Patrick S. Daugherty, Ph.D.
Department of Chemical Engineering
University of California, Santa Barbara, CA, 93106
Ph: 805-893-2610, Email: psd@engineering.ucsb.edu

Education

1999	Ph.D.	Chemical Engineering, The University of Texas at Austin
1993	B.S.	Chemical Engineering (with Honors), University of Minnesota, Minneapolis-St. Paul

Appointments

06/10-present	Professor and Vice Chair, Department of Chemical Engineering
06/10-present	Professor, Biomolecular Science and Engineering
07/07- 10	Associate Professor, Department of Chemical Engineering
07/07-10	Associate Professor, Biomolecular Science and Engineering
07/01-07	Assistant Professor, Department of Chemical Engineering
07/02-07	Assistant Professor, Biomolecular Science and Engineering
09/10-present	Scientific Advisory Board Member, CytomX Therapeutics, Inc.
07/08-09/10	Co-founder, Office of CSO, and Board member, CytomX Therapeutics, LLC
07/05-08	Co-founder, Office of CSO, and Board member, CytomX, LLC
01/04-present	Affiliate Member, California NanoSystems Institute (CNSI)
03/03-10/07	Discovery Team Leader, Institute for Collaborative Biotechnologies
05/99-07/01	Postdoctoral Research Fellow, Fred Hutchinson Cancer Center (Seattle, WA)
08/98-01/99	Visiting Engineer, SRI International (Menlo Park, CA)

Awards and Honors

2007	ACS Young Investigator Award, Biochemical Technology Division
2006	Camille Dreyfus Teacher Scholar Award
2005	National Science Foundation CAREER Award
2003	Santa Barbara Cottage Hospital Research Award
1999	NIH Virology-Oncology Fellow, FHCRC
1997	Biotechnology Training Fellow, UT-Austin
1993	3M Scholar, University of Minnesota

Professional Service

2009	Session Chair, Poster Judge, ECI Biochemical Engineering meeting
2008	Session Chair, SBE Meeting
2007	NSF CBET Proposal Review Panel
2006-	Consultant, CytomX Therapeutics, LLC.
2006	Session Organizer, SBE Meeting, Biomolecular Engineering
2006	Session Organizer and Chair, ACS Meeting
2006	Visiting Committee Panel Member, NIH-NCRR
2005	Session Chair, ACS Meeting
2004-05	Consultant, Applied BioSystems, Applera Corp.

2004 Study Section Member, Microbial Detection, NIH
2004 Review Panel Member, Biosensors, National Science Foundation

Publications (42 total)

Average number of citations per paper: 30
* Designates corresponding author(s)

1. Georgiou, G*, Stathopoulos, C, Daugherty, PS, Nayak, AR, Iverson, BL, and Curtiss III, R* (1997) Display of Heterologous Proteins on the Surface of Microorganisms: From The Screening Of Combinatorial Libraries to Live Recombinant Vaccines. *Nature Biotechnology,* 15, 29-34.

2. Daugherty, PS, Chen, G, Olsen, MJ, Iverson, BL*, and Georgiou, G* (1998) Antibody Affinity Maturation Using Bacterial Surface Display, *Protein Engineering,* 11, 825-32.

3. Daugherty, PS, Olsen, MJ, Iverson, BL*, and Georgiou, G* (1999) Development of an Optimized Expression System for the Screening of Antibody Libraries Displayed on the *E.coli* Surface. *Protein Engineering,* 12, 613-621.

4. Daugherty, PS, Chen, G, Iverson, BL *, and Georgiou, G*(2000) Quantitative Analysis of The Effect of Mutation Frequency on the Affinity Maturation of Single Chain Fv Antibodies. *Proc. Nat. Acad. Sci. U S A,* 97:2029-2034.

5. Olsen, MJ, Stephens, DL, Griffiths, D, Daugherty, PS, Georgiou, G*, and Iverson, BL* (2000) Function-Based Isolation of Novel Enzymes from a Large Library, *Nature Biotechnology,* 18, 1071-1074.

6. Daugherty, PS*, Iverson, BL, and Georgiou, G (2000) Flow Cytometric Screening of Cell-Based Libraries, *J. Immunol. Methods,* 243, 211-227.

7. Daugherty, PS* (2002) Cell Surface Display And Cytometric Screening for Protein Ligand Isolation and Engineering In: Vector Targeting for Therapeutic Gene Delivery, *Wiley Press.*

8. Bessette, PH, Nguyen, AW, Mena, MA, Daugherty, PS* (2003) Construction of Designed Combinatorial Libraries Using Gene Assembly Mutagenesis. *Meth. Mol. Biol,* Humana Press, v. 231, 29-38.

9. Nguyen, AW, Daugherty, PS* (2003) Production of Randomly Mutated Plasmid Libraries Using Mutator Strains *Meth. Mol. Biol,* Humana Press. v. 231, *39-43.*

10. Bessette, PH, Daugherty, PS* (2004) Flow Cytometric Cloning of Fluorescent Proteins from cDNA Expression Libraries, *Biotechnology Progress,* 20, 963-967.

11. Bessette, PH, Rice, J, Daugherty, PS* (2004) Rapid Isolation of High Affinity Protein Binding Peptides Using Bacterial Display, *Protein Engineering, Design & Selection,* 17(10):731-9.

12. Nguyen, AW Daugherty, PS* (2005) Evolutionary Optimization of Fluorescent Proteins for Intracellular FRET, *Nature Biotechnology*, 23(3):355-60.
Commentaries: "FRET - Feat," *Nature Biotechnology Online*, March 2005. "FRET Not Evolution," Taroncher-Oldenburg, G., *Nature Biotechnology*, March, 2005, 23, 3, p viii.

13. Mena, MA, Daugherty, PS* (2005) Computational Design of Degenerate Codon Libraries, *Protein Engineering, Design & Selection*, 18(12):559-61.

14. Hu, X, Bessette, PH, Qian, J, Meinhart, CD, Daugherty, PS*, Soh, HT* (2005) Marker Specific Sorting of Rare Cells Using Dielectrophoresis, *Proc. Natl. Acad. Sci. U S A*, 102(44) 15757-15761.
Commentaries: "Playing the Field," Eisenstein, M., *Nature*, 441, June, 2006, p1181. "Sorting Rare Cells," *Analytical Chemistry*, January, 2006, p.3

15. Dane, KY, Chan, L, Rice, JR, Daugherty, PS* (2006) Isolation of Cell Specific Peptide Ligands using Fluorescent Bacterial Display Libraries, *J. Immunol. Methods*, 309(1-2):120-9.

16. Curnow, P, Bessette, PH, Kisalilus, D, Murr, MM, Daugherty, PS, Morse, DE* (2005) *JACS*, Enzymatic Synthesis of Layered Titanium Phosphates at Low Temperature and Neutral pH by Cell-Surface Display of Silicatein-α. *J. Am. Chem. Soc.*, 127(45):15749-55.

17. Rice, JJ, Schohn, A, Bessette, PH, Boulware, KT, Daugherty, PS* (2006) Bacterial Display Using Circularly Permuted Outer Membrane Protein OmpX Yields High Affinity Peptide Ligands, *Protein Science*, 10(3), 825-36.
News Article: "Developing Sophisticated Protein-Based Drugs," K. John Morrow, *Genetic Engineering News*, 25,13, p1.

18. Boulware, KT, Daugherty, PS* (2006) Protease Specificity Determination Using Cellular Libraries of Peptide Substrates (CLiPS), *Proc. Natl. Acad. Sci. U S A*, 103(20), 7583-88.
Commentaries: "Clipping Away at Protease Substrates," DeFrancesco, L., *Nature Biotechnology*, June, 2006, 24, 6, p665. "Sorting out the Best Targets," Eisenstein, M., *Nature Methods*, July, 2006, 3, 7, p498. Best Poster, AIChE National Meeting (2006), Division 15, (to K. Boulware)

19. Dane, KY, Zhu, Y, Nguyen, AW, Daugherty, PS* (2006) Detection of Caspase-3 Activity using Intracellular Fluorescent Protein FRET," *Meth. Mol. Biol.* Humana Press, In press.

20. Oh, SH, Kenrick, SA, Daugherty, PS, Soh, HT* (2006) Microfluidic Protein Detection Using Genetically Engineered Bacteria. *J. Proteome Res.*, 5(12):3433-7.

21. Mena, MA, Treynor, T, Mayo, SL, Daugherty, PS* (2006) Blue Fluorescent Proteins with Enhanced Brightness and Photostability from a Structurally Targeted Library, *Nature Biotechnology*, 24(12):1569-71.
Commentaries: "Welcoming an improved blue fluorescent protein," *Nature Methods*, Jan, 2007, 4, 1, p498. "Don't feel blue; a brighter fluorescent protein is now here," *Biophotonics Intl.*, Jan, 2007, p15.

22. You, X, Nguyen, AW, Jabaiah, A, Sheff, MA, Thorn, KS, Daugherty, PS* (2006) Intracellular Protein Interaction Mapping with FRET Hybrids, *Proc. Natl. Acad. Sci. U S A*, 103 (48).

Commentary: "FRETing for a more detailed interactome," Kaganman, I, *Nature Methods*, Feb, 2007, 4, 2, p112-113.

23. Bessette, PH, Hu, X, Soh, HT*, Daugherty, PS.* (2007) Microfluidic library screening for mapping antibody epitopes. *Analytical Chemistry*, Mar 1;79(5):2174-8.

24. Hall SS, Mitragotri S, Daugherty PS*. (2007) Identification of peptide ligands facilitating nanoparticle attachment to erythrocytes. *Biotechnol Prog*. ;23(3):749-54..

25. Daugherty PS*. (2007) Protein engineering with bacterial display. *Current Opinion in Structural Biology*, Aug; 17(4):474-80.

26. Kim U, Shu CW, Dane KY, Daugherty PS*, Wang JY, Soh HT. (2007) Selection of mammalian cells based on their cell-cycle phase using dielectrophoresis. *Proc Natl Acad Sci USA* Dec 26; 104(52): 20708.

27. Kenrick SA, Rice JJ, Daugherty PS*. (2008) Flow cytometric sorting of bacterial surface-displayed libraries. Curr Protoc Cytom. Oct; Chapter 4:Unit4.6.

28. Dubin G, Stec-Niemczyk J, Kisielewska M, Pustelny K, Popowicz GM, Bista M, Kantyka T, Boulware KT, Stennicke HR, Czarna A, Phopaisarn M, Daugherty PS, Thøgersen IB, Enghild JJ, Thornberry N, Dubin A, Potempa J. (2008) Enzymatic activity of the Staphylococcus aureus SplB serine protease is induced by substrates containing the sequence Trp-Glu-Leu-Gln. *J Mol Biol*.; 379(2):343-56.

29. Rice, JJ and Daugherty, PS*. (2008) Directed evolution of a biterminal bacterial display scaffold enhances the display of diverse peptides, *Protein Eng Des Sel*. 2008 Jul; 21(7):435-42.

30. Kim U, Qian J, Kenrick SA, Daugherty PS, Soh HT*. (2008) Multitarget dielectrophoresis-activated cell sorter. *Anal Chem*. Nov 15;80(22):8656-61.

31. Dane, KY, Gottstein, C, Daugherty, PS*. (2009) Cell surface profiling with peptide libraries yields ligand arrays that classify breast tumor subtypes, *Mol. Cancer Therapy*. 2009 May 5. Epub ahead of print.

32. Stec-Niemczyk, J, Pustelny, K, Kisielewska, M, Bista, M, Boulware, KT, Stennicke, HR, Thogersen, I, Daugherty, PS, Enghild, J, Baczynski, K, Popowicz, GM, Dubin, A, Potempa, J., Dubin, G. (2009) Structural and functional characterization of SplA, an exclusively specific protease of *Staphylococcus aureus*, *Biochemical Journal.* 1;419(3):555-64.

33. Hall SS, Daugherty PS*. (2009) Quantitative specificity-based display library screening identifies determinants of antibody-epitope binding specificity. *Protein Science*, Sep;18(9):1926-34.

34. Thomas JM, Daugherty PS*. (2009) Proligands with protease-regulated binding activity identified from cell-displayed prodomain libraries. *Protein Science*. Oct;18(10):2053-9.

35. Kenrick SA, Daugherty PS*. (2010) Bacterial display enables efficient and quantitative peptide affinity maturation. *Protein Eng Des Sel*. Jan; 23(1):9-17. (Cover article)

36. Karim AY, Kulczycka M, Kantyka T, Dubin G, Jabaiah A, Daugherty PS, Thogersen IB, Enghild JJ, Nguyen KA, Potempa J. (2010) A novel matrix metalloprotease-like enzyme (karilysin) of the periodontal pathogen Tannerella forsythia ATCC 43037. *Biol Chem.* 2010 Jan;391(1):105-17.

37. Boulware KT, Jabaiah A, Daugherty PS*. (2010) Evolutionary optimization of peptide substrates for proteases that exhibit rapid hydrolysis kinetics. *Biotechnol. Bioeng.* Feb 10; 106(3). [Epub ahead of print] (Featured article)

38. Nguyen, AW, You, X, Jabaiah, AM, Daugherty, PS*. (2010) Fluorescent Protein FRET Applications: Protein Engineering, Intracellular Sensing, and Interaction Screening, *Principles of Fluorescence Spectroscopy, Fluorescent Proteins and Their Uses.* Vol. 12.

39. Jabaiah A, Daugherty PS*. (2010) Directed evolution of protease beacons that enable sensitive detection of endogenous MT1-MMP activity in tumor cells. *Chem. & Biol*. In revision.

40. Getz JA, Rice JJ, Daugherty PS*. (2010) Design of knottin thrombin inhibitors resistant to proteolysis. Submitted.

41. Little, L, Dane K, Daugherty P, Healy K and Schaffer D. (2010) Exploiting Bacterial Peptide Display Technology to Engineer Biomaterials for Neural Stem Cell Culture". Submitted.

42. Xiao Y, Dane K, Uzawa T, Csordas A, Qian J, Soh T, Daugherty P, Lagally E; Heeger, A, Plaxco K*. (2010) Detection of Telomerase Activity in High Concentration of Cell Lysates Using Primer-Modified Gold Nanoparticles. Submitted.

Patents and Applications (12 total)

1. Iverson, BL, Georgiou, G, Olsen, MJ, Chen, G, Daugherty, PS. (1997) DIRECTED EVOLUTION OF ANTIBODIES AND ENZYMES, US20040072740, US20070258954, US20030036092, WO/1998/049286A2. *Licensed to Maxygen, Inc. (Redwood City, CA, NASDAQ: MAXY)

2. Daugherty, PS., Bessette, PH., Rice, JJ, POLYPEPTIDE DISPLAY LIBRARIES AND METHODS OF MAKING AND USING THEREOF, US 2007/0099247 A1, WO/2005/047461A2, EP1668114A2. *Licensed to CytomX Therapeutics, LLC. (Goleta, CA)

3. Daugherty, PS, Boulware, K, CELLULAR LIBRARIES OF PEPTIDE SEQUENCES (CLIPS) AND METHODS OF USING THE SAME, US20070065878, EP1919931A2, WO/2007/027935A2, Patents Pending. *Licensed to CytomX Therapeutics, LLC. (Goleta, CA)

4. Daugherty, PS, Kenrick, SA, PEPTIDES BINDING TO VASCULAR ENDOTHELIAL GROWTH FACTOR, US20090035317

5. Daugherty, PS, Stagliano, NE., Thomas, J, Kamath, K, West, JW, Khare, S. ACTIVATABLE BINDING POLYPEPTIDES AND METHODS OF IDENTIFICATION AND USE THEREOF, WO/2009/025846A2, Patents Pending. * Licensed to CytomX, LLC. (Goleta, CA)

6. Daugherty, PS, Jabaiah, A. PEPTIDE SUBSTRATES OPTIMIZED FOR CLEAVAGE BY MATRIX METALLOPROTEASE, Patents Pending

7. Soh, HT, Hyun, S, Daugherty, PS. SCREENING MOLECULAR LIBRARIES USING MICROFLUIDIC DEVICES, WO/2008/127292A2 Patents Pending. International Application No. PCT/US2007/022118.
   * Licensed to Cynvenio Biosystems, LLC. (Goleta, CA)

8. OH, S, Singh, AK, Zhang, Y, Kim, U, Daugherty, PS, Soh, H, Ferguson, BS. MICROFLUIDIC MAGNETOPHORETIC DEVICE AND METHODS FOR USING THE SAME, US20080124779, WO/2008/048616A2, Patents Pending.
   * Licensed to Cynvenio Biosystems, LLC. (Goleta, CA)

9. Daugherty, PS, Rice, JJ. METHODS FOR ENHANCING BACTERIAL CELL DISPLAY OF PROTEINS AND PEPTIDES, US20090062142, WO/2009/014726A1, Patents Pending.
   * Licensed to CytomX, LLC. (Goleta, CA)

10. Schaffer, DV, Healy, KE, Miller, L, Daugherty, PS. SYNTHETIC CELL PLATFORMS AND METHODS OF USE THEREOF, WO/2008/118392A2, Patents Pending.

11. Additional Patents Pending. Titles confidential.

Courses Taught (UC- Santa Barbara)

ChE 119	Current topics in Chemical Engineering
ChE 132A	Analytical Methods in Chemical Engineering
ChE 171	Introduction to Biochemical Engineering
ChE 258	Protein Engineering
ChE 172	Cell Biology for Engineers (new required course)
BMSE 251	Introduction to Biopharmaceutical Engineering (new course)
ChE 180A, B	Undergraduate Chemical Engineering Laboratory

Post-Doctoral Research Associates Supervised (7 Total)

Paul H. Bessette, Ph.D. (Senior Scientist, CytomX)
Sang-Hyun Oh, Ph.D. (Assistant Prof., U of MN)
Sangho Lee, Ph.D. (Scientist, KO)
Claudia Gottstein, M.D. (Director, BioNano Lab UCSB CNSI)
Yimin Zhu, M.D., Ph.D. (Assistant Prof., University, China)
Oran Erster, Ph.D. (UCSB)
Tobias Schoep, Ph.D. (UCSB)

Doctoral Students Supervised (15 total, 9 completed)

Annalee W. Nguyen, (Ph.D. 2/2006) (Scientist, Applied Biosystems)

Marco A. Mena (Ph.D. 12/2006) (Scientist, Celexion)
Kevin T. Boulware (Ph.D. 4/2007) (Posdoctoral Fellow)
Jeffrey J. Rice (Ph.D. 6/2007) (Postdoctoral Fellow, EPFL)
Karen Dane (Ph.D. 5/2008) (Postdoctoral Fellow, EPFL)
Sejal Sempat (Ph.D. 6/2008) (Business Development Associate, Novartis)
Xia You (Ph.D. 3/2008) (Postdoctoral Fellow, U of Washington)
Sophia Kenrick (Ph.D. 8/2009) (Scientist, Wyatt Laboratories, Inc)
Jerry Thomas (Ph.D. 8/2009) (Scientist, Adimab)
Abeer Jabaiah
Jennifer Getz
John Ballew
Brad Spatola
Tyler Shropshire
Serra Elliot

Undergraduate Students Supervised in Research (18 total)
Athra Kaviani, Yu-Anne Chen, David Lee, Laura-Marie Nucho, Abeer Jabaii , Kristy Troung, Aaron Schohn, Lisa A. Chan, Melanie Matheu, Ulrich Wuellner, Monica Lozano, Heather Hultgen, Sean Beal, Victor Morales, Santosh Gupta, Brad Downey, Shannon Murphy, Caroline Pietrzyk

Other Teaching Contributions
- Developed and taught new UCSB course in Engineering Cell Biology
- Developed and taught new Freshmen Seminar entitled 'Biotechnology Controversies'.
- Successfully secured external funding for, and developed new laboratory experiment for undergraduate laboratory; 'Fluorescent Fermentations'.
- Developed and taught new graduate level course (BMSE 251) entitled, "Introduction to Biopharmaceutical Engineering," attended by chemistry, engineering, and biology students.
- Co-developed and taught a new 4 credit Chemical Engineering math course ChE132A, which integrates computer math tools with analytic approaches.
- Developed new graduate level course in Protein Engineering, offered Spring 2010.

Selected Invited Presentations

1. Rapid Molecular Recognition Element Isolation Using Bacterial Display Peptide Libraries, UCSB MROP Presentation, January 2002
2. Evolution of the Efficiency of FRET in Fluorescent Proteins, University of California, Santa Barbara, Dept. of Chemistry, March, 2003.
3. Accelerating Affinity Reagent Development, BD Biosciences, San Jose, CA, April, 2003.
4. Molecular Recognition in High Gear: Bacterial Display, Genencor International, San Francisco, CA, July, 2004.
5. New Strategies for Therapeutic Protein Engineering, Neuroscience Research Institute, UCSB, March, 2004.
6. The FACS on Molecular Recognition: Bacterial Display Peptide Libraries, Lawrence Livermore National Labs, Bio-Security Group, April, 2004.
7. Biotechnology Tools for Discovery and Synthesis, Army Research Labs, Natick Soldier Center, & USAMRIID, Ft. Detrick, August, 2004.

8. The FACS on Bacterial Display: Engineering Molecular Recognition, Bioprocess Technology Institute, University of Minnesota, Minneapolis, MN, September, 2004.
9. The FACS on Biomolecular Recognition: Bacterial Display Peptide Libraries, USAMRIID, Fort Detrick, MD, September, 2004.
10. Accelerating Affinity Reagent Development Using Bacterial Display Peptide Libraries, Applied BioSystems, Santa Clara, CA, October, 2004.
11. Bacterial Display Process Development for Peptide Affinity Reagent Production, American Society for Microbiology, San Diego, CA, November, 2004.
12. Display Library Screening-on-a-Chip, Phage Display Meeting, Cambridge, MA, May 2005.
13. New Proteomics Tools for Systems Biology, FOSBE Meeting, Santa Barbara, CA, August, 2005.
14. Exploiting Molecular Specificity for Biopharmaceutical Development, Johns Hopkins University, October, 2005.
15. Exploiting Molecular Specificity for Biopharmaceutical Development, University of Texas at Austin, November, 2005.
16. Novel Routes to Peptide Therapeutics, Northwestern University, April 2006.
17. Robust Display Technology for Peptide Ligand Engineering, ICB - Industry Conference, UCSB, May, 2006.
18. Improvement of Tumor Targeting Specificity with Protein Engineering, CCNE – Educational Meeting, Burnham Research Institute, San Diego, CA, June, 2006.
19. Design and Assembly of Protein Therapeutics, Columbia University, New York, NY, October. 2006.
20. Assembly of Responsive Protein Therapeutics, MCDB Department, UCSB, October, 2006.
21. Protein Switches for the Detection of Atherosclerotic Plaque. Pen Meeting, Washington University, St. Louis, MO, October 2006.
22. Modular Assembly of Protein Therapeutics, California Institute of Technology, Pasadena, CA, November, 2006.
23. Intracellular ligand screening with FRET-hybrids, HHMI Janelia Farms, VA, October, 2007.
24. Developing Peptides with New Properties for Nanomedicine, Gordon Research Conference, February, 2008.
26. Peptide Engineering for Diagonstic Development, UCSB, Engr. Insights, 10/06.
27. New Strategies for Therapeutic Peptide Engineering, Caltech, Pasadena, Chem & Chem Eng., 11/06
28. New Strategies for Therapeutic Peptide Engineering, UCSB, Dept of MCDB, 11/06
29. Protein technologies for Therapeutic and Diagnostic Engineering, UCLA, Chem Eng. Dept., 3/07
30. Building proteins with new therapeutic functions from peptide modules, ACS National Meeting, Boston, MA, August, 2007.
31. Antibody specificity profiling with bacterial display, Antibody Engineering Meeting, San Diego, CA, December, 2007.
32. Development of Protease activated plaque targeting molecules, PEN Meeting, Marina Del Rey, CA, March, 2008.
33. Molecular Switches for Tumor Targeting, Moores Cancer Center, UCSD, San Diego, CA, March 2008.

34. Emerging Diagnostic Technologies, Birnamwood Country Club Luncheon, Montecito, CA, May 2008.
35. Presto Chango! Revisiting the magic bullet concept. University of Colorado, Boulder, February 18, 2009.
36. Reviving the magic bullet analogy for antibody therapeutics, University of Pennsylvania, PA, April, 2009.
37. Molecular Biotechnology by the Billion. Bimolecular discovery technologiesMillipore, October, 2009
38. Beyond the "Magic Bullet." New strategies for site-specific targeting of therapeutic and diagnostic agents, University of Washington, WAm Nov, 2009.
39. Antibodies go pro. Renesselaer Polytechnic Institute, NY, Dec 2009
40. Evolution of biomolecular discovery technologies, GE Global R&D, NY, Dec 2009
41. New strategies for the development of site-targeted protein therapeutics, University of Minnesota, Mpls, January 1010.
42. Biomolecular discovery technologies for nanomedicine. Sanford-Burnham Institute for Medical Research – UCSB Retreat, February, 2010.
43. Protein ligand and substrate discovery using cell-based libraries, SBS Meeting, San Francisco, 2010.
44. Antibodies go pro. Protease mediated targeting of antibody activity in vivo. Life Science Symposium - LSS 2010, EPFL, Luassane, SZ.

Selected Contributed Presentations

1. Bacterial Display Peptide Libraries, ECI Biochemical Engineering Meeting, Boulder, CO, July 2003.
2. Rapid Isolation of High Affinity Protein-Binding Peptides Using Bacterial Display, ACS National Meeting, Anaheim, CA. March, 2004.
3. Bacterial Display Peptide Libraries From Targets to Affinity Reagents in 24 Hours, World Congress on Biotechnology, Santiago, Chile, October, 2004.
4. Accelerating Affinity Reagent Development with Bacterial Display Peptide Libraries, AIChE National Meeting, Austin, TX, November, 2004.
5. Protease Isolation and Evolution in the Intracellular Environment, ACS National Meeting, San Diego, CA, March, 2005.
6. High-Throughput Protease Screening Using Optimized Fluorescent Protein FRET, ECI Biochemical Engineering Meeting, XIV, July, 2005.
7. High-Throughput Protease Screening Using Optimized Fluorescent Protein FRET, Protein Society Meeting, San Diego, CA, August, 2005.
8. N-Terminal Bacterial Display Peptide Libraries, Protein Society Meeting, San Diego, CA August, 2005.
9. Blue Fluorescent Proteins from a Computationally Designed Library, Protein Society Meeting, San Diego, CA, August, 2005.
10. Bacterial Substrate Display for Characterizing Protease Specificity, Protein Society Meeting, San Diego, CA, August, 2005.

11. Engineering of High Affinity Binding Peptides Using N-Terminal Bacterial Display, AIChE National Meeting, Cincinnati, OH, November, 2005.
12. Isolation of Tumor Targeting Peptides Using Fluorescent Bacterial Display Libraries, AIChE National Meeting, Cincinnati, OH, November, 2005.
13. Cell-Linked Peptide Substrates (CLiPS): A New Method for Proteolytic Enzyme Characterization, AIChE National Meeting, Cincinnati, OH, November, 2005.
14. Enhanced Blue Fluorescent Proteins Using Computational Design and Library Screening, AIChE National Meeting, Cincinnati, OH, November, 2005.
15. Optimized Fluorescent Protein FRET for Intracellular Protease Detection, Fluorescent Proteins, San Diego, CA, November, 2005.
16. Evolving Display Technology to Efficiently Search Sequence Space, PacifiChem, Honolulu, HI, December, 2005.
17. Protease Specificity Profiling with the CLiPS System, Gordon Conference on Proteases, NH, July, 2005.
18. New strategies for engineering the Properties of Peptides as Therapeutics, ACS National Meeting, San Francisco, CA, Sept, 2006.
19. Cellular Libraries of Peptide Substrates (Clips): A Method for Rapid Protease Characterization, November, 2006. AIChE Meeting, Salt Lake, UT
20. Blue fluorescent proteins with enhanced brightness and photostability from a targeted library AIChE Meeting, Salt Lake, UT, November, 2006.
21. Profiling Breast Cancer Tumor Cells with Bacterial display peptide libraries SBE Meeting, San Diego, CA, January, 2007.
22. Evolution of a Biterminal Bacterial Display Scaffold SBE Meeting, San Diego, CA, January, 2007.
23. Intracellular Sensing And Screening Of Protein-Ligand Interactions Using Fret Hybrids SBE Meeting, San Diego, CA, January, 2007.
24. Screening And Evolution Of VEGF-Binding Peptides, SBE Meeting, San Diego, CA, January, 2007.
25. A Novel Method of Antibody Profiling Using Cell Surface Display, SBE Meeting, San Diego, CA, January, 2007.
26. Engineering High-Affinity, Specific Peptide Ligands To Vascular Endothelial Growth Factor AIChE Meeting, Salt Lake, UT.
27. Intracellular Screening Of Protein-Ligand Interactions Using Fret Hybrids

    AIChE Meeting, Salt Lake, UT, November, 2007.
28. Engineering Enzymatically Activated Peptide Therapies using Bacterial Display Libraries AIChE Meeting, Salt Lake, UT, November, 2007.
29. Improved Substrates for MT1-MMP Using CLiPS, Protein Society Meeting, San Diego,CA, July 2008.
30. Enzymatically-Activated Binding Peptides, ACS National Meeting, Philadelphia, PA, August 2008.
31. Enzymatically-Activated Binding Peptides, SBE Meeting, Santa Barbara, CA, Jan, 2008.
32. Peptide Affinity maturation using bacterial display, SBE Meeting, Santa Barbara, CA, Jan, 2008.

33. Design of high stability protease inhibitors from the cyclic cystein knot scaffold, ICB Meeting, Santa Barbara, CA, March 2009.
34. Proligands: Protease-activated binding ligands, Protein Society Meeting, Zurich, June 2009.

University Service (2002-10)

2002-04	College of Engineering Executive Committee
2003-present	ARO Institute for Collaborative Biotechnologies Grant, Co-PI
2003	Development of freshman seminar: 'Biotechnology News and Views'
2003	BMSE Chair Search Committee
2003-05	Led Successful Proposal for Major Shared Research Instrumentation
2003-04	Advisory Committee, Biomolecular Science and Engineering
2003	Cancer Research Distinguished Seminar Committee
2003	Biological Systems Engineering Chair Search Committee
2003-04	Faculty Search Committee, Department of Chemical Engineering
2003-present	Neuroscience Research Institute Advisory Committee
2003-present	Chair, Cell Sorting Shared Facility
2003-present	Institute for Collaborative Biotechnologies, Executive Committee, Member
2003-present	Institute for Collaborative Biotechnologies, Team Leader
2004-05	Chair, Faculty Search Committee, Department of Chemical Engineering
2004-05	Undergraduate Curriculum Committee, Chemical Engineering
2005-06	Graduate Student Recruiting Committee
2005-06	Chair, Ph.D. Exam Kinetics Committee
2005-06	Led Successful Proposal for Biosensor Instrumentation (SPR), Lead PI
2005-06	Co-authored Successful Dreyfus Proposal for ChE Undergraduate Laboratory
2006-2008	Bionanofabrication Lab Design Committee, California Nanosystems Institute
2007-2009	ChE Graduate Affairs Committee, Chair
2008-2010	UC Biotechnology Committee, Member
2008-2010	UCSB Campus IUCUC Committee, UCSB
2008-2009	ChE Faculty Awards Committee
2010-	Alumni Relations Committee, Chair
2010-	Chair, Undergraduate Affairs Commitee
2010-	Vice Chair, Chemical Engineering