbana, IL, September 13, 2005.
39. "Directed Evolution: Technology and Applications." Air Force Office of Science and Research Cell-Like Entity (CLE) workshop, Fairborn, OH, September 14, 2005.

40. “Development of a Novel Enzymatic NAD(P)H Regeneration System for Industrial Biocatalysis.” Biotechnology Research and Development Consortium (BRDC) workshop, Chicago, IL, September 15, 2005.
41. “Biomolecular Engineering for Fun and Profit.” Department of Chemical Engineering, University of Massachusetts, Amherst, MA, September 22, 2005.
42. “Development of a Novel Enzymatic NAD(P)H Regeneration System for Industrial Biocatalysis.” ECI Enzyme Engineering XVIII, Gyeong-Ju, Korea, October 13, 2005.
43. “Biocatalyst and Bioprocess Development via Biomolecular Engineering.” International Symposium on Biocatalysis and Bioprocess Engineering II, Shanghai, China, October 17, 2005 (keynote lecture).
44. “Biomolecular Engineering for Fun and Profit.” Department of Chemical Engineering, Tsinghua University, Beijing, China, October 18, 2005.
45. “Biomolecular Engineering for Fun and Profit.” Institute of Biophysics, Chinese Academy of Science, China, October 19, 2005.
46. “Biomolecular Engineering for Fun and Profit.” College of Life Sciences, University of Science and Technology of China, Hefei, Anhui, China, October 20, 2005.
47. “Biomolecular Engineering for Fun and Profit.” Department of Biochemistry, Nanjing University, Nanjing, China, October 21, 2005.
48. “Biomolecular Engineering for Fun and Profit.” Department of Chemical Engineering, Purdue University, West Lafayette, IN, October 25, 2005.
49. “Biomolecular Engineering for Fun and Profit.” Department of Chemical Engineering, University of California, Los Angeles, CA, January 13, 2006.
50. “Biomoelcular Engineering of Proteins and Pathways.” School of Molecular and Cell Biology, University of Illinois, Urbana, IL, January 21, 2006.
51. “Biomoelcular Engineering of Proteins and Pathways.” Department of Chemical Engineering, University of Delaware, Newark, DE, February 10, 2006.
52. “Biomolecular Engineering of Genetic Switches and Biological Catalysts.” Department of Chemistry, Emory University, Atlanta, GA, February 13, 2006.
53. “Biomoelcular Engineering for Fun and Profit.” Department of Chemical Engineering, University of Southern California, Los Angeles, CA, February 23, 2006.
54. “Bioinformatics Tools for Biomolecular Engineering.” The First UIUC Bioinformatics Summit, University of Illinois, Urbana, IL, March 9, 2006.
55. “Biomoelcular Engineering for Fun and Profit.” Department of Chemical Engineering, Rensselaer Polytechnic Institute, Troy, NY, March 27, 2006.
56. “Biomass Conversion through Biomolecular Engineering.” Symposium on Sustainable Bioenergy: Focus on the Future of Biofuels and Chemicals, Urbana, IL, April 13-14, 2006.
57. “Biocatalyst Development through Biomolecular Engineering.” Society for Industrial Microbiology Annual Meeting, Baltimore, MD, August 2, 2006.
58. “Directed Evolution of Genetic Switches and Circuits.” Nano-Bio Group, Urbana, IL November 3, 2006.
59. “Biomolecular Engineering for Fun and Profit.” Department of Chemical Engineering and Materials Science, University of Minnesota, Twin Cities, MN, November 21, 2006.
60. “Biomolecular Engineering of Genetic Switches and Biological Catalysts.” Department of Physics, University of Illinois, Urbana, IL, March 9, 2007.

61. “Directed Evolution of Gene Switches and Enzyme Biocatalysts.” Northern Illinois University, April 27, 2007.
62. “Directed Evolution of Gene Switches and Enzyme Biocatalysts.” Shanghai Institute of Plant Physiology, Chinese Academy of Science, Shanghai, China, May 11, 2007.
63. “Biomolecular Engineering for Fun and Profit.” School of Chemical Engineering and Technology, Tianjin University, May 15, 2007.
64. “Directed Biomolecular Engineering for Fun and Profit.” School of Biochemical Engineering, East China University of Science and Technology, May 22, 2007.
65. “Industrial Biotechnology: Surfing the Third Wave of Biotechnology.” Department of Chemical Engineering and Materials Science, University of Minnesota, Twin Cities, MN, June 7, 2007.
66. “Biosynthesis of Xylitol from Renewable Biomass.” ECI Biochemical Engineering XV, Quebec City, PQ, Canada, July 16, 2007.
67. “Evolution in Reverse: Engineering a Xylose-Specific Xylose Reductase.” Society for Industrial Microbiology Annual Meeting, Denver, CO, August 1, 2007.
68. “Biomolecular Engineering for Industrial Biotechnology and Bioenergy.” Biotechnology Institute, University of Minnesota, Twin Cities, MN, August 23, 2007.
69. “Discovery, Characterization, and Engineering of Phosphonic Acids.” Department of Chemistry, Vanderbilt University, Nashville, TN, September 10, 2007.
70. “Surfing the Third Wave of Biotechnology.” Department of Chemical Engineering, University of Colorado, Denver, CO, October 30, 2007.
71. “Surfing the Third Wave of Biotechnology.” Department of Chemical Engineering, Princeton University, Princeton, NJ, December 12, 2007.
72. “Biomolecular Engineering for Fun and Profit.” Department of Biomedical and Chemical Engineering, Syracuse University, Syracuse, NY, February 29, 2008.
73. “Synthetic Biology for Fun and Profit.” 2nd Annual IGB Fellows Symposium, University of Illinois, Urbana, IL, April 4, 2008.
74. “Development of New Biocatalysts for Pharmaceutical Applications.” Pfizer Global R & D, Groton, CT, April 7, 2008.
75. “Microbial Synthesis of Phloroglucinol and Xylitol.” Fifth World Congress on Industrial Biotechnology and Bioprocessing, Chicago, IL, April 30, 2008.
76. “Production of fine chemical phloroglucinol and antimalarial drug FR900098 in *E. coli*.” ECI Natural Products II, Whistler, Canada, June 24, 2008.
77. “Microbial Synthesis of Phloroglucinol and Xylitol.” The 2008 Korean Society of Microbiology and Biotechnology (KMB) International Symposium and Annual Meeting, Seoul, Korea, June 26, 2008.
78. “Industrial Biotechnology: Surfing the Third Wave of Biotechnology.” Kongkuk University, Seoul, Korea, June 27, 2008.
79. “Enzymatic and Microbial Synthesis of Xylitol from Renewable Biomass.” Gordon Research Conference on Biocatalysis, Smithfield, RI, July 6-11, 2008.
80. “Metalloenzymes: Mechanisms, Structures, and Applications.” NSF CENTC Summer School, University of Washington, Seattle, WA, July 24, 2008.
81. “Discovery, Characterization, and Engineering of Novel *N*-Oxygenases.” Society for Industrial Microbiology Annual Meeting, San Diego, CA, August 12, 2008.

82. "Directed Evolution for Fun and Profit." American Chemical Society Annual Meeting, Philadelphia, PA, August 20, 2008.
83. "New Tools for Pathway Engineering." Gevo, Denver, CO, August 25, 2008.
84. "Development of New Tools for Gene Therapy." Cystic Fibrosis Focus Group, University of Illinois, Urbana, September 11, 2008.
85. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." University of California, Berkeley, CA, September 29, 2008.
86. "Microbial Synthesis of Phloroglucinol and Xylitol." The Thirteenth International Biotechnology Symposium and Exhibition, Dalian, China, October 15, 2008.
87. "Industrial Biotechnology: Surfing the Third Wave of Biotechnology." Jiangnan University, Wuxi, China, October 17, 2008.
88. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China, October 20, 2008.
89. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." Beijing University of Chemical Technology, Beijing, China, October 21, 2008.
90. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." Genencor Shanghai R&D Center, Shanghai, China, October 23, 2008.
91. "Harnessing the Power of Synthetic Biology and Chemical Biology." Shanghai Jiaotong University, Shanghai, China, October 24, 2008.
92. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." Novozymes, Davis, CA, November 3, 2008.
93. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." Rice University, Houston, TX, January 8, 2009.
94. "Harnessing the Power of Chemical and Synthetic Biology." Department of Statistics, University of Illinois, Urbana, IL, March 5, 2009.
95. "Surfing the Third Wave of Biotechnology: Turning Trash to Cash." SUNY at Buffalo, Buffalo, NY, April 8, 2009.

F. Offices Held in Professional Societies

Program Chair (2009), Division of Biochemical Technology, American Chemical Society
Program co-Chair (2008), Society for Industrial Microbiology
Program Chair (2009), Society for Industrial Microbiology

G. Editorships of Journals or Other Learned Publications

Editorial Board Member, Applied Biochemistry and Biotechnology, 2004-present

H. Consultancy

OMT, Inc., Palo Alto, CA, 2008-date
Pfizer, Groton, CT, 2008-date
zuChem, Peoria, IL, 2007-present
British Petroleum (BP), Naperville, IL, 2007-2008
Member of Scientific Advisory Board, Gevo, Pasadena, CA, 2006-present
Maxygen, Redwood City, CA, 2005-present
Cabot Corporation, Boston, MA, 2002
Fox/Atkins Development, Urbana, IL, 2002

The Dow Chemical Company, Midland, MI, 1997
Diversa, Inc., San Diego, CA, 1996

II. PUBLICATIONS AND CREATIVE WORKS

Publication Key:
# Denotes any publication derived from the candidate's thesis.
* Denotes publication that has undergone stringent editorial review by peers.
+ Denotes publication that was invited and carries special prestige and recognition.

A. Doctoral Thesis Title
1. *Enzyme Design by Directed Evolution*, 1998.

B. Books Authored or Co-Authored (in print or accepted)
not applicable

C. Books Edited or Co-Edited (in print or accepted)
not applicable

D. Chapters in Books (in print or accepted)
1. # H. Zhao, J. C. Moore, A. A. Volkov and F. H. Arnold. "Methods for Optimizing Industrial Enzymes by Directed Evolution." In *Manual of Industrial Microbiology and Biotechnology*, 2nd Ed. (A. L. Demain and J. E. Davies, Eds.) pp. 597-604, ASM Press, Washington, DC, 1999.
2. *+ H. Zhao and W. Zha. "Evolutionary Methods for Protein Engineering." In *Enzyme Functionality: Design, Engineering and Screening*, (A. Svendsen Ed.) pp. 353-373, Marcel Dekker, Inc., New York, NY, 2003.
3. W. Zha, T. Zhu, and H. Zhao. "Family Shuffling with Single-stranded DNA." In *Methods in Molecular Biology*, Volume 231, pp. 93-99: Directed Evolution Library Creation: Methods and Protocols, (F.H. Arnold and G. Georgiou, Eds.), Humana Press Inc., Totowa, NJ, 2003.
4. O. Esteban, R. D. Woodyer, and H. Zhao. "*In vitro* DNA recombination by Random Priming." In *Methods in Molecular Biology*, Volume 231, pp. 101-106: Directed Evolution Library Creation: Methods and Protocols, (F.H. Arnold and G. Georgiou, Eds.), Humana Press Inc., Totowa, NJ, 2003.
5. H. Zhao. "A pH Indicator Based Screening Method for Hydrolytic Haloalkane Dehalogenase." In *Methods in Molecular Biology*, Volume 230, pp. 213-221: Directed Enzyme Evolution: Screening and Selection Methods (F.H. Arnold and G. Georgiou, Eds.), Humana Press Inc., Totowa, NJ, 2003.
6. + R. D. Woodyer, T. Johannes, and H. Zhao. "Cofactor Regeneration for Biocatalytic Applications." In *Enzyme Technology*, (A. Pandey, C. Webb, C. S. Soccol, and C. Larroche, Eds.) pp. 83-101, Asiatech Publishers, Inc., New Delhi, India, 2004.
7. *+ T. Johannes, M. Simurdiak and H. Zhao. "Biocatalysis." In *Encyclopedia of Chemical Processing*, (S. Lee, Ed.) pp. 101-110, Marcel Dekker, Inc., New York, NY, 2006.

8. *+ Z. Chen and H. Zhao. “Protein Design.” In *Encyclopedia of Chemical Processing*, (S. Lee, Ed.) pp. 2467-2477, Marcel Dekker, Inc., New York, NY, 2006.
9. *+ Shao, Z., Ang. E. and H. Zhao. “Biomolecular Engineering.” In *Encyclopedia of Chemical Processing*, (S. Lee, Ed.) pp. 171-182, Marcel Dekker, Inc., New York, NY, 2006.
10. *+ T. Johannes, R. Woodyer, and H. Zhao. “High Throughput Screening Methods for Oxidoreductases.” In *Enzyme Assays: High-throughput Screening, Genetic Selection and Fingerprinting*, (J.L Reymond, Ed.) pp. 77-93, Wiley VCH-Verlag GmbH, Weinheim, Germany, 2006.
11. *+ S. Rubin-Pitel, C. M.-H. Cho, W. Chen, and H. Zhao. “Directed Evolution Tools in Bioproduct and Bioprocess Development.” In *Bioprocessing for Value-Added Products from Renewable Resources: New Technologies and Applications*, (S.-T. Yang, Ed.) pp. 49-72, Elsevier Science, New York, NY, 2006.
12. *+ N. U. Nair and H. Zhao. “Improving Proteins by Directed Evolution.” In *Handbooks for Metabolic Engineering*, (C. Smolke, Ed.) CRC Press, Taylor and Francis Group, Boca Raton, FL, accepted.
13. *+ F. Wen, M. McLachlan, and H. Zhao. “Novel and Improved Enzymes through Directed Evolution.” In *Wiley Encyclopedia of Chemical Biology*, John Wiley & Sons, Hoboken, NJ, 2008, DOI: 10.1002/9780470048672.wecb125.
14. *+ M. DeSieno, J. Du, and H. Zhao. “Protein Engineering of Enzymes with Altered Substrate and Cofactor Specificity. “ In *Protein Engineering Handbook*, (S. Lutz, U. Bornscheuer, Eds.), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, accepted.
15. *+ M. Mclachlan, R.P. Sullivan, and H. Zhao. “Directed Enzyme Evolution and High Throughput Screening.” In *Biocatalysis for the Pharmaceutical Industry-Discovery, Development, and Manufacturing*, (J. Tao, G., Lin, and A. Liese, Eds.) John Wiley and Sons, in press.
16. *+ F. Wen, S. Rubin-Pitel, and H. Zhao. “Engineering of Therapeutic Proteins.” *In Protein Engineering and Design*, (J. Cochran and S. Park, Eds.), CRC Press, Taylor & Francis Group, Boca Raton, FL, accepted.

E. Monographs (in print or accepted)
not applicable

F. Articles in Journals (in print or accepted)
1. *# Y. Shi, H. Zhao and C. Wang. “Relative Binding Free Energy Calculations of DNA to Daunomycin and its 13-Dihydro Analogue.” *International Journal of Biological Macromolecules*, 15, 247-251 (1993).
2. *# H. Zhao and F. H. Arnold. “Optimization of DNA Shuffling of High Fidelity Recombination.” *Nucleic Acids Research*, 25, 1307-1308 (1997).
3. *# H. Zhao and F. H. Arnold. “Functional and Non-functional Mutations Distinguished by Random Recombination of Homologous Genes.” *Proceedings of National Academy of Sciences of the United States of America*, 94, 7997-8000 (1997).
4. *# H. Zhao and F. H. Arnold. “Combinatorial Protein Design: Strategies for Screening Protein Libraries.” *Current Opinion in Structural Biology*, 7, 480-485 (1997).
5. *# Z. Shao, H. Zhao, L. Giver and F. H. Arnold. “Random-Priming *in vitro* Recombination: An Effective Tool for Directed Evolution.” *Nucleic Acids Research*, 26, 681-683 (1998).

6. *# H. Zhao, L. Giver, Z. Shao, J. A. Affholter and F. H. Arnold. "Molecular Evolution by Staggered Extension Process (StEP) *in vitro* Recombination." *Nature Biotechnology*, 16, 258-261 (1998).
7. *# H. Zhao and F. H. Arnold. "Directed Evolution Converts Subtilisin E into a Functional Equivalent of Thermitase." *Protein Engineering*, 12, 47-53 (1999).
8. *+ H. Zhao, K. Chockalingam and Z. Chen. "Directed Evolution of Enzymes and Pathways for Industrial Biocatalysis." *Current Opinion in Biotechnology*, 13, 104-110 (2002).
9. * Z. Chen and H. Zhao. "A Highly Efficient and Sensitive Screening Method for Trans-activation Activity of Estrogen Receptors." *Gene*, 306, 127-134 (2003).
10. * J. Sun, J. A. Katzenellenbogen, H. Zhao, and B.S. Katzenellenbogen. "DNA Shuffling Method for Generating Estrogen Receptor α and β Chimeras in a Yeast System." *Biotechniques*, 34, 278-288 (2003).
11. *+ W. A. van der Donk and H. Zhao. "Recent Developments in Pyridine Nucleotide Regeneration." *Current Opinion in Biotechnology*, 14, 421-426 (2003).
12. *+ H. Zhao and W. A. van der Donk. "Cofactor Regeneration for Use in Biocatalysis." *Current Opinion in Biotechnology*, 14, 583-589 (2003).
13. * R.D. Woodyer, W. A. van der Donk and H. Zhao. "Relaxing the Nicotinamide Cofactor Specificity of Phosphite Dehydrogenase by Rational Design." *Biochemistry*, 42, 11604-11614 (2003).
14. *+ R. D. Woodyer, W. Chen and H. Zhao. "Outrunning Nature: Directed Evolution of Superior Biocatalysts." *Journal of Chemical Education*, 81, 126-133 (2004).
15. *+ H. Zhao. "Staggered Extension Process (StEP) *in vitro* DNA Recombination." *Methods in Enzymology*, 388, 42-49 (2004).
16. * W. Zha, Z. Shao, J. W. Frost, and H. Zhao. "Rational Pathway Engineering of Type I Fatty Acid Synthase Allows Biosynthesis of Triacetic Acid Lactone from D-Glucose *in vivo*." *Journal of the American Chemical Society*, 126, 4534-4535 (2004).
17. * O. Esteban, and H. Zhao. "Directed Evolution of Soluble Single-chain Human Class II MHC Molecules on the Yeast Cell Surface." *Journal of Molecular Biology*, 340, 81-95 (2004).
18. * Z. Chen, B. S. Katzenellenbogen, J. A. Katzenellenbogen, and H. Zhao. "Directed Evolution of Human Estrogen Receptor Variants with Significantly Enhanced Androgen Specificity and Affinity." *Journal of Biological Chemistry*, 279, 33855-33864 (2004).
19. * R. Woodyer, M. Simurdiak, W. A. van der Donk, and H. Zhao. "Heterologous Expression, Purification and Characterization of a Highly Active Xylose Reductase from *Neurospora crassa*." *Applied and Environmental Microbiology*, 71, 1642-1647 (2005).
20. * Z. Chen and H. Zhao. "Rapid Creation of a Novel Protein Function by *in vitro* Co-evolution." *Journal of Molecular Biology*, 348, 1273-1282 (2005).
21. * K. Chockalingam, Z. Chen, J. A. Katzenellenbogen, and H. Zhao. "Directed Evolution of Specific Receptor-Ligand Pairs for Use in the Creation of Gene Switches." *Proceedings of National Academy of Sciences of the United States of America*, 102, 5691-5696 (2005).
22. * J. Achkar, M. Xian, H. Zhao, and J. W. Frost. "Biosynthesis of Phloroglucinol." *Journal of the American Chemical Society*, 127, 5332-5333 (2005).
23. * K. Chockalingam and H. Zhao. "Creating New Specific Ligand-Receptor Pairs for Transgene Regulation." *Trends in Biotechnology*, 23, 333-335 (2005).

24. * E. Ang, H. Zhao, and J. P. Obbard. “Bioremediation of Persistent Organic Pollutants via Biomolecular Engineering.” *Enzyme and Microbial Technology*, 37, 487-496 (2005).
25. * R. Woodyer, H. Zhao, and W. A. van der Donk. “Mechanistic Investigation of a Highly Active Phosphite Dehydrogenase Mutant and its Application for NADPH Regeneration.” *FEBS Journal*, 272, 3816-3827 (2005).
26 * T. Johannes, R. Woodyer, and H. Zhao. “Directed Evolution of a Thermostable Phosphite Dehydrogenase for NAD(P)H Regeneration.” *Applied and Environmental Microbiology*, 71, 5728-5734 (2005).
27. * J. Lee, M. Simurdiak, and H. Zhao. “Reconstitution and Characterization of Aminopyrrolnitrin Oxidase that Catalyzes Unusual Arylamine Oxidation.” *Journal of Biological Chemistry*, 280, 36719-36728 (2005).
28. * Z. Chen and H. Zhao. “A Highly Sensitive Selection Method for Directed Evolution of Homing Endonucleases.” *Nucleic Acids Research*, 33, e154 (2005).
29. * J. Lee and H. Zhao. “Mechanistic Studies on the Conversion of Arylamines into Arylnitro Compounds by Arylaminopyrrolnitrin Oxygenase: Identification of Intermediates and Kinetic Studies.” *Angewandte Chemie International Edition*, 45, 622-625 (2006).
30. * D. Xie, Z. Shao, J. Achkar, W. Zha, J. W. Frost, and H. Zhao. “Microbial Synthesis of Triacetic Acid Lactone.” *Biotechnology and Bioengineering*, 93, 727-736 (2006).
31. * R. Woodyer, W. A. van der Donk, and H. Zhao. “Optimizing a Biocatalyst for Improved NAD(P)H Regeneration: Directed Evolution of Phosphite Dehydrogenase.” *Combinatorial Chemistry and High Throughput Screening*, 9, 237-245 (2006).
32. * S. Rubin-Pitel and H. Zhao. “Recent Advances in Biocatalysis by Directed Enzyme Evolution.” *Combinatorial Chemistry and High Throughput Screening*, 9, 247-257 (2006).
33. * T. Johannes and H. Zhao. “Directed Evolution of Enzymes and Biosynthetic Pathways.” *Current Opinion in Microbiology*, 9, 261-267 (2006).
34. * M. Simurdiak, J. Lee, and H. Zhao. “A New Class of Arylamine Oxygenases: Evidence that *p*-Aminobenzoate *N*-Oxygenase (AurF) is a Diiron Enzyme and Further Mechanistic Studies.” *ChemBioChem*, 7, 1169-1172 (2006).
35. * J. Lee, E. Ang, and H. Zhao. “Probing the Substrate Specificity of Aminopyrrolnitrin Oxygenase (PrnD) by Mutational Analysis.” *Journal of Bacteriology*, 188, 6179-6183 (2006).
36. * W. Zha, S. Rubin-Pitel, and H. Zhao. “Characterization of the Substrate Specificity of PhlD, a Type III Polyketide Synthase from *Pseudomonas fluorescens*.” *Journal of Biological Chemistry*, 281, 32036-32047 (2006).
37. * K. Chockalingam, J. Luba, H. S. Nick, D. N. Silverman, and H. Zhao. “Engineering and Characterization of Human Manganese Superoxide Dismutase Mutants with High Activity and Low Product Inhibition.” *FEBS Journal*, 273, 4853-4861 (2006).
38. * R. Woodyer, Z. Shao, P. M. Thomas, N. L. Kelleher, J. A. V. Blodgett, W. M. Metcalf, W. A. van der Donk, and H. Zhao.”Heterologous Production of Fosfomycin and Identification of the Minimal Fosfomycin Biosynthetic Cluster.” *Chemistry & Biology*, 13, 1171-1182 (2006).
39. * H. Zhao and W. Zha. “*In vitro* ‘Sexual’ Evolution through the PCR-based Staggered Extension Process (StEP).” *Nature Protocols*, 1, 1865-1871 (2006).
40. * T. Johannes, R. Woodyer, and H. Zhao. “Efficient Regeneration of NADPH using an Engineered Phosphite Dehydrogenase.” *Biotechnology and Bioengineering*, 96, 18-26 (2007).

41. * R. Woodyer, G. Li, H. Zhao and W. A. van der Donk. “New Insight into the Mechanism of Methyl Transfer during the Biosynthesis of Fosfomycin.” *Chemical Communications,* 359-361 (2007).
42. * E. Ang, J.P. Obbard, and H. Zhao. “Probing the Molecular Determinants of Aniline Dioxygenase Substrate Specificity.” *FEBS Journal*, 274, 928-939 (2007).
43. * N. Nair and H. Zhao. “Biochemical Characterization of an L-Xylulose Reductase from *Neurospora crassa." Applied and Environmental Microbiology*, 73, 2001-2004 (2007).
44. * H. Zhao. “Directed Evolution of Novel Protein Functions.” *Biotechnology and Bioengineering,* 98, 313-317 (2007).
45. * J. Lee and H. Zhao. “Identification and Characterization of a Flavin:NADH Reductase (PrnF) Involved in the Novel Two-component Arylamine Oxygenase.” *Journal of Bacteriology*, 189, 8556-8563 (2007).
46. * R. P. Sullivan and H. Zhao. “Cloning and Characterization of a Highly Active L-Arabinitol Dehydrogenase from *Neurospora crassa*.” *Applied Microbiology and Biotechnology*, 77, 845–852 (2007).
47. * M. McLachlan, T. Johannes, and H. Zhao. “Further Improvement of Phosphite Dehydrogenase Thermostability by Saturation Mutagenesis.” *Biotechnology and Bioengineering,* 99, 268-274 (2008).
48. * W. Zha, S. Rubin-Pitel, and H. Zhao. “Molecular Breeding of Type III Polyketide Synthases for Improved Productivity”, *Molecular Biosystems*, 4, 246-248 (2008).
49. * N. Nair and H. Zhao. “Evolution in Reverse: Engineering a D-Xylose-specific Xylose Reductase.” *ChemBioChem*, 9, 1213-1215 (2008).
50. * F. Wen, O. Esteban, and H. Zhao. “Rapid Identification of CD4+ T-cell Epitopes Using Yeast Displaying Pathogen-derived Peptide Library.” *Journal of Immunological Methods*, 336, 37-44 (2008).
51. * Y. Choi, H. Zhang, J. S. Brunzelle, S. Nair, and H. Zhao. “*In vitro* Reconstitution and Structure of an Arylamine *N*-Oxygenase Involved in Biosynthesis of Aureothin.” *Proceedings of National Academy of Sciences of the United States of America*, 105, 6858-6863 (2008).
52. * Z. Shao, J. A. V. Blodgett, B. T. Circello, R. Woodyer, G. Li, W. A. van der Donk, W. W. Metcalf, and H. Zhao. “Biosynthesis of 2-Hydroxyethylphosphonate, an Unexpected Intermediate Common to Multiple Phosphonate Biosynthetic Pathways.” *Journal of Biological Chemistry*, 23161-23168 (2008).
53. * A. C. Eliot, B. M. Griffin, P. M. Thomas, T. W. Johannes, N. L. Kelleher, H. Zhao and W. W. Metcalf. “Cloning, Expression, and Biochemical Characterization of *Streptomyces rubellomurinus* Genes Required for Biosynthesis of Antimalarial Compound FR900098.” *Chemistry and Biology*, 15, 765-770 (2008).
54. * S. Rubin-Pitel, H. Zhang, J. S. Brunzelle, T. Vu, H. Zhao, and S. Nair. “Distinct Structural Elements Dictate the Specificity of the Pentaketide Resorcylic Acid Synthase from *Neurospora crassa*.” *Chemistry and Biology*, 15, 1079-1090 (2008).
55. * E. Ang, J. P. Obbard, and H. Zhao. “Directed Evolution of Aniline Dioxygenase with Improved and Novel Activity.” *Applied Microbiology and Biotechnology*, accepted.
56. * K. M. D. Islam, M. Dilcher, C. Thurow, I. Krimmelbein, C. Vock, V. Gonzalez, H. Zhao, L. Tietze, and C. Gatz. “Directed Evolution of Estrogen Receptor Proteins with Altered Ligand-binding Specificities.” *Protein Engineering, Design, and Selection*, accepted.

57. * N. Nair and H. Zhao. “Mutagenic Inverted Repeat Assisted Genome Engineering (MIRAGE).” *Nucleic Acids Research*, accepted.
58. * H. Zhao and W. Chen. “Chemical Biotechnology: Microbial Solutions to Global Change.” *Current Opinion in Biotechnology*, in press.
59. * Z. Shao, H. Zhao, and H. Zhao. “DNA Assembler, an *in vivo* Genetic Method for Rapid Construction of Biochemical Pathways.” *Nucleic Acids Research*, accepted.

G. Creative Works

not applicable

H. Bulletins, Reports, or Conference Proceedings (in print or accepted)

1. # H. Zhao, L. You, and F. H. Arnold. “Strategy for the Directed Evolution of a Peptide Ligase.” *Proceedings of the 13th Enzyme Engineering Conference, Annals of the New York Academy of Sciences,* 799, 1-6 (1996).
2. # F. H. Arnold, L. Giver, A. Gershenson, H. Zhao, and K. Miyazaki. “Directed Evolution of Mesophilic Enzymes into Their Thermophilic Counterparts.” *Annals of the New York Academy of Sciences*, 870, 400-403 (1999).

I. Abstracts (in print or accepted)

1. H. Zhao, R. Woodyer, T. Johannes. “Protein engineering of phosphite dehydrogenase for the development of a novel NAD(P)H regeneration system.” *Abstracts of Papers of the American Chemical Society* 227, 130 (2004).
2. E. Ang, J. Obbard, and H. Zhao. “Engineering an Enzymatic Carbazole Denitrogenation Pathway.” *Abstracts of Papers of the American Chemical Society* 229, 223 (2005).
3. E. Ang, Z. Chen, and H. Zhao. “Towards Engineering of an Androgen Receptor Equivalent from the Human Estrogen Receptor α.” *Abstracts of Papers of the American Chemical Society* 229, 242 (2005).
4. R. Woodyer, T. Johannes, W. A. van der Donk, and H. Zhao. “Protein Engineering of Phosphite Dehydrogenase for NAD(P)H Regeneration.” *Abstracts of Papers of the American Chemical Society* 229, 229 (2005).
5. H. Zhao, R. Woodyer, T. Johannes, and M. Mclachlan. “Development of a novel phosphite dehydrogenase based NAD(P)H regeneration system for industrial biocatalysis.” *Abstracts of Papers of the American Chemical Society*, 230, (2006).
6. H. Zhao, K. Chockalingam, M. Mclachlan, and K. Lai. “Protein engineering of gene switches.” *Abstracts of Papers of the American Chemical Society*, 230, (2006).
7. H. Zhao, Z. Chen, Y. Choi, and S. Rubin-Pitel. “Directed evolution of homing endonuclease for gene targeting.” *Abstracts of Papers of the American Chemical Society*, 230, (2006).
8. H. Zhao and N. Nair. “Evolution in reverse: engineering a xylose-specific xylose reductase.” *Abstracts of Papers of the American Chemical Society*, 231, (2007).
9. H. Zhao, Z. Shao, and R. Woodyer. “Biosynthesis of fosfomycin.” *Abstracts of Papers of the American Chemical Society*, 231, (2007).

J. Book Reviews (in print or accepted)

not applicable

K. Other

(1). Patents Issued and Pending (*: from UIUC)

1. F. H. Arnold, Z. Shao, J. A. Affholter, H. Zhao, and L. Giver. Recombination of Polynucleotide Sequences Using Random or Defined Primers. US 6,153,410 (2000).
2. H. Zhao. Improved Recombinant Haloalphatic Dehalogenases. PCT/US 00/06132 (1998).
3. F. H. Arnold, Z. Shao, H. Zhao, and L. Giver. ECB Deacylase Mutants. US 6,361,988 (2002).

*4. H. Zhao and O. Esteban, Universal Peptide-Binding Scaffolds and Protein Chips. US 7,442,773.

*5. H. Zhao, W. A. van der Donk, W. Metcalf, T. Johannes, and R. D. Woodyer. Phosphite Dehydrogenase Mutants for Nicotinamide Cofactor Regeneration. US 7,402,419 (2008).

*6. H. Zhao, R. D. Woodyer, M. Simurdiak, and W. A. van der Donk. Cloning and Expression of a Novel Xylose Reductase for Conversion of Xylose into Xylitol. US60/579,710.

*7. H. Zhao and Z. Chen. Rapid Creation of a Novel Protein Function by *in vitro* Coevolution. US60/654,269.

*8. H. Zhao and K. Chockalingam. Novel Protein Engineering Strategies for Significantly Altering Ligand Selectivity. US60/658,986.

*9. H. Zhao and Z. Chen. A Highly Sensitive Selection Method for Directed Evolution of Homing Endonucleases. US60/709,923.

*10. H. Zhao. Engineering of Recombinant Yeast for Butanol Production. UIUC TF06195.

*11. H. Zhao, K. Chockalingam, J. Katzenellenbogen, P. Chambon, D. Metzger. New Orthogonal Ligand-Receptor Pairs for Regulating Protein Functions. UIUC TF07001.

*12. H. Zhao, H. Zhao, and Z. Shao. Pathway Assembler - A Novel Highly Efficient, One-step Method for Assembling Biochemical Pathways in Yeast. UIUC TF07025.

*13. H. Zhao, and N. Nair. A Novel One-Step Method for Genome Engineering. UIUC TF08078.

(2). Zhao Group in the News

1. "Prospecting for Proteins." Elizabeth K. Wilson, *Chemical and Engineering News*, pp. 38-43, April 12, 2002.
2. "Molecular sex for fun and profit." Ken Garber, *Latin Trade*, pp. 57-59, May 2001.
3. "Fatty acid pathway, glucose produce triacetic acid lactone" Jim Barlow, News Bureau, UIUC, April 1, 2004.
4. "Sweeter way to make drug precursor." In-Pharma Technologist.com, June 4, 2004.
5. "Researchers improve design of genetic on-off switches." Jim Barlow, News Bureau, UIUC, April 7, 2005. Also in Medical News Today (United Kingdom, April 8, 2005), Innovations Report (Germany, April 8, 2005), Technocrat.net (April 8, 2005), and Bio.com Weekly Newsletter (April 13, 2005), Lincolndailynews.com (June 8, 2005).
6. "By creating molecular bridge, scientists change function of a protein." Jim Barlow, News Bureau, UIUC, May 5, 2005. Also in Biocompare (May 6, 2005), Medical News Today (United Kingdom, May 6, 2005), Innovations Report (Germany, May 9, 2005), Bio.com Weekly Newsletter (May 11, 2005), and Science Daily (May 17, 2005).
7. "Scientists use 'bridge' to change protein function." BioScience World (Canada, May 10, 2005).

8. "Researchers develop new way to make proteins." Greg Kline, The News-Gazette, June 6, 2005.
9. "Cloning techniques produce FDA-approved Antibiotic." Kristen Aramthanapon, News Bureau, UIUC, November 27, 2006. Also in Unite Press International (November 28), Biology News Net (Canada, November 28), Innovation Report (Germany, November 28), PhysOrg.com (November 28), and Daily India (November 28).
10. "UI researchers using faster-growing bacteria for antibiotics." Greg Kline, The News-Gazette, December 10, 2006.
11. "Scientists use cloning to create antibiotic." LAS News, College of Liberal Arts and Sciences, UIUC, January 3, 2007.

(3) Awards and Honors by Students

1. Zhilei Chen
   - Best Oral Presentation, The 17th CMG/MBTG Research Symposium, Urbana, IL, 2004
   - Eugene Rabinowitch Graduate Fellowship, Center for Biophysics and Computational Biology, 2006
2. Karuppiah Chockalingam
   - Best Oral Presentation, The 18th CMG/MB Research Symposium, Urbana, IL, 2005
   - Second Best Poster Award, GSAC Research Symposium, Urbana, IL, 2005
   - Best Poster Award, UIUC Biotechnology Job Fair, Urbana, IL, 2005
3. Ryan Woodyer
   - W. H. Peterson Award for Best Student Poster Presentation, ACS Biochemical Technology Division, 2005
   - Henry Drickamer Graduate Fellowship, Department of Chemistry, UIUC, 2004-2005
4. Sheryl Rubin-Pitel
   - NSF Graduate Research Fellowship, 2005-2007
   - Second Place Award for Poster Presentation, 7th GSAC Research Symposium, Urbana, IL, 2008
   - Harantty Travel Award, Department of Chemical and Biomolecular Engineering, UIUC, 2008
5. Tyler Johannes
   - Best Poster Award, 4th GSAC Research Symposium, Urbana, IL, 2005
   - Mavis Memorial Scholarship Fellowship, College of Engineering, UIUC, 2006-2007
   - First Place Award for Poster Presentation, 6th GSAC Research Symposium, Urbana, IL, 2007
6. Fei Wen
   - Second Place Award for Poster Presentation, GSAC Research Symposium, Urbana, IL, 2006
7. Matthew DeSieno
   - NIH Chemistry and Biology Interface Trainee, 2007-2009
8. Victor Gonzalez
   - NIH Chemistry and Biology Interface Trainee, 2005-2007
9. Nikhil Nair
   - Mavis Memorial Scholarship Fellowship, College of Engineering, UIUC, 2008-2009

- Henry Drickamer Graduate Fellowship, Department of Chemical and Biomolecular Engineering, UIUC, 2008-2009
- Third Place Award for Oral Presentation, 7th GSAC Research Symposium, Urbana, IL, 2008
- Best Oral Presentation, The 21st CMG/MBTG Research Symposium, Urbana, IL, 2008
- Harantty Travel Award, Department of Chemical and Biomolecular Engineering, UIUC, 2008

10. Ryan Sullivan
    - First Place Award for Oral Presentation, 7th GSAC Research Symposium, Urbana, IL, 2008
11. Ryan Cobb
    - NIH Chemistry and Biology Interface Trainee, 2008-2010
12. Dawn Eriksen
    - NSF Graduate Research Fellowship, 2008-2011

(4) Unpublished Conference Paper Presentations (presenting author underlined)

1. H. Zhao, Y. Li, and F.H. Arnold. "Strategies for Directed Evolution of a Peptide Ligase." XIII International Enzyme Engineering Conference, San Diego, CA, October 15-20, 1995.
2. H. Zhao and F.H. Arnold. "Functional and Non-functional Mutations Distinguished by Random Recombination of Homologous Genes." Proteins Gordon Research Conference, Holderness, New Hampshire, June 15-20, 1997.
3. H. Zhao and F.H. Arnold. "Directed Evolution of New Biocatalysts: Subtilisin E as a Test Case." AIChE Annual Meeting, Los Angeles, CA, November 12, 1997.
4. H. Zhao. "The Development of a Dehalogenase-based Process for the Production of Commodity Chemicals." AIChE Annual Meeting, Dallas, TX, November 18, 1999.
5. H. Zhao. "Directed Evolution of Highly Active Antifreeze Proteins." AIChE Annual Meeting, Reno, NV, November 5, 2001.
6. Z. Chen and H. Zhao. "Functional Studies of Human Estrogen Receptor via Directed Evolution." AIChE Annual Meeting, Indianapolis, IN, November 5, 2002.
7. K. Chockalingam and H. Zhao. "Directed Evolution of Human Manganese Superoxide Dismutase." AIChE Annual Meeting, Indianapolis, IN, November 7, 2002.
8. Z. Chen and H. Zhao. "Functional Studies of Human Estrogen Receptor via Directed Evolution." Illinois Biophysics Society Student Symposium, Urbana, IL, March 12, 2003.
9. R. Woodyer, W. A. van der Donk, and H. Zhao. "Relaxing the Nicotinamide Cofactor Specificity of Phosphate Dehydrogenase by Rational Design." ACS PRF Chemical Biology Symposium. Ithaca, NY, July 7, 2003.
10. O. Esteban and H. Zhao. "Directed Evolution of Functional Single-Chain HLA-DR1 Molecules." The Protein Society 17th Annual Symposium, Boston, MA, July 27, 2003.
11. R. Woodyer, W. A. van der Donk, and H. Zhao. "Relaxing the Nicotinamide Cofactor Specificity of Phosphite Dehydrogenase by Rational Design: Development of a NAD(P)H Regeneration Catalyst." UIUC Biochemistry Fall Research Conference, Urbana, IL, September 19, 2003.
12. Z. Chen, K. Chockalingam, and H. Zhao. "Directed Evolution of Human Estrogen Receptor for Fun and Profits." AIChE Annual Meeting, San Francisco, CA, November 20, 2003.

13. W. Zha and H. Zhao. "Rational Pathway Engineering of Type I Fatty Acid Synthase Allows Biosynthesis of Triacetic Acid Lactone from D-Glucose *in vivo*." ACS Annual Meeting, Anaheim, CA. April 1, 2004.
14. O. Esteban and H. Zhao. "Directed Evolution of Soluble Single-chain Human Class II MHC Molecules." Symposium on the Evolution of Biomolecular Structure, Michigan State University, East Lansing, MI, June 4, 2004.
15. W. Zha, Z. Shao, Z. Simurdiak, J. Lee, and H. Zhao."Biosynthesis of Thermally Stable Energetic Compounds via Pathway Engineering." Metabolic Engineering V, Lake Tahoe, CA, September 19-23, 2004.
16. K. Chockalingam and H. Zhao. "Engineering Genetic Switches for Biomedical Applications." UIUC ChBE Graduate Student Symposium, Urbana, IL, October 7, 2004.
17. W. Zha and H. Zhao. "Rational Pathway Engineering of a Type I Fatty Acid Synthase for Biosynthesis of TAL *in vivo*." UIUC ChBE Graduate Student Symposium, Urbana, IL, October 7, 2004.
18. Z. Chen and H. Zhao. "Rapid Creation of Novel Protein Function by *in vitro* Coevolution." The Seventeenth Annual CMB/MB Research Symposium, Urbana, IL, November 4, 2004.
19. T.W. Johannes, R. Woodyer, and H. Zhao. "Directed Evolution of a Thermostable Phosphite Dehydrogenase." The Seventeenth Annual CMB/MB Research Symposium, Urbana, IL, November 4, 2004.
20. Z. Shao and H. Zhao. "*In vivo* Biosynthesis of Triacetic Acid Lactone from D-Glucose by Rational Design and Directed Evolution." AIChE Annual Meeting, Austin, TX, November 10, 2004.
21. O. Esteban and H. Zhao. "Engineering Soluble Single-chain Human Class II MHC Molecules." AIChE Annual Meeting, Austin, TX, November 12, 2004.
22. E. Ang, J. Obbard, and H. Zhao. "Engineering an Enzymatic Carbazole Denitrogenation Pathway." ACS Annual Meeting, San Diego, March 13, 2005.
23. E. Ang, Z. Chen, and H. Zhao. "Towards Engineering of an Androgen Receptor Equivalent from the Human Estrogen Receptor α." ACS Annual Meeting, San Diego, March 17, 2005.
24. R. Woodyer, T.W. Johannes, W.A. van der Donk, and H. Zhao. "Protein Engineering of Phosphite Dehydrogenase for NAD(P)H Regeneration." ACS Annual Meeting, San Diego, March 16, 2005.
25. K. Chockalingam, Z. Chen, and H. Zhao. "Directed Evolution of Human Estrogen Receptor." Biochemical Engineering XIV, Harrison Hot Springs, British Columbia, Canada, July 10, 2005 (poster).
26. R. Woodyer, W. A. van der Donk, and H. Zhao. "Directed Evolution and Application of Phosphite Dehydrogenase." 1st Annual Chemistry-Biology Interface Training Program Symposium, University of Illinois, Urbana, August 26, 2005.
27. T.W. Johannes, R. Woodyer, and H. Zhao. "Development of Phosphite Dehydrogenase-based NAD(P)H Regeneration System." UIUC ChBE Graduate Student Symposium, Urbana, IL, October 6, 2005.
28. K. Chockalingam, Z. Chen, and H. Zhao. "Systematic Approaches to the Protein Engineering of Highly Specific Receptor-Ligand Pairs." UIUC ChBE Graduate Student Symposium, Urbana, IL, October 6, 2005 (poster presentation).

29. Z. Shao, T. Johannes, H. Zhao. "Biosynthesis of Phosphonic Acid Antibiotics in *E. coli*." UIUC ChBE Graduate Student Symposium, Urbana, IL, October 6, 2005 (poster presentation).
30. W. Zha and H. Zhao. "Biosynthesis of Phloroglucinol." UIUC ChBE Graduate Student Symposium, Urbana, IL, October 6, 2005 (poster presentation).
31. T. Johannes and H. Zhao. "Development of a Phosphite Dehydrogenase-Based Nicotinamide Cofactor Regeneration System." The Eighteenth Annual CMB/MB Research Symposium, Urbana, IL, October 14, 2005 (poster presentation).
32. Chen, Z. and H. Zhao. "Directed Evolution of Homing Endonuclease with Novel DNA Sequence Specificity." The Eighteenth Annual CMB/MB Research Symposium, Urbana, IL, October 14, 2005 (poster presentation).
33. K. Chockalingam, Z. Chen, and H. Zhao. "Systematic Approaches to the Protein Engineering of Highly Specific Receptor-Ligand Pairs." The Eighteenth Annual CMB/MB Research Symposium, Urbana, IL, October 14, 2005.
34. Z. Chen and H. Zhao. "Directed Evolution of Proteins for Biomedical Application." AIChE Annual Meeting, Cincinnati, OH, October 30, 2005 (poster presentation).
35. K. Chockalingam and H. Zhao. "Systematic Approaches to the Protein Engineering of Highly Specific Receptor-Ligand Pairs." AIChE Annual Meeting, Cincinnati, OH, October 30, 2005.
36. Z. Chen and H. Zhao. "Directed Evolution of Homing Endonuclease with Altered DNA Sequence Specificity." AIChE Annual Meeting, Cincinnati, OH, October 31, 2005.
37. Z. Chen and H. Zhao. "Directed Evolution of Homing Endonuclease with Novel DNA Sequence Specificity." AIChE Annual Meeting, Cincinnati, OH, November 2, 2005 (poster presentation).
38. T.W. Johannes and H. Zhao. "Development of a Phosphite Dehydrogenase-Based Nicotinamide Cofactor Regeneration System." AIChE Annual Meeting, Cincinnati, OH, November 3, 2005.
39. K. Chockalingam, Chen, Z. and H. Zhao. "Directed Evolution of Specific Receptor-Ligand Pairs for Use in the Creation of Gene Switches." AIChE Annual Meeting, Cincinnati, OH, November 3, 2005.
40. T. Johannes and H. Zhao, "Development of a Novel Phosphite Dehydrogenase-Based NAD(P)H Regeneration System for Industrial Biocatalysis." Graduate Seminar in the Applied Chemical Sciences, Urbana, IL, May 2006.
41. H. Zhao, R. Woodyer, T.W. Johannes, and M.J. Mclachlan. "Development of a novel phosphite dehydrogenase based NAD(P)H regeneration system for industrial biocatalysis." ACS Annual Meeting, San Francisco, CA, September 10, 2006.
42. H. Zhao, K. Chockalingam, M. Mclachlan, and K. Lai. "Protein engineering of gene switches." ACS Annual Meeting, San Francisco, CA, September 13, 2006.
43. H. Zhao, Z. Chen, Y. Choi, and S. Rubin-Pitel. "Directed evolution of homing endonuclease for gene targeting." ACS Annual Meeting, San Francisco, CA, September 14, 2006.
44. E. Ang, J. Obbard, and H. Zhao. "Engineering of a Carbazole Denitrogenation Pathway through Directed Evolution." AIChE Annual Meeting, San Francisco, CA, November 14, 2006.

45. F. Wen and H. Zhao. "$CD4^+$ T-Cell Epitope Identification Using Yeast Displaying Single Chain Class II MHC Molecules as Artificial APCs." The 5th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2006 (poster presentation).
46. W. Zha and H. Zhao. "Biosynthesis of Phloroglucinol via Metabolic Pathway Engineering." The 5th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2006.
47. T.W. Johannes and H. Zhao. "Development of a Phosphite Dehydrogenase-Based Nicotinamide Cofactor Regeneration System." The 5th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2006.
48. F. Wen and H. Zhao. "$CD4^+$ T-Cell Epitope Identification Using Yeast Displaying Single Chain Class II MHC Molecules as Artificial APCs." AIChE Annual Meeting, San Francisco, CA, November 14, 2006.
49. Z. Shao, R. Woodyer, and H. Zhao. "Biosynthesis of Fosfomycin." AIChE Annual Meeting, San Francisco, CA, November 16, 2006.
50. N.U. Nair and H. Zhao. "Evolution in Reverse: Engineering a Xylose-Specific Xylose Reductase." AIChE Annual Meeting, San Francisco, CA, November 17, 2006.
51. N. Nair and H. Zhao. "Evolution in Reverse: Engineering a Xylose-Specific Xylose Reductase." ACS Annual Meeting, Boston, MA, August 19, 2007.
52. Z. Shao, R. Woodyer, and H. Zhao. "Biosynthesis of Fosfomycin." The 6th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2007.
53. N. Nair and H. Zhao. "Evolution in Reverse: Engineering a Xylose-Specific Xylose Reductase." The 6th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2007 (poster presentation).
54. S. Rubin-Pitel, W. Zha, and H. Zhao. "Protein and Metabolic Engineering to Enhance Phloroglucinol Biosynthesis." The Tenth Annual CMB/MB Research Symposium, Urbana, IL, October, 2007.
55. T.W. Johannes and H. Zhao. "Heterologous Production of the Antimalarial Drug FR-900098 in *E. coli*." AIChE Annual Meeting, Salt Lake City, UT, November, 2007.
56. M.J. McLachlan and H. Zhao. "Development of Gene Switches by Protein Engineering." AIChE Annual Meeting, Salt Lake City, UT, November, 2007.
57. M.J. McLachlan and H. Zhao. "Directed Evolution of Orthogonal Ligand Specificity in a Single Scaffold." The 6th Annual Biophysics and Computational Biology Symposium, Urbana, IL, June 6, 2008.
58. Z. Shao, H. Zhao, and H. Zhao. "DNA Assembler, a Highly Efficient Approach for Rapid Construction of Large Recombinant DNA for Metabolic Pathway Engineering and Synthetic Biology." ACS Annual Meeting, Philadelphia, PA, August 19, 2008.
59. R.P. Sullivan and H. Zhao. "Engineering a Fungal L-Arabinose Pathway towards the Utilization of Pentose Sugars for Production of Xylitol and Ethanol." The 7th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2008.
60. S.B. Rubin-Pitel, H. Zhang, J. Brunzelle, T. Vu, H. Zhao and S. Nair. "Structure-function analysis of a Type III polyketide synthase from *Neurospora crassa*." The 7th Annual UIUC ChBE Graduate Research Symposium, Urbana, Illinois, October, 2008 (poster).

61. N.U. Nair, Z. Shao, H. Zhao, T.H. Lee, R.P. Sullivan, M.J. McLachlan, T.W. Johannes, and H. Zhao. "Biobutanol from yeast. A synergistic genome and protein engineering approach." The 7th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2008.
62. F. Wen and H. Zhao. "Rapid identification of CD4+ T cell epitopes using yeast displaying pathogen-derived peptide libraries." The 7th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2008.
63. Z. Shao, H. Zhao, and H. Zhao. "DNA assembler, an in vivo genetic method for rapid construction of large recombinant DNA." The 7th Annual UIUC ChBE Graduate Student Symposium, Urbana, IL, October, 2008 (poster).
64. S.B. Rubin-Pitel, W. Zha, and H. Zhao. "Structure-function analysis of a Type III polyketide synthase from *Neurospora crassa*." The Eleventh Annual CMB/MB Research Symposium, Urbana, IL, November, 2008 (poster).
65. N.U. Nair, Z. Shao, H. Zhao, T.H. Lee R.P. Sullivan, M.J. McLachlan, T.W. Johannes, and H. Zhao. "Biobutanol from yeast. A synergistic genome and protein engineering approach." The Eleventh Annual CMB/MB Research Symposium, Urbana, IL, November, 2008.
66. F. Wen and H. Zhao. "Rapid identification of CD4+ T cell epitopes using yeast displaying pathogen-derived peptide libraries." The Eleventh Annual CMB/MB Research Symposium, Urbana, IL, November, 2008 (poster).
67. R.P. Sullivan, N.U. Nair, and H. Zhao. "Engineering a fungal L-arabinose pathway towards the utilization of pentose sugars for production of xylitol and ethanol." AIChE Annual Meeting, Philadelphia, DE, November, 2008.
68. N.U. Nair, Z. Shao, H. Zhao, R. P. Sullivan, M. McLachlan, T.W. Johannes, and H. Zhao. "Biobutanol from yeast. A synergistic genome and protein engineering approach." AIChE Annual Meeting, Philadelphia, DE, November, 2008.
69. S.B. Rubin-Pitel, W. Zha, and H. Zhao. "Directed evolution of a phloroglucinol producing Type III polyketide synthase." AIChE Annual Meeting, Philadelphia, DE, November, 2008.
70. M.A. DeSieno, T.W. Johannes, and H. Zhao. "Deciphering the late steps in FR900098 biosynthesis." AIChE Annual Meeting, Philadelphia, DE, November, 2008.

III. RESIDENT INSTRUCTION

A. Supervision of Graduate Students

M.S. Thesis Students (only for ChBE Students):

Former: 10

Current: 8

1. Karu Chockalingam, M.S., 2003, "Engineering a Gene Switch for Biomedical Applications."
2. Wenjuan Zha, M.S., 2004, "Pathway Engineering for Biosynthesis of Aromatic Compounds *in vivo*."
3. Tyler Johannes, M.S., 2005, "Development of a Phosphite Dehydrogenase Based Nicotinamide Cofactor Regeneration System."
4. Zengyi Shao, M.S., 2005, "Pathway Engineering of Triacetic Acid Lactone Biosynthesis and Fosfomycin Biosynthesis."

5. Michael Simurdiak, M.S., 2005, "Cloning, Expression, Partial Characterization, and Engineering of a Novel *N*-oxidase involved in Aureothin Biosynthesis."
6. Sheryl Rubin-Pitel, M.S. 2006, "Investigation of an in vitro Enzymatic Method for the Biosynthesis of Phloroglucinol."
7. Ryan Sullivan, M.S. 2006, "Toward the Development of a Multi-Enzymatic Process for Xylitol Synthesis from Biomass."
8. Fei Wen, M.S. 2006, "Engineering of Yeast Displaying Single-chain MHC-Peptide Complexes for Biomedical Applications."
9. Nikhil Nair, M.S. 2006, "Investigation of Enzymatic Methods for Partially Purified Hemicellulose Hydrolysate for Biosynthesis of Xylitol."
10. Victor Gonzalez, M.S. 2008, "Directed Evolution of Novel Gene Switches." joint student with John Kazenellenbogen
11. Matt DeSieno, M.S. anticipated 2009
12. Jing Du, M.S. anticipated 2009
13. Carl Denard, M.S. anticipated 2010
14. Ryan Cobb, M.S. anticipated 2011
15. Dawn Eriksen, M.S. anticipated 2011
16. Yunzi Luo, M.S. anticipated 2011
17. Jing Liang, M.S. anticipated 2011
18. Sijin Li, M.S. anticipated 2011

Ph.D. Thesis Students

Former: 6

1. Ryan Woodyer, Ph.D., August, 2005, "*Understanding, Optimization, and Application of Phosphite Dehydrogenase: Advancing NAD(P)H Regeneration*." Now a research scientist at zuChem (Peoria, IL).
2. Karu Chockalingam, Ph.D., May, 2006, "*Engineering Estrogen Receptor-based Gene Switches and a Superoxide Dismutase for Therapeutic Applications*." Now a research staff in the chemical engineering department at the Texas A & M University in 2008.
3. Zhilei Chen, Ph.D., May, 2006, "*Protein Engineering via in vitro Coevolution*." Now an assistant professor of chemical engineering at the Texas A & M University in 2008.
4. Ee-Lui Ang, Ph.D., May, 2007, "*Engineering of Aniline Dioxygenase for Bioremediation and Industrial Applications*." Now a research scientist at Codexis @ Singapore, Singapore.
5. Wenjuan Zha, Ph.D., September, 2007, "*Protein and Metabolic Engineering for Biosynthesis of Aromatic Compounds*." Now a research scientist at Codexis @ Singapore, Singapore.
6. Tyler Johannes, Ph.D., April, 2008, "Directed Evolution of Phosphite Dehydrogenase and Engineered Biosynthesis of FR-900098." Now an assistant professor of chemical engineering department at the University of Tulsa.

Current: 19

1. Zengyi Shao, Ph.D., anticipated 2008
2. Sheryl Rubin, Ph.D., anticipated 2009
3. Jane Wen, Ph.D., anticipated 2009

4. Ryan Sullivan, Ph.D., anticipated 2009
5. Nikhil Nair, Ph.D., anticipated 2010
6. Michael Mclachlan, Ph.D., anticipated 2010
7. Brad Evans, Ph.D., anticipated 2011, joint student with Neil Kelleher
8. Matt DeSieno, Ph.D. anticipated 2012
9. Jing Du, Ph.D., anticipated 2012
10. Wenling Tang, Ph.D., anticipated 2011
11. Carl Denard, Ph.D., anticipated 2012
12. Ning Sun, Ph.D. anticipated 2012
13. Jie Sun, Ph.D. anticipated 2012
14. Ryan Cobb, Ph.D. anticipated 2013
15. Dawn Eriksen, Ph.D. anticipated 2013
16. Yunzi Luo, Ph.D. anticipated 2013
17. Jing Liang, Ph.D. anticipated 2013
18. Sijin Li, Ph.D. anticipated 2013
19. Emmanuel Chanco, anticipated 2013

B. Supervision of Postdocs/Research Associates

Former: 9

1. Whankoo Kang, 2001, now Professor of Chemical Engineering at Hannam University, Korea.
2. Tongbo Zhu, 2002-2003, now a postdoc at Department of Animal Biology at UIUC
3. Olga Esteban, 2002-2004, now at MRC Laboratory of Molecular Biology, Cambridge, United Kingdom
4. Jung-kul Lee, 2004-2006, now an assistant professor at Konkuk University, Seoul, Korea.
5. Ryan Woodyer, 2005-2006, now a research scientist at zuChem, Peoria, IL.
6. Hua Zhao, 2006-2007, now a research scientist at the Institute of Chemical Engineering and Science (ICES), Singapore.
7. Yoo Seong Choi, 2006-2008, now a research professor at the Pohang University of Science and Technology (POSTECH), Korea.
8. Haige Lu, 10/2007-10/2008, now a postdoc researcher at the Memorial Sloan-Kettering Cancer Center, New York
9. Yuichi Nakagawa, 1/2008-10/2008, now in Japan

Current: 4

1. Michael Vu, 5/2008-date
2. Tae Hee Lee, 6/2008-date
3. Byoungjin Kim, 1/2009-date
4. Amit Ghosh, 1/2009-date (joint postdoc with Nathan Price)

C. Supervision of Undergraduate Students

Former: 19

Current: 1

1. Trang Vu, 2005-2007, now at Department of Chemical and Biological Engineering, University of Wisconsin, Madison.

2. Frank Qin, 2005-2006
3. Mark Laurenz, 2005-2006
4. Ka-chun Lai, 2004-2006
5. Chae Young Han, 2005
6. Junaid Begawala, 2004
7. Kathleen Sese, 2004
8. Kyle Kloepper, 2004
9. Samir Shah, 2001
10. Anna Kornafel, 2001-2002, now at General Mills, MN
11. Peter Meis, 2001-2002, now at Merck, Rahway, NJ
12. Edgar Goluch, 2001-2003, now at the Department of Bioengineering, UIUC
13. Yen Sia Low, 2002-2003, now at GlaxoWellcomeSmith, Singapore
14. Andrew Miller, 2002-2003, now at the Department of Chemical Engineering, MIT
15. Thuytram Dang, 2004, now at UIUC
16: Saroj Baha, 2006-2007, now at UIUC
17. Anu Biswas, 2006-2008, now at the Department of Chemical Engineering, UCLA
18. Jenna Wozniak, 2006-2008, now at Abbort
19. Kyle Fritschle, 2007-2008
20. Vincent Ip, 2008-date

D. Supervision of Rotation Students and Biophysics Tutorial Students

Rotation Students: 26

1. Zhilei Chen (Biophysics), 2001
2. Haili Pin (Biophysics), 2001
3. Fenglin Yin (Biophysics), 2002
4. Marina Barakova (Biophyscis), 2002
5. Shu Dong (CSB), 2002
6. Sheryl Rubin-Pitel (ChBE), 2003
7. Michael McLachlan (Biophysics), 2004
8. Hua Zhou (Biochemistry), 2005
9. Meng Chen (CSB), 2005
10. Nell Keith (BioE), 2005
11. Kara Smith (ChBE), 2005
12. Alex Parent (Chem), 2005
13. Victor Gonzalez (Chem), 2005
14. Quin Christensen (Micro), 2005
15. Brad Evans (Biochemistry), 2005
16. Po-chao Wen (Biophysics), 2005
17. Yanni Lin (MCB), 2007
18. Hui Liu (Biophysics), 2007
19. Xiaoyi Cao (Biophysics), 2007
20. Ning Sun (Biochemistry), 2007
21. Cancan Huang (Biophysics), 2007
22. Jesse Grenz (MCB), 2008
23. Abhinav Luthra (MCB), 2008

24. Neha Garg (MCB), 2008
25. Salehe Ghasempur (MCB), 2008
26. Ryan Cobb (ChBE), 2008

Tutorial Students (3):
1. Rong Cao, 2005
2. Qian Bian, 2005
3. Ayano Sakai, 2007

E. Service on Ph.D. Examination Committees

Preliminary Examination Committees (40)

2001, Zheng-guang Wang, Chemical Engineering
2002, Josh Ackerman, Chemical Engineering
2002, M. Larid Forrest, Chemical Engineering
2002, Qingjun Wang, Biophysics
2003, John Comninos, Chemistry
2003, Eric Olsen, Chemistry
2003, Su Ha, Chemical Engineering
2003, Halong Vu, Chemical Engineering
2003, Ryan Woodyer, Chemistry, Chair
2004, Karu Chockalingam, Chemical Engineering, Chair
2004, Zhilei Chen, Biophysics, Chair
2004, Emily J. Pollauf, Chemical Engineering
2004, Dan Ryan, Chemistry
2004, Chandrashekar Raman, Chemical Engineering
2005, Ee-Lui Ang, Chemical Engineering, Chair
2005, Michael Toepke, Chemical Engineering
2005, Edgar Goluch, Bioengineering
2005, Matt Levengood, Chemistry
2005, YoungJung Chang, Chemical Engineering
2005, Josh Ramsey, Chemical Engineering
2006, Wei Xie, Chemical Engineering
2006, Wenjuan Zha, Chemical Engineering, Chair
2006, Tyler Johannes, Chemical Engineering, Chair
2006, Paul Barone, Chemical Engineering
2006, Fenglin Yin, Biophysics
2007, Keng Jin Lee, Chemical Engineering
2007, Nathan Gabrielson, Chemical Engineering
2007, Zengyi Shao, Chemical Engineering, Chair
2007, David Drake, Chemical Engineering
2007, Quanming Shi, Chemical Engineering
2007, Tasha Desai, Chemical Engineering
2008, Sheryl Rubin-Pitel, Chemical Engineering
2008, Fei Wen, Chemical Engineering
2008, Ryan Sullivan, Chemical Engineering

2008, Lily Wong, Chemical Engineering
2008, Quinn Peterson, Biochemistry
2008, Yan Fan, Chemistry
2008, Sharon Hyonju Choi, Biochemistry
2008, Benjamin Schudel, Chemical Engineering
2008, Jung-un Baek, Chemistry

Final Thesis Examination Committees (25):
2002, Qingjun Wang, Biophysics
2003, Zheng-guang Wang, Chemical Engineering
2003, Josh Ackerman, Chemical Engineering
2003, M. Larid Forrest, Chemical Engineering
2003, Yu-wen Huang, Chemical Engineering
2004, Emily J. Pollauf, Chemical Engineering
2005, Anil Prakasam, Chemical Engineering
2005, Chandrashekar Raman, Chemical Engineering
2005, Ryan Woodyer, Chemistry, Chair
2005, Bridget Trogden, Chemistry
2006, Karu Chockalingam, Chemical Engineering, Chair
2006, Zhilei Chen, Biophysics, Chair
2006, Michael Toepke, Chemical Engineering
2006, Heather Relyea, Chemistry
2006, Josh Ramsey, Chemical Engineering
2006, YoungJung Chang, Chemical Engineering
2007, Edgar Goluch, Bioengineering
2007, Wei Xie, Chemical Engineering
2007, Ee Lui Ang, Chemical Engineering, Chair
2007, Wenjuan Zha, Chemical Engineering, Chair
2007, Edgar Goluch, Bioengineering
2008, Tyler Johannes, Chemical Engineering, Chair
2008, Fenglin Yin, Biophysics
2008, Monica Usrey, Chemical Engineering
2008, Keng Jin Lee, Chemical Engineering
2008, Paul Barone, Chemical Engineering
2008, Matt Levengood, Chemistry

IV. SERVICE (PUBLIC, PROFESSIONAL/DISCIPLINARY, AND UNIVERSITY)

A. Public Service

Review Panels:
NSF SBIR/STTR Phase I, Bio-based Sensors, Washington, DC, March 24-25, 2003
NIH Biochemistry Study Section, Washington, DC, November 13-14, 2003
NSF SBIR/STTR Phase I, Bio-based Sensors, Washington, DC, April 5-6, 2004
NSF Metabolic Engineering, Washington, DC, April 27-28, 2005

NSF SBIR/STTR Phase I, Industrial Bioproducts, Washington, DC, March 14-15, 2006.
NSF BES Biochemical Engineering/Biotechnology, Washington, DC, April 20-21, 2006.
NSF BES CAREER, Washington, DC, November 8-9, 2006.
NSF CBET Biochemical Engineering/Biotechnology, Washington, DC, December 3-4, 2007.

Reviewer for Grant Proposals:
National Institute of Health (NIH)
National Science Foundation (NSF)
Army Research Office (ARO)
ARO Institute for Collaborative Biotechnologies
Department of Energy (DOE)
US Department of Agriculture (USDA)
ACS Petroleum Research Fund
Research Corporation
North Dakota State Government
Chinese National Science Foundation

Workshops:
ARO's Workshop for Bio-Fuel Cells, Washington, DC, June 30-July 2, 2002
DOE's Workshop on Catalysis, Gaithersburg, Maryland, May 14-16, 2002
U.S. Government's Science and Technical Expert Partnership (STEP) Program Workshop on Synthetic Biology, McLean, VA, July 27, 2005.
ARO's Workshop on Cell-Like Entities (CLE), Fairborn, OH, September 13-14, 2005.

Search Committees:
Argonne National Laboratories Biosciences Division Director Search Committee, 2007-2008

B. Service to Disciplinary and Professional Societies and Associations

American Institute of Chemical Engineers (AIChE)
Co-chair, Advances in Biocatalysis and Protein Engineering, AIChE Annual Meeting, Reno, CA, November 5, 2001.
Chair, Combinatorial/Directed Evolution Approaches in Bioengineering, AIChE Annual Meeting, San Francisco, CA, November 20, 2003.
Chair, Advances in Metabolic Engineering, AIChE Annual Meeting, Austin, TX, November 5-12, 2004.
Chair, Advances in Metabolic Engineering, AIChE Annual Meeting, Cincinnati, OH, October 30 - November 4, 2005.

American Chemical Society
Co-chair, High throughput Screening/Genomics and Proteomics, ACS Annual Spring Meeting, Anaheim, CA, March 28-April 1, 2004.
Co-chair, Protein Expression, ACS Annual Spring Meeting, San Diego, CA, March 13-17, 2005.
Co-chair, Protein Expression, ACS Annual Fall Meeting, San Francisco, CA, September 10-14, 2006.
Symposium Chair, Emerging Technologies, ACS Annual Fall Meeting, Boston, MA, August 19-23, 2007.
Co-chair, Advances in Biocatalysis, ACS Annual Fall Meeting, Philadelphia, CA, August 17-21, 2008.

Programming Chair, BIOT Division, ACS Annual Fall Meeting, Washington DC, August 16-20, 2009.

Institute of Electrical and Electronic Engineers (IEEE)

Theme chair, Molecular, Cellular and Tissue Engineering and Biomechanics, 26th Annual International Conferences of the IEEE Engineering in Medicine and Biology Society, San Francisco, CA, September 1-4, 2004.

Member of Program Committee, 4th IEEE International Symposium on Bioinformatics and Bio Engineering, Taichung, Taiwan, May 19-21, 2004.

Society for Industrial Microbiology (SIM)

Program co-chair, Biocatalysis, Annual SIM Meeting, August 10 - August 14, San Diego, CA, 2008.

Program co-chair, Biocatalysis, Annual SIM Meeting, July 29 - August 2, Denver, CO, 2007.

Session chair, Recent Advances in Biocatalyst Development, Annual SIM Meeting, Denver, CO, July 29 - August 2, 2007.

Engineering Conference International (ECI)

Session chair, Evolutionary Approaches in Metabolic Engineering, Metabolic Engineering V International Conference, Lake Tahoe, CA, September 19-23, 2004.

Session chair, Biomolecular Evolutions and Revolutions: DNA, RNA, and Proteins, Biochemical Engineering XV International Conference, Quebec City, Canada, July 15-19, 2007

Reviewer for:

Science
Nature
PNAS
Angewandte Chemie
Journal of the American Chemical Society (JACS)
Nucleic Acids Research
Journal of Biological Chemistry
Journal of Molecular Biology
ACS Chemical Biology
Chemistry and Biology
Molecular Microbiology
Biochemistry
Analytical Chemistry
Applied and Environmental Microbiology
Journal of Immunological Methods
Biotechnology and Bioengineering
Biotechnology Progress
Biotechniques
Bioinformatics Journal
Biochimica et Biophysica Acta (BBA)
FEBS Letters
FEMS Microbiology Letters
Metabolic Engineering

Trends in Biotechnology
Trends in Microbiology
Extremophiles
Molecular Biology and Evolution
Chemical Communications
Cell Research
Cellular and Molecular Life Sciences
Tetrahedron
Expert Opinion in Biological Therapy
Nature Protocols
Journal of Molecular Catalysis B: Enzymatic
Journal of Bioscience and Bioengineering

C. University/Campus Service

UIUC Campus	
Office of Technology Management (OTM) Board of Advisors	2003-date
College of Engineering	
Ad Hoc Subcommittee to Review a Proposal to Revise Bioengineering Minor	2006
Executive Committee	2007-date
School of Chemical Sciences	
ChBE Department Head Search Committee	2002-2003
Executive Committee	2007-date
Faculty Advisor for Chemical Storeroom	2008-date
Search Committee for SCS Associate Director	2008-date
Department of Chemical and Biomolecular Engineering	
Academic Advisor for Undergraduate Students in Chemical Engineering	2000-date
Administrative Committee	2000-date
Graduate Admission Committee	2000-2007
Systems Bioinformatics Committee	2001-2003
Graduate Fellowship Coordinator	2003-date
Undergraduate Curriculum Committee	2004-2006
Shen Postdoctoral Fellowship	2005
Chair, Departmental Seminar Committee	2004-2007
Faculty Search Committee	2005-date
Chair, Biomolecular Engineering Minor Committee	2006
Department of Biochemistry	
Graduate Admission Committee	2008-2009
Department of Bioengineering	
Co-chair, Departmental Seminar Committee	2003-2004
Department of Food Science and Human Nutrition	
Search Committee for Position in Microbial Genomics	2005-2007
Department of Microbiology	
Search Committee for Position in Bioinformatics	2005-2006
Search Committee for Position in Natural Products	2006-2007
Center for Biophysics and Computational Biology	

Graduate Admission Committee	2005-2007
School of Molecular and Cell Biology	
NIH Cellular and Molecular Biology Training Grant Minority Committee	2003
Molecular Biophysics Training Grant Executive Committee	2008-date

D. Service to Other Universities/National Laboratories

Argonne National Laboratories	
Search Committee for Director of the Division of Biosciences	2007-date