Curriculum Vitae

Scott F. Singleton, Ph.D.

Associate Professor
Division of Chemical Biology and Medicinal Chemistry
UNC Eshelman School of Pharmacy
The University of North Carolina at Chapel Hill
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Education

1994–96 National Science Foundation Postdoctoral Fellow
The Pennsylvania State University, University Park, PA
Research Advisor: Professor Stephen J. Benkovic

1994 Ph. D. in Chemistry
California Institute of Technology, Pasadena, CA
Thesis Advisor: Professor Peter B. Dervan
Dissertation: *The Thermodynamics of Oligonucleotide-directed Triple Helix Formation at Single DNA Sites*

1988 B. A., *Summa Cum Laude*, in Chemistry and Biology
Trinity University, San Antonio, TX
Thesis Advisor: Professor Benjamin F. Plummer
Dissertation: *The Photodynamics of Aceanthrylene*

Professional Experience

2003-present **Associate Professor**, Eshelman School of Pharmacy, Division of Chemical Biology & Medicinal Chemistry, University of North Carolina at Chapel Hill (appointed August, 2003)

2022-present **Faculty Lead for Minor in Pharmaceutical Sciences**, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill

2011-2019 **Division Vice Chair**, Chemical Biology & Medicinal Chemistry, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill (appointed August, 2011)

2014-2016 **Executive Director**, The Academy, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill (appointed September, 2014)

2010-2017 **Associate Professor**, School of Medicine, Department of Biochemistry & Biophysics, University of North Carolina at Chapel Hill, joint appointment (appointed October, 2010)

2010-2015 Investigator, Chemical Biology Training Program, UNC-CH

2004-2007 Investigator, Infectious Diseases Training Program, School of Pharmacy, UNC-CH

2003-04 Member, Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill

2003-2007 Adjunct Professor, Department of Biochemistry & Cell Biology, Rice University

1998-2003 Investigator, Houston Area Molecular Biophysics Program (NSF BIR)

1996-2003 **Assistant Professor**, Department of Chemistry, Rice University (appointed July, 1996).
Assistant Professor, Department of Biochemistry & Cell Biology, joint appointment.

Honors and Awards

2011 PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2010 PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2009 PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2007 PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2006 PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
1999 Outstanding Faculty Award, Rice University Premedical Society
1998-99 Doughtie Distinguished Faculty Associate Award, Rice University
1997 Research Corporation Research Innovation Award, Rice University
1994-96 National Science Foundation Postdoctoral Fellowship, The Pennsylvania State University
1991-94 Ralph M. Parsons Foundation Graduate Fellowship, California Institute of Technology
1988-91 National Science Foundation Predoctoral Fellowship, California Institute of Technology
1988 Waldo Semon National Undergraduate Research Award in Chemistry
1988 *Phi Beta Kappa,* Trinity University

Research Experience

UNC-CH *Developing novel strategies for enhancing antibacterial therapy:*
- Targeting bacterial genomic repair and recombination.
- Targeting the mechanisms of antibacterial resistance development and transmission.
- Targeting surface endonucleases that facilitate immune escape.

Rice University *Bioorganic and biophysical chemistry of protein-DNA complexes and enzymes:*
- Protein and DNA dynamics in genomic repair and recombination.
- Design and directed evolution of novel enzymes.
- Design of proteolytic agents for noninvasive ocular zonulolysis.

Postdoctoral Studies *Biological Catalysis:* Kinetic and structural analyses of the role of intrinsic dynamic processes in the catalytic strategy of *E. coli* DHFR.

Graduate Studies *Molecular Recognition of Double-Helical DNA & Nucleic Acid Biophysical Chemistry:*
- Measurement of the energetics of triple helix formation at single DNA sites using a novel equilibrium binding assay.
- Model-dependent analyses of the influence of pH, cations, and temperature on the equilibrium constants for triple helix formation.
- Thermodynamic characterization of triple helix stability using spectroscopic and calorimetric methods.

Undergrad Studies *Organic Photochemistry:* Synthesis and analysis of the excited state properties, including reactivity and anomalous fluorescence, of polycyclic aromatic hydrocarbons.

Bibliography

Refereed Articles

(reverse chronological order; *, corresponding author)

Published at UNC-CH

1. Rhoney, D. H.*, **Singleton, S. F.**, Nelson, N. R., Anderson, S. M., and Hubal, R. "Forces driving change in pharmacy education: Opportunities to take ASTEP into the future," *Journal of the American College of Clinical Pharmacy* 4(5): 639–651 (2021). https://accpjournals.onlinelibrary.wiley.com/doi/full/10.1002/jac5.1407

2. Fuller, K. A., Karunaratne, N. S., Naidu, S., Exintaris, B., Short, J. L., Wolcott, M. D., **Singleton, S. F.**, and White, P. J.*, "Development of a self-report instrument for measuring in-class student engagement reveals that pretending to engage is a significant unrecognized problem," *PLOS ONE* 13(10): e0205828. https://doi.org/10.1371/journal.pone.0205828

3. Roth, M. T.*, Mumper, R. J., **Singleton, S. F.**, Lee, C. R., Rodgers, P. T., Cox, W. C., McLaughlin, J. E., Joyner, P., and Blouin, R. A., "A Renaissance in Pharmacy Education at the University of North Carolina at Chapel Hill," *North Carolina Medical Journal* 75(1): 48-52 (2014).

4. Peterson, E. J., Kireev, D., Moon, A.F., Midon, M., Janzen, W.P., Pingoud, A., Pedersen, L.C., **Singleton, S.F.***, "Inhibitors of Streptococcus pneumoniae Surface Endonuclease EndA Discovered by High-Throughput Screening Using a PicoGreen Fluorescence Assay," *Journal of Biomolecular Screening* 18(3): 247-57 (2013). doi: 10.1177/1087057112461153.

5. Peterson, E.J.R., Janzen, W.P., Kireev, D., and **Singleton, S.F.***, "High-Throughput Screening for RecA Inhibitors Using a Transcreener Adenosine 5'-O-Diphosphate Assay," *ASSAY and Drug Development Technologies* 10(3): 260-8 (2012). doi:10.1089/adt.2011.0409

6. Carroll, M.J., Mauldin, R.V., Gromova, A.V., **Singleton, S.F.**, Collins, E.J. and Lee, A.L.*, "Evidence for dynamics in proteins as a mechanism for ligand dissociation," *Nature Chemical Biology* 8: 246–252 (2012). doi:10.1038/nchembio.769

7. Carroll, M.J., Gromova, A.V.; Miller, K., Tang, H., Wang, X., Tripathy, A., **Singleton, S.F.**; Collins, E., Lee, A.L.*, "Direct detection of structurally resolved dynamics in a multi-conformation receptor-ligand complex," *Journal of the American Chemical Society* 133: 6422-6428 (2011).

8. Sexton, J.Z.*, Wigle, T.J., He, Q., Hughes, M., Smith, G., **Singleton, S.F.**, and Yeh, L.-A., "Novel Inhibitors of *E. coli* RecA ATPase Activity," *Current Chemical Genomics* 26: 34-42 (2010).

9. Wigle, T.J., Sexton, J.Z., Gromova, A.V., Hadimani, M.B., Huges, M.A., Smith, G.R., Yeh, L.-A., and **Singleton, S.F.***, "High-throughput Screening for Novel Inhibitors of Escherichia coli RecA ATPase Activity," *Journal of Biomolecular Screening* 14:1092-101 (2009).

10. Lee, A.M., Wigle, T.J., and **Singleton, S.F.***, "A complementary pair of rapid molecular screening assays for RecA activities," *Analytical Biochemistry* 367, 247-58 (2007).

11. Wigle, T.J. and **Singleton, S.F.***, "Directed molecular screening for RecA ATPase inhibitors," *Bioorganic & Medicinal Chemistry Letters*, 17, 3249-3253 (2007).

12. Cline, D.J., Holt, S.L., and **Singleton, S.F.***, "Inhibition of *Escherichia coli* RecA by a Rationally Redesigned Helical Peptide," *Organic & Biomolecular Chemistry* 5: 1525-1528 (2007).

13. **Singleton, S.F.***, Roca, A.I., Lee, A.M., and Xiao, J., "Probing the Structures of RecA-DNA Filaments. Advantages of a Fluorescent Guanine Analog," *Tetrahedron* 63: 3553-3566 (2007).

14. Lee, A.M., Xiao, J., and **Singleton, S.F.***, "Origins of Sequence Selectivity in Homologous Genetic Recombination: Insights from Rapid Kinetic Probing of RecA-mediated DNA Strand Exchange," *Journal of Molecular Biology* 360: 343-359 (2006).

15. Xiao, J., Lee, A.M., and **Singleton, S.F.***, "Direct evaluation of a kinetic model for RecA-mediated DNA strand exchange: Importance of nucleic acid dynamics and entropy during homologous genetic recombination," *ChemBioChem* 7: 1265-1278 (2006).

16. Lee, A.M. and **Singleton, S.F.***, "Intersubunit Electrostatic Complementarity in the RecA Nucleoprotein Filament Regulates Nucleotide Substrate Specificity and Conformational Activation," *Biochemistry* 45: 4514-4529 (2006).

17. Wigle, T.J., Lee, A.M., and **Singleton, S.F.***, "Conformationally Selective Binding of Nucleotide Analogs to *Escherichia coli* RecA: A Ligand-Based Analysis of the RecA ATP-Binding Site," to *Biochemistry* 45: 4502-4513 (2006).

18. Xiao, J., Lee, A.M., and **Singleton, S.F.***, "Construction and Evaluation of a Kinetic Scheme for RecA-mediated DNA Strand Exchange," *Biopolymers* 81: 473-496 (2006).

19. Lee, A.M., and **Singleton, S.F.***, "A Molecular Target for Suppression of the evolution of Antibiotic Resistance: Inhibition of the *Escherichia coli* RecA Protein by N^6-(1-Naphthyl)-ADP," *Journal of Medicinal Chemistry*, 48: 5408-5411 (2005).

20. Lee, A.M., and **Singleton, S.F.***, "Inhibition of the Escherichia coli RecA protein: zinc(II), copper(II) and mercury(II) trap RecA as inactive aggregates," *Journal of Inorganic Biochemistry*, 98: 1981-1986 (2004).

Published at Rice University

21. Roca, A.I., and **Singleton, S.F.***, "Direct Evaluation of a Mechanism of Activation of the RecA Nucleoprotein Filament," *Journal of the American Chemical Society*, 125: 15366-15375 (2003).

22. **Singleton, S.F.***, Simonette, R.A., Sharma, N.C., and Roca, A.I., "Intein-Mediated Affinity-Fusion Purification of the *Escherichia coli* RecA Protein," *Protein Expression & Purification*, 26: 476-488 (2002).

23. Xiao, J., and **Singleton, S.F.***, "Elucidating a Key Intermediate in Homologous DNA Strand Exchange: Structural Characterization of the RecA·Triple-Stranded-DNA Complex Using Fluorescence Resonance Energy Transfer," *Journal of Molecular Biology*, 320: 529-558 (2002).

24. **Singleton, S.F.***, and Xiao, J., "The Stretched DNA Geometry of Recombination and Repair Nucleoprotein Filaments," *Biopolymers*, 61: 145-158 (2002).

25. Peng, Z.-H., Sharma, V., **Singleton, S.F.**, and Gershon, P.D.*, "Synthesis and Application of a Chain-Terminating Dinucleotide mRNA Cap Analog," *Organic Letters*, 4: 161-164 (2002).

26. **Singleton, S.F.***, Shan, F., Kanan, M.W., McIntosh, C.M., Stearman, C.J., Helm, J.S., and Webb, K.J., "Facile Synthesis of a Fluorescent Deoxycytidine Analogue Suitable for Probing the RecA Nucleoprotein Filament," *Organic Letters*, 3: 3919-3922 (2001).

27. Berger, M.D., Lee, A.M., Simonette, R.A., Jackson, B.E., Roca, A.I., and **Singleton, S.F.***, "Design and Evaluation of a Tryptophanless RecA Protein with wild type Activity," *Biochemical and Biophysical Research Communications*, 286: 1195-1203 (2001).

Published as a Student or Postdoc

28. Cannon, W.R., **Singleton, S.F.**, and Benkovic, S.J.*, "A Perspective on Biological Catalysis," *Nature Structural Biology*, 3: 821-833 (1996).

29. Wagner, C.R., Huang, Z., **Singleton, S.F.**, and Benkovic, S.J.*, "The Molecular Basis for Non-Additive Mutational Effects in *Escherichia coli* Dihydrofolate Reductase," *Biochemistry*, 34: 15671-15680 (1995).

30. Plum, G.E., Pilch, D.S., **Singleton, S.F.**, and Breslauer, K.J.*, "Nucleic Acid Hybridization: Triplex Stability and Energetics," *Annual Reviews of Biophysics and Biomolecular Structure*, 24: 319–350 (1995).

31. **Singleton, S.F.**, and Dervan, P.B.*, "Temperature Dependence of the Energetics of Oligonucleotide-Directed Triple Helix Formation at a Single DNA Site," *Journal of the American Chemical Society*, 116: 10376–10382 (1994).

32. **Singleton, S.F.**, and Dervan, P.B.*, "Equilibrium Association Constants for Oligonucleotide-Directed Triple Helix Formation at Single DNA Sites: Linkage to Cation Valence and Concentration," *Biochemistry*, 32: 13171–13179 (1993).

33. **Singleton, S.F.**, and Dervan, P.B.*, "Influence of pH on the Equilibrium Association Constants for Oligodeoxyribonucleotide-Directed Triple Helix Formation at Single DNA Sites," *Biochemistry*, 31: 10995–11003 (1992).

34. **Singleton, S.F.**, and Dervan, P.B.*, "Thermodynamics of Oligonucleotide-Directed Triple Helix Formation: An Analysis Using Quantitative Affinity Cleavage Titration," *Journal of the American Chemical Society*, 114: 6957–6965 (1992).

35. Plum, G.E., Park, Y.-W., **Singleton, S.F.**, Dervan, P.B., and Breslauer, K.J.* "Thermodynamic Characterization of the Stability and the Melting Behavior of a DNA Triplex: A Spectroscopic and Calorimetric Study," *Proceedings of the National Academy of Sciences U.S.A.*, 87: 9436–9440 (1990).

36. Plummer, B.F.*, and **Singleton, S.F.**, "An Analysis of the Electronic Transitions of Aceanthrylene," *Journal of Physical Chemistry*, 94: 7363–7366 (1990).

37. Plummer, B.F.*, and **Singleton, S.F.**, "Triplets, Biradicals, Radical Ions, and the Heavy-Atom Solvent Effect in the Photodimerization of Aceanthrylene," *Journal of Physical Chemistry*, 93: 5515–5520 (1989).

38. Plummer, B.F.*, and **Singleton, S.F.**, "The Photodimerization of Aceanthrylene," *Tetrahedron Letters*, 28: 4801–4804 (1987).

Patents and Patent Applications

1. Jones, Michael L.; Lilly, John C.; Ankala, Sudha; **Singleton, Scott**; "Heterocyclic Compounds As Antibiotic Potentiators," PCT Int. Appl. (2016), Synereca Pharmaceuticals and University of North Carolina at Chapel Hill, 185 pp.

2. **Singleton, S. F.**, "Bacterial RecA Inhibitors," Provisional patent application (2009), University of North Carolina at Chapel Hill.

3. **Singleton, S. F.**, "Inhibitors of RecA Activities for Control of Antibiotic-Resistant Bacterial Pathogens," PCT Int. Appl. (2006), University of North Carolina at Chapel Hill, 127 pp.**;** U.S. Patent Appl. (2006), University of North Carolina at Chapel Hill, 141 pp.

Invited Lectures at Academic, Governmental, or Industrial Organizations

1. "The Role of Fundamental Pharmaceutical Sciences (and Scientists) in an Integrated PharmD Curriculum," Daniel K. Inouye College of Pharmacy, University of Hawai'i at Hilo, January 31, 2022 (virtual).

2. "PharmD Curriculum Transformation: Process & Lessons Learned," Daniel K. Inouye College of Pharmacy, University of Hawai'i at Hilo, November 8, 2021 (virtual).

3. "Using Data as Inspiration to Improve Student Engagement & Learning in Molecular Foundations of Drug Action," Center for Innovation in Pharmacy Education & Research, University of North Carolina at Chapel Hill, December 1, 2017 (part of the CIPhER Celebration of Innovative Pharmacy Teaching, Education Research, Scholarship, and Development at UNC).

4. "PharmD Curriculum Transformation: Process & Lessons Learned at the UNC Eshelman School of Pharmacy," School of Nursing, University of North Carolina at Chapel Hill, September 6, 2017 (part of a faculty development workshop with the SON Curriculum Task Group).

5. "PharmD Curriculum Transformation: Process & Lessons Learned at the UNC Eshelman School of Pharmacy," School of Dentistry, University of North Carolina at Chapel Hill, July 24, 2017.

6. "Deeper Learning by Design: Curriculum Transformation at the UNC Eshelman School of Pharmacy," College of Pharmacy, University of Texas at Austin, May 31, 2017 (part of the UT COP Pharmacotherapy Sequence Visioning Day).
7. "PharmD Curriculum Transformation: Process & Lessons Learned," School of Nursing, University of North Carolina at Chapel Hill, April 24, 2017 (co-presented with Wendy Cox).
8. "Exploring the Use of the Flipped Classroom Model in Pharmacy Education," College of Pharmacy, University of Nebraska Medical Center, January 24, 2017 (part of a faculty development workshop co-led by Mary Roth McClurg).
9. "Deeper Learning by Design: A Systems Approach Towards a Transformative PharmD Curriculum," College of Pharmacy, University of Nebraska Medical Center, January 24, 2017 (part of a faculty development workshop co-led by Mary Roth McClurg).
10. "Conceptual Threshold Crossings in Professional Pharmacy Learning," PharmAlliance Education Summit, UNC Eshelman School of Pharmacy, November 18, 2016.
11. "Educational Renaissance & Curriculum Transformation at The UNC Eshelman School of Pharmacy," Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, March 2, 2015.
12. "Evolution and Prevention of Antibiotic Resistance: Small-molecule Inhibitors of Bacterial DNA Processing," Department of Chemistry, College of Charleston, October 10, 2013.
13. "Evolution and Prevention of Antibiotic Resistance: Small-molecule Inhibitors of Bacterial DNA Processing," Anti-infectives Research Group, University of North Carolina at Chapel Hill, April 18, 2013.
14. "Chemical Microbiology: Inhibitors of Antibiotic Escape Routes and Evolution in Bacteria," Department of Chemistry & Physics, University of North Carolina at Pembroke, February 26, 2013.
15. "Chemical Microbiology: Inhibitors of Antibiotic Escape Routes and Evolution in Bacteria," Department of Chemistry & Physics and Department of Biology, Western Carolina University, March 30, 2012.
16. "A Chemical Approach to Target Validation of *Streptococcus pneumoniae* EndA for Control of Pneumococcal Infection," Laboratory of Structural Biology, National Institute of Environmental Health Sciences, Research Triangle Park, January 14, 2012.
17. "Chemical Microbiology for Fun and Profit: Inhibitors of Antibiotic Escape Routes and Evolution in Bacteria," Division of Molecular Pharmaceutics, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, November 16, 2011.
18. "Conformationally Selective Chemical Probes of Antibiotic Escape Routes and Evolution in Bacterial Pathogens," Institut für Biochemie, Justus-Liebig-Universität Giessen, March 22, 2011.
19. "Conformationally Selective Chemical Probes of Antibiotic Escape Routes and Evolution in Bacterial Pathogens," Organic Chemistry Institute, University of Zürich, March 17, 2011.
20. "Rec-ing the DNA Repair Shop to Combat Antibiotic Resistance," INNOVATION @ CAROLINA - A Chemical Biology Symposium, University of North Carolina at Chapel Hill, June 9, 2010.
21. "Rec-ing the DNA Repair Shop to Rearm Antibiotics," Department of Biochemistry and Biophysics, University of North Carolina at Chapel Hill, September 29, 2009.
22. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Seminars in Chemistry, National Institutes of Health, May 1, 2009.
23. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Center for Advanced Drug Research, SRI International, Harrisonburg, VA, April 30, 2009.
24. "What to Expect When You're Inventing: Inhibitors of RecA Activities for Control of Bacterial Pathogens," Carolina Innovations Seminar, University of North Carolina at Chapel Hill, April 2, 2009.

25. "Rec-ing the DNA Repair Shop: For Business and For Pleasure," RTI Health Solutions, Research Triangle Park, NC, February 24, 2009.
26. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Clinical Laboratories, Duke University Health System, Durham Regional Hospital, January 12, 2009.
27. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Center for Integrative Chemical Biology and Drug Discovery, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, December 17, 2008.
28. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Center for BioDynamics, Boston University, November 21, 2008.
29. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Department of Chemistry and Biochemistry, James Madison University, October 17, 2008.
30. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Department of Science, Durham Technical Community College, September 17, 2008.
31. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," RecÆdo Therapeutics, Inc., Wellesley, MA, July 23, 2008.
32. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Technology Development Workshop, School of Dentistry, University of North Carolina at Chapel Hill, June 9, 2008.
33. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Department of Chemistry and Program in Biochemistry, Indiana University, April 11, 2008.
34. "Rec-ing the DNA Repair Shop: A Novel Approach for Confronting Antibiotic Resistance," Department of Biochemistry and Molecular Biology, Penn State University, February 11, 2008.
35. "Novel Inhibitors of RecA Activities," SolMap Pharmaceuticals, Inc., Cambridge, MA, December 13, 2007.
36. "Novel Inhibitors of RecA Activities," Le@p Technology, Inc., Wellesley, MA, December 12, 2007.
37. "Novel Inhibitors of RecA Activities," Exigent Pharmaceuticals, Inc., Durham, NC, December 7, 2007.
38. "Small-molecule Approaches to Controlling the Evolution of Antibiotic Resistance," Department of Chemistry, University of Georgia, April 19, 2007.
39. "Wrecking the DNA Repair Shop: A Novel Approach to Combating Super Bugs," Biomanufacturing Research Institute and Technology Enterprise (BRITE), North Carolina Central University, February 12, 2007.
40. "Genome Repair & Recombination in Bacteria: From Molecular Recognition to Molecular Pharmacology," Organic Chemistry Institute, University of Zürich, May 23, 2006.
41. "Wrecking the DNA Repair Shop: A Novel Approach to Combating Superbugs," Department of Pharmacology, Case Western Reserve University, October 4, 2005.
42. "Wrecking the DNA Repair Shop: A Novel Approach to Combating Superbugs," Department of Pharmacology, University of North Carolina at Chapel Hill, September 20, 2005.
43. "The Inhibition of Prokaryotic DNA Repair: An Approach for Confronting Antibiotic Resistance," Department of Chemistry, University of North Carolina at Chapel Hill, January 19, 2005.
44. "Harnessing Molecular Evolution for Confronting Antimicrobial Resistance," Microbiology Research-in-Progress Meeting, University of North Carolina at Chapel Hill, January 5, 2005.
45. "At the Crossroads of Genome Repair & Recombination Understanding & Controlling the Bacterial RecA Protein," Department of Biochemistry & Biophysics, University of North Carolina at Chapel Hill, September 28, 2004.

46. "A Roadmap for Novel Antimicrobial Strategies: Targeting Bacterial DNA Repair & Genetic Selection for Improved Proteinase Inhibitors," School of Pharmacy, Division of Medicinal Chemistry & Natural Products, University of North Carolina at Chapel Hill, April 22, 2004.
47. "Towards Novel Antimicrobial Strategies: (1) Targeting Bacterial DNA Repair and (2) Genetic Selection for Improved Proteinase Inhibitors," A.R. Smith Department of Chemistry, Appalachian State University, 13 February, 2004.
48. "Towards Novel Antimicrobial Strategies: (1) Targeting Bacterial DNA Repair and (2) Genetic Selection for Improved Proteinase Inhibitors," Division of Drug Delivery & Disposition, School of Pharmacy, University of North Carolina at Chapel Hill, 13 January, 2004.
49. "A Molecular View of a Genomics Crossroad: Structure & Mechanism in Prokaryotic DNA Repair and Recombination," Division of Medicinal Chemistry & Natural Products, School of Pharmacy, University of North Carolina at Chapel Hill, 9 February, 2003.
50. "A Molecular View of a Genomics Crossroad: Structure & Mechanism in Prokaryotic DNA Repair and Recombination," Department of Chemistry, University of Missouri, 27 January, 2003.
51. "A Molecular View of a Genomics Crossroad: Structure & Mechanism in Prokaryotic DNA Repair and Recombination," School of Pharmacy, University of Kansas, 21 January, 2003.
52. "Studies on Biomolecular Recognition: Designed Genetic Selection of Novel Biocatalysts and Mechanistic Probing of Genomic DNA Repair," Department of Chemistry and Biochemistry, Baylor University, 11 December, 2002.
53. "A Molecular View of the Crossroads of DNA Repair and Homologous Recombination: The Mechanistic Strategy of the DNA Strand Exchange Mediated by the E. coli RecA Protein," Molecular and Cellular Biology Program, University of Massachusetts at Amherst, 12 November, 2002.
54. "Studies on Biomolecular Recognition: Designed Genetic Selection of Novel Biocatalysts and Mechanistic Probing of Genomic DNA Repair," Department of Chemistry, Rice University, 2 October, 2002.
55. "A Molecular View of the Crossroads of DNA Repair and Homologous Recombination: The Mechanistic Strategy of the DNA Strand Exchange Mediated by the E. coli RecA Protein," Institute of Biosciences and Technology, Texas A&M University, 4 April, 2002.
56. "The Recombination Molecular Motor of Escherichia coli," Department of Chemistry and Biochemistry, Texas Tech University, 13 February, 2001.
57. "Chemical Approaches to Understanding Genetic Recombination." Department of Chemistry and Biochemistry, University of California at San Diego, 18 October, 1999.
58. "Chemical Approaches to Understanding Genetic Recombination." Department of Chemistry, Baylor University (Waco, Texas), 29 January, 1999.
59. "Chemical Approaches to Understanding Genetic Recombination." Department of Chemistry, University of Houston (Houston, Texas), 2 November, 1998.
60. "Chemical Approaches to Understanding Genetic Recombination." Department of Chemistry and Biochemistry, Fort Lewis College (Durango, Colorado), 31 March, 1997.

Invited Lectures at Professional Meetings

61. "Adaptive Learning for Evolving Education Needs," Association for Medical Education in Europe (AMEE) 2021 Virtual Conference (August 27–30, 2021). Collaboration with Sarah Anderson, Nick Nelson, Rob Hubal, and Denise Rhoney.
62. "Change Drivers in Higher Education: Implications for the Pharmacy Academy to Reflect, Respond, and Re-Imagine," American Association of Colleges of Pharmacy (AACP) Annual Meeting, July 19-22, 2021 (virtual; co-presented with Denise Rhoney, Cindy Stowe, and Tina Brock).

63. "Quality in Online Courses," UNC Center for Faculty Excellence 2021 Faculty Showcase, University of North Carolina at Chapel Hill, April 22, 2021 (virtual; co-presented with Paul Wolff, Rob Lucas, and Quin Jernigan).

64. "Leveling the Playing Field: A Three-Week Pharmacy Bridging Course for Incoming Students," American Association of Colleges of Pharmacy (AACP) Annual Meeting, Nashville, TN, July 15-19, 2017 (co-presented with Jacqueline E. McLaughlin).

65. "Deeper Learning by Design: Towards a Transformative PharmD Curriculum," 73rd Annual General Meeting of the Association of Faculties of Pharmacy of Canada, Vancouver, BC, June 2, 2016.

66. "Integration of Fundamental Pharmaceutical Sciences into Professional Pharmacy Programs," 73rd Annual General Meeting of the Association of Faculties of Pharmacy of Canada, Vancouver, BC, June 2, 2016 (part of a faculty development workshop co-led by Simon Albon).

67. "Deeper Learning by Design: Towards a Transformative PharmD Curriculum at the UNC Eshelman School of Pharmacy," University of Washington School of Pharmacy Curricular Innovation Panel, Seattle, WA, May 17, 2016.

68. "Leading Change in Pharmacy Education: A Systems Approach to Curriculum Transformation," 2015 Pharmacy Education Conference, Prato, Italy, July 5 – 8, 2015.

69. "The Global Pharmacist: Developing 'Global Pharmacy Scholars' through Student Experience," 2015 Pharmacy Education Conference, Prato, Italy, July 5 – 8, 2015.

70. "Antibiotic Resistance: Origins, Mechanisms and Responses," 2nd Annual Pharmacy Practice Seminar in the Mountains, Asheville, NC, May 4–5, 2013.

71. "Antibiotic Resistance: Origins, Mechanisms and Responses," 27th Annual Pharmacy Practice Seminar, Wrightsville Beach, NC, August 24–26, 2012.

72. "RecA and DNA Repair as Antibacterial Targets," Novel Approaches to Antibacterial Drug Discovery, an invited symposium at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Chicago, IL, September 17 – 20, 2011.

73. "Nucleic Acid Dynamics in Genomic Repair and Recombination," Southwest Regional Meeting of the American Chemical Society, 4 November, 2002.

74. "Nucleic Acid Dynamics in Genomic Repair and Recombination," 2nd German and American Symposium on the Frontiers of Chemistry, 23-25 August, 2002.

75. "Nucleic Acid Dynamics in Genomic Repair and Recombination," Gordon Research Conference on Bioorganic Chemistry, 9-14 June, 2002.

76. "Dynamic Interactions of the E. coli RecA Nucleoprotein Filament with Double-stranded DNA," Keystone Symposium on Molecular Mechanisms of DNA Replication and Recombination, 7 - 13 January, 2002.

Contributed Presentations at Professional Meetings

1. Poster (E.J.R. Peterson, W.P. Janzen, and D. Kireev): "Identifying and Characterizing Inhibitors of Streptococcus pneumoniae EndA Using a Novel PicoGreen Nuclease Assay", 52nd Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), San Francisco, CA, September 9–12, 2012.

2. Poster (with M.A. Chapman and G.R. Smith): "Identification and Characterization of Small-molecule Inhibitors of *Escherichia coli* RecBCD DNA Repair Enzyme Using a Using a Transcreener Adenosine 5'-*O*-Diphosphate Assay", 2nd Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), San Francisco, CA, September 9–12, 2012.

3. Poster (with E.J.R. Peterson): "A Chemical Approach to Target Validation of *S. pneumoniae* EndA for Control of Pneumococcal Infection", 8th International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD-8), Foz de Iguaçu City, Brazil, March 11-15, 2012.

4. Poster (with T.J. Wigle): "Targeting RecA to prevent the evolution of antibiotic resistance: HTS-screening strategies and ATP-competitive inhibitors", ACS National Meeting, San Francisco, CA, September 2006.

5. Poster (with D.J. Cline): "Inhibition of *Escherichia coli* RecA by a rationally designed peptide helix", ACS National Meeting, San Francisco, CA, September 2006.

6. Poster (with M.B. Hadimani): "Bypassing antibiotic resistance: Development of novel pronucleotides as antibacterials", ACS National Meeting, San Francisco, CA, September 2006.

7. Poster (with T.J. Wigle): "Targeting RecA to prevent the evolution of antibiotic resistance: HTS-screening strategies and ATP-competitive inhibitors", Gordon Research Conference on Bioorganic Chemistry, August, 2006.

8. Poster "The Inhibition of Bacterial DNA Repair & Recombination: An Approach for Confronting Antibiotic Resistance," Gordon Research Conference on Bioorganic Chemistry, June, 2005.

9. Poster (with A.M. Lee and T.J. Wigle): "A Molecular Target for Suppression of the Evolution of Antibiotic Resistance: Inhibition of the E. coli RecA Protein by Select Small Molecules," Experimental Biology Meeting, San Diego, CA, April 2005.

10. Poster (with A.M. Lee): "Chemical Biology of Prokaryotic DNA Repair: Small-Molecule Control of the *Escherichia coli* RecA Protein," ASBMB Annual Meeting, June 11-17, 2004.

11. Poster (with N.C. Sharma): "A Two-Tiered System for Rapid Screening of Site-Specific Proteases in *Escherichia coli*," 16th Symposium of The Protein Society, 17-21 August, 2002.

12. Poster: "Nucleic Acid Dynamics in Genomic Repair and Recombination," 16th IUPAC Conference on Physical-Organic Chemistry, 4-9 August, 2002.

13. Poster (with J. Xiao): "Dynamic Interactions of the E. coli RecA Nucleoprotein Filament with Double-stranded DNA: Rapid DNA Conformational Changes Accompany Homology Testing," Biophysical Society 46th Annual Meeting, 23 - 27 February, 2002.

14. Poster (with A.M. Lee): "The Mechanistic Strategy for Homologous DNA Strand Exchange by the E. coli RecA Protein: Influence of Homology Disruption on the Kinetics of Sequence-Specific DNA Pairing," Biophysical Society 46th Annual Meeting, 23 - 27 February, 2002.

15. Poster: "Dynamic Interactions of the E. coli RecA Nucleoprotein Filament with Double-stranded DNA: Rapid DNA Conformational Changes Accompany Homology Testing During the Earliest Detectable Phases of DNA Strand Exchange," Keystone Symposium on Molecular Mechanisms of DNA Replication and Recombination, 7 - 13 January, 2002.

16. Poster (with A.I. Roca): "A Complete Kinetic Scheme Describing RecA-DNA Filament Assembly," Keystone Symposium on Molecular Mechanisms of DNA Replication and Recombination, 7 - 13 January, 2002.

17. Poster (with A.M. Lee): "Dynamic Interactions of the E. coli RecA Nucleoprotein Filament with Double-stranded DNA: Rapid DNA Homology Testing During the Earliest Detectable Phases of DNA Strand Exchange," Keck Center for Computational Biology Annual Research Conference, 9 September, 2001.

18. Poster (with M.D. Berger): "Fluorescence Properties of Escherichia coli RecA Proteins Containing Single Tryptophan Residues," Keck Center for Computational Biology Annual Research Conference, 9 September, 2001.

19. Poster (with J. Xiao): "Rapid Discrimination of DNA Strands and Double-stranded DNA Unwinding Accompany Homology Testing During the Earliest Phases of DNA Strand Exchange Directed by the *Escherichia coli* RecA Protein." FASEB Summer Research Conference (Genetic Recombination & Chromosome Rearrangements), July 21-26, 2001.

20. Poster: "Unexpected Sensitivity of RecA-DNA Filament Assembly Kinetics to the Presence of ATPγS." FASEB Summer Research Conference (Genetic Recombination & Chromosome Rearrangements), July 21-26, 2001.

21. Poster: "Rapid Discrimination of DNA Strands and Double-stranded DNA Unwinding Accompany Homology Testing During the Earliest Phases of DNA Strand Exchange Directed by the *Escherichia coli* RecA Protein." Gordon Research Conference on Bioorganic Chemistry, June 17-21, 2001.

22. Poster (with J. Xiao): "Elucidating a Key Intermediate in Homologous DNA Strand Exchange: Structural Characterization of the RecA·Triple-Stranded-DNA Complex Using Fluorescence Resonance Energy Transfer." Keck Center for Computational Biology Annual Research Conference, 16 October, 2000.

23. Poster (with A.M. Lee): "The Search for the Dark Side: Design and Evaluation of a Tryptophanless RecA Protein with wild-type Function." Keck Center for Computational Biology Annual Research Conference, 16 October, 2000.

24. Poster (with M.D. Berger): "Nonadditive Tryptophan-Replacement Mutational Effects on the Fluorescence of the *Escherichia coli* RecA Protein." Keck Center for Computational Biology Annual Research Conference, 16 October, 2000.

25. Poster (with M.D. Berger): "Exploring Potential Nonadditive Tryptophan-Replacement Mutational Effects in the Fluorescence Emission of the *Escherichia coli* RecA Protein." FASEB Summer Research Conference (Nucleic Acid Enzymes: Structures, Mechanisms and Novel Applications), June, 2000.

26. Poster (with A.M. Lee): "Probing the Functional Roles of Distal Tryptophans in the Binding and Exchange of DNA Strands by the *Escherichia coli* RecA Protein." FASEB Summer Research Conference (Nucleic Acid Enzymes: Structures, Mechanisms and Novel Applications), June, 2000.

27. Poster: "DNA Binding by the RecA Protein: Influence of DNA Structure, Cofactor, and Cations Probed Using Intrinsically Fluorescent Nucleosides." 219th ACS National Meeting, 26 March, 2000.

28. Poster: "The Development of Mutant RecA Proteins with Unique Fluorescent Residues." 219th ACS National Meeting, 26 March, 2000.

29. Poster (with A.I. Roca): "DNA Binding by the RecA Protein: Influence of DNA Structure, Cofactor, and Cations Probed Using Intrinsically Fluorescent Nucleosides." Keck Center for Computational Biology Annual Research Conference, 15 October, 1999.

30. Poster (with M.D. Berger): "The Development of Mutant RecA Proteins with Unique Fluorescent Residues." Keck Center for Computational Biology Annual Research Conference, 15 October, 1999.

Teaching Record

Teaching Awards

2011	PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2010	PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2009	PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2007	PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2006	PY2 Teacher of the Year, UNC Eshelman School of Pharmacy
2000	Finalist, *Phi Beta Kappa* Teaching Award, Rice University

Teaching Activities

University of North Carolina at Chapel Hill, School of Pharmacy

Semester	*Course Title (Number, Credit Hours)*	*Enrollment*	*Fraction of Load*
Spring 2023	Pharmaceutics & Drug Delivery Systems II (PHCY 514, 1.5 Cr)	136	Director + 8 lectures
	Making Medicines (PHCY 817.1, 1.5 Cr)	30	Co-Director
	Making Medicines (PHCY 817.2, 1.5 Cr)	20	Co-Director
Fall 2022	Molecular Foundations of Drug Action (PHCY 503, 3.5 Cr)	136	Director + 18 lectures
	Pathophysiology of Human Disease (PHCY 502, 3.5 Cr)	136	2 lectures
Spring 2022	Making Medicines (PHCY 817.1, 1.5 Cr)	12	Co-Director
	Making Medicines (PHCY 817.2, 1.5 Cr)	8	Co-Director
Fall 2021	Molecular Foundations of Drug Action (PHCY 503, 3.5 Cr)	150	Director + 17 lectures
Spring 2021	Integrative Pharmacotherapy I (PHCY 631.1, 5 Cr)	75	Facilitator
	Integrative Pharmacotherapy I (PHCY 631.2, 5 Cr)	75	Facilitator
Fall 2020	Molecular Foundations of Drug Action (PHCY 503, 3.5 Cr)	150	Director + 14 lectures
Spring 2020	Integrative Pharmacotherapy I (PHCY 631.1, 5 Cr)	75	Facilitator
	Integrative Pharmacotherapy I (PHCY 631.2, 5 Cr)	75	Facilitator
Fall 2019	Molecular Foundations of Drug Action (PHCY 503, 3.5 Cr)	150	Director + 13 lectures
	Integrative Pharmacotherapy II (PHCY 732.1, 5 Cr)	75	1 lecture
	Integrative Pharmacotherapy II (PHCY 732.2), 5 Cr)	75	1 lecture
Spring 2019	Integrative Pharmacotherapy I (PHCY 631.1, 5 Cr)	75	Facilitator
	Integrative Pharmacotherapy I (PHCY 631.2, 5 Cr)	75	Facilitator

Fall 2018	Pharmacy Bridging Course (PHCY 500, 5 Cr)	150	Director
	Molecular Foundations of Drug Action (PHCY 503, 3.5 Cr)	150	Director + 15 lectures
	Integrative Pharmacotherapy II (PHCY 732.1, 5 Cr)	75	1 lecture
	Integrative Pharmacotherapy II (PHCY 732.2), 5 Cr)	75	1 lecture
Spring 2018	Integrative Pharmacotherapy I (PHCY 631.1, 5 Cr)	75	Facilitator + 1 lecture
	Integrative Pharmacotherapy I (PHCY 631.2, 5 Cr)	75	Facilitator + 1 lecture
	RASP III (PHCY 726)	1	Mentor
Fall 2017	Pharmacy Bridging Course (PHCY 500, 5 Cr)	150	Director
	Molecular Foundations of Drug Action (PHCY 503, 4 Cr)	150	Co-director + 12 lectures
	Seminar in Evolutionary Biology (BIOL 659, 2 Cr)	10	1 lecture
Fall 2016	Pharmacy Bridging Course (PHCY 500, 5 Cr)	150	Director
	Molecular Foundations of Drug Action (PHCY 503, 4 Cr)	150	12 lectures
	Med Chem III – Cancer and Infectious Disease (PHCY 425, 2.5 Cr)	165	2 lectures
Spring 2016	Intro Pharmacy Innovation and Problem Solving (PHCY 520, 1 Cr)	150	Director + 12 lectures +
Fall 2015	Pharmacy Bridging Course (PHCY 500, 5 Cr)	150	Director
	Molecular Foundations of Drug Action (PHCY 503, 4 Cr)	150	12 lectures
	Med Chem III – Cancer and Infectious Disease (PHCY 425, 2.5 Cr)	165	2 lectures
Spring 2015	Pharmaceutical Biochemistry II (PHCY 422, 3 Cr)	165	Director + 26 lectures + 27 recitation hours
	Biochemical Foundations of Chemical Biology (CBMC 804a, 3 Cr)	6	2 lectures
Fall 2014	Med Chem III – Cancer and Infectious Disease (PHCY 425, 2.5 Cr)	165	2 lectures
Spring 2014	Pharmaceutical Biochemistry II (PHCY 422, 3 Cr)	165	Director + 26 lectures + 27 recitation hours
	Biochemical Foundations of Chemical Biology (CBMC 804a, 3 Cr)	9	2 lectures
Fall 2013	Med Chem III – Cancer and Infectious Disease (PHCY 425, 2.5 Cr)	165	2 lectures

Spring 2013	Pharmaceutical Biochemistry II (PHCY 422, 3 Cr)	170	Director + 26 lectures + 27 recitation hours
Fall 2012	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2.5 Cr)	170	Director + 17 lectures
	Ethical Dilemmas in Research (PHCY 801, 1 Cr)	15	1 lecture
	Drug Discovery Targets II (MEDC 833, 3 Cr)	6	3 lectures
Fall 2011	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2.5 Cr)	140	Director + 17 lectures
	Ethical Dilemmas in Research (PHCY 801, 1 Cr)	15	1 lecture
	Drug Discovery Targets II (MEDC 833, 3 Cr)	15	3 lectures
	First Year Group Seminar, Pharmaceutical Sciences Graduate Program	15	1 lecture
Spring 2011	First Year Group Co-mentor, Biological and Biomedical Sciences Program	15	
Fall 2010	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2.5 Cr)	150	Director + 17 lectures
	Ethical Dilemmas in Research (PHCY 801, 1 Cr)	15	1 lecture
	Drug Discovery Targets II (MEDC 833, 3 Cr)	15	3 lectures
	First Year Seminar – Biology of Infectious Disease in the Developing World (BIOL 62)	25	1 lecture
	First Year Group Co-mentor, Biological and Biomedical Sciences Program	15	
Spring 2010	Drug Discovery Targets II (MEDC 804, 3 Cr)	15	3 lectures
Fall 2009	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2.5 Cr)	150	Director + 17 lectures
	Ethical Dilemmas in Research (PHCY 801, 1 Cr)	15	1 lecture
Spring 2009	Drug Discovery Targets II (MEDC 804, 3 Cr)	15	3 lectures
Fall 2008	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2 Cr)	140	Director + 14 lectures
	Ethical Dilemmas in Research (PHCY 801, 1 Cr)	25	1 lecture
Spring 2008	Drug Discovery Targets II (MEDC 804, 3 Cr)	15	3 lectures
Fall 2007	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2 Cr)	140	Director + 13 lectures
	Ethical Dilemmas in Research (PHCY 801, 1 Cr)	15	1 lecture
Spring 2007	Drug Discovery Targets II (MEDC 804, 3 Cr)	15	3 lectures
Fall 2006	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 423, 2 Cr)	140	Director + 12 lectures
Spring 2006	Infectious Disease Elective (DPET 153, 1 Cr)	8	50%

	Drug Discovery Targets I (MEDC 168, 3 Cr)	9	3 lectures
Fall 2005	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 71, 2 Cr)	124	12 lectures
Spring 2005	Medicinal Chemistry Seminar (MEDC 361, 1 Cr)	29	100%
	Drug Discovery Targets I (MEDC 168, 3 Cr)	10	2 lectures
Fall 2004	Medicinal Chemistry Seminar (MEDC 361, 1 Cr)	33	100%
	Drug Discovery Targets II (MEDC 169, 3 Cr)	16	3 lectures
	Med Chem I – Autonomic, Autacoid, Hormones (PHCY 71, 2 Cr)	120	3 lectures
	Pharmaceutical Biochemistry I (PHCY 52, 3 Cr)	133	5 lectures[†]
Fall 2003	Pharmaceutical Biochemistry I (PHCY 52, 3 Cr)	133	2.5 lectures[†]

Rice University, Department of Chemistry and Department of Biochemistry & Cell Biology

Semester	*Course Title (Number)*	*Enrollment*	*Fraction of Load*
Fall 2002	Physical Organic Chemistry (CHEM 445, 3 Cr)	9	100%
	Graduate Organic Seminar (CHEM 602, 1 Cr)	18	100%
	Introduction to Research in BCB (BIOS 575, 1 Cr)	12	6%
Fall 2001	Physical Organic Chemistry (CHEM 445, 3 Cr)	13	100%
	Introduction to Research in BCB (BIOS 575, 1 Cr)	12	6%
Fall 2000	Physical Organic Chemistry (CHEM 445, 3 Cr)	8	100%
	Graduate Organic Seminar (CHEM 602, 1 Cr)	20	50%
	Introduction to Research in BCB (BIOS 575, 1 Cr)	12	6%
Spring 2000	Organic Chemistry II (CHEM 212, 3 Cr)	182	100%
Fall 1999	Physical Organic Chemistry (CHEM 445, 3 Cr)	8	100%
	Introduction to Research in BCB (BIOS 575, 1 Cr)	12	6%
Spring 1999	Organic Chemistry II (CHEM 212, 3 Cr)	201	100%
	Graduate Organic Seminar (CHEM 602, 1 Cr)	7	50%
Fall 1998	Physical Organic Chemistry (CHEM 445, 3 Cr)	11	100%
	Graduate Organic Seminar (CHEM 602, 1 Cr)	7	50%
	Introduction to Research in BCB (BIOS 575, 1 Cr)	14	6%
	Graduate Seminar in BCB (BIOS 583, 3 Cr)	13	33%
Spring 1998	Organic Chemistry II (CHEM 212, 3 Cr)	208	100%
Fall 1997	Research for Undergraduates (CHEM 491)	21	100%
	Introduction to Research in BCB (BIOS 575, 1 Cr)	13	6%
	Graduate Seminar in BCB (BIOS 583, 3 Cr)	13	33%
Spring 1997	Organic Chemistry II (CHEM 212, 3 Cr)	219	100%
	Graduate Seminar in BCB (BIOS 584, 3 Cr)	10	50%
Fall 1996	Introduction to Research in BCB (BIOS 575, 1 Cr)	10	5%

[†] *Lectures were 75 min; all other lectures were 50 min.*

Educational Innovation and Research Mentoring

Postdoctoral Fellows Mentored

	Name	*Dates*	*Present Position*
1.	Kathryn A. Fuller, PharmD	2015 – 2017	PGY1 Ambulatory Care Resident UNC Medical Center

Professional Students Mentored

	Name	*Dates (Degree)*	*Present Position*
2.	Anita Marie Scotti	2017-2019	

Research Mentoring

Postdoctoral Fellows Mentored

	Name	*Dates*	*Present Position*
3.	Sobhan Nandi	2013	Senior Scientist, Molec. Microbiol. Canon US Life Science
4.	Lisa A Heimbach	2012 – 2013	Global Medical Scientist bioMerieux
5.	John A. Bauman	2011	Senior Manager, Molecular Biology Covance (LabCorp)
6.	Beth M. Mole	2010 – 2011	Health Reporter Ars Technica
7.	Justin J. Richards *NIH Kirchstein Fellow*	2009 – 2011	stay-at-home father
8.	Anna V. Gromova	2006 – 2009	Patent Technical Specialist Pepper Hamilton LLP
9.	Daniel J. Cline *NIH Kirchstein Fellow*	2005 – 2009	Project Manager, Product Development Fujirebio Diagnostics
10.	Mallinath Hadimani	2004 – 2008	Research Assistant Professor Wake Forest University
11.	Bu-Bing Zeng	2004	Professor East China Univ of Sci & Tech
12.	Alberto I. Roca *NSF Minority Fellow*	1998 – 2003	Executive Director DiverseScholar

Doctoral Students Mentored

	Name	*Dates (Degree)*	*Present Position*
1.	Eliza J. R. Peterson	2009-2013 (PhD, May 2013)	Senior Research Scientists Institute for Systems Biology (Seattle)

Dissertation: *Evolution and Prevention of Antibiotic Resistance: Small Molecule Inhibitors of Bacterial DNA-Processing Enzymes*

Graduate Education Advancement Board's ***Impact Award****, 2013*

2. Tim J. Wigle — 2004-2008 (PhD, May 2008) — Senior Director, Pharmacology, Ribon Therapeutics
   Dissertation: *The evolution of antibacterial chemotherapy: Targeting RecA to sabotage antibiotic tolerance and resistance mechanisms*
   Graduate Education Advancement Board's ***Recognition Award****, 2007*
3. Andrew M. Lee — 2001-2005 (PhD, April 2005) — Senior Medical Science Liaison, Genentech
   Dissertation: *Ligand Binding Specificity of the RecA Nucleoprotein Filament*
4. Neil C. Sharma — 1997-2003 (PhD, June 2003) — Vice President, Product Development, LuminUltra Technologies
   Dissertation: *Progress Toward the Development of an Enzymatic Zonulolytic Reagent for the Noninvasive Treatment of Cataracts*
5. Jie Xiao — 1998-2002 (PhD, June 2002) — Associate Professor, Biophysics, Johns Hopkins School of Medicine
   Dissertation: *Structural Characterization and Kinetic Evaluation of RecA-mediated Strand Exchange*
6. Michael D. Berger, Jr. — 1997-2002 (PhD, April 2002) — Patent Agent, ConocoPhillips Co. (Houston, TX)
   Dissertation: *The Molecular Bases of Tryptophan Replacement Effects in RecA: A biochemical and biophysical characterization of single- and null-tryptophan mutant Escherichia coli RecA proteins*

Masters Students Mentored

	Name	*Dates (Degree)*	*Present Position*
1.	Morgan A. Chapman	2009-2016 (MS, December 2016)	
2.	Keri A. Flanagan	2006-2008 (MS, May 2009)	Associate Professor, County College of Morris

Dissertation: *Evaluation of Potential Inhibitors of Escherichia coli RecA to Attenuate the Rate of Antibiotic Resistance Development and to Sensitize Escherichia coli to Current Antibiotics*

3.	Robert C. Hudson	2002-2003 (MA, July 2003)	Dentist
4.	Feng Shan	1998-2000 (MS, May 2000)	Attorney, SZDC Law P.C.

Dissertation: *Synthesis of N1-(β-D-2'-deoxyribosyl)-5-methyl-2-pyrimidinone Nucleoside and Its Incorporation into Oligodeoxyribonucleotides for the Mechanistic Investigation of RecA-Mediated Homologous DNA Strand Exchange*

5. Xun Zhu — 1996-1998 (MS, January 1999) — Physician
   Dissertation: *A Continuous Kinetic Assay for RecA-mediated DNA Strand Exchange Using DNA-based Fluorescence Signals*

Professional Students Mentored

	Name	*Dates (Degree)*	*Present Position*
1.	Delon Canterbury	2012-2014 (Pharm.D.)	Local Specialty Pharmacy Manager, Walgreens
2.	Zachary Tackett	2009-2014 (Pharm.D.)	Clinical Pharmacist, Cardinal Health
3.	Renita Patel	2008 (Pharm.D.)	Clinical Pharmacy Supervisor-Surgery, Oregon HSU Hospital

4.	William H. Horton	2005-2006 (Pharm.D.)	Pharmacist Kroger
5.	Thomas H. Rhodes	2006 (Pharm.D.)	Pharmacist UNC Health Care (Hillsborough)
6.	Shannon L. Holt	2005-2007 (Pharm.D.)	Associate Professor, Clinical Education UNC Eshelman School of Pharmacy

Undergraduate Students Mentored

	Name	*Dates (Degree)*	*Subsequent Position*
1.	Bemnat Agegnehu *Chancellor's Science Scholar*	2014-2015	
2.	Kevin Straughn	2012-2013 (Chemistry)	Pharm.D. Candidate UNC Eshelman School of Pharmacy
3.	Jean Ra	2012 (Chemistry)	Pharmacist Walgreens
4.	Tyler Redelico	2009-2011	Oncology Clinical Pharmacist Cooper University Health Care
5.	Heidi Clarke	2008-2009 (Biology)	
6.	Hala Borno	2006-2008 (Chemistry)	Assistant Professor UCSF Medical Center
7.	Caroline C. (Hopke) Verges	2006-2007 (Biology, 2007)	Clinical Pharmacy Manager, Am Care Montefiore Medical Center
8.	Sunil Patel	2000-2001 (Biochemistry, 2003)	Manager, Medical Safety Excellence Acerta Pharma
9.	Kathryn E. Dalton	2000 (Chemistry, 2002)	Physician – Family Medicine
10.	Jane Li	1999-2002 (Biochemistry, 2002)	Physician – Psychiatry
11.	Bobak Nazer	1999 (Electrical Engineering, 2003)	Assistant Professor Boston University
12.	Matthew W. Kanan	1999-2000 (Chemistry, 2000)	Associate Professor, Chemistry Stanford University
13.	Andrew M. Lee	1999-2001 (Biochemistry, 2001)	Senior Medical Science Liaison Genentech
14.	Nathan J. Susnow	1998 (Chemistry, 2000)	Physician – Gastroenterology
15.	Karen S. Andersen	1998-2000 (Biochemistry, 2000)	Senior Analyst (CFA) Morningstar
16.	Benjamin Y. Hayden	1998 (Chemistry, 2000)	Associate Professor, Neuroscience University of Minnesota
17.	Hansi A. Singh	1997-1998 (Chemical Physics, 2000)	Linus Pauling Dist. Postdoc. Fellow Pacific Northwest National Laboratory
18.	Carolyn M. Lee	1997-1999 (Biochemistry, 1999)	Assistant Professor, Dermatology Palo Alto VA Health Care System

19.	Catherine M. (McIntosh) Goodman	1997-1998 (Chemistry, 1998)	Scientific Editor *Journal of Biological Chemistry*
20.	Jeremiah S. Helm	1996-1997 (Chemistry, 1998)	Counsel Knobbe Martens Olson & Bear LLP
21.	Jennifer E. Stine-Elam	1996-1998 (Biochemistry, 1998)	Outreach Coord, Human Connectome Project, Washington Univ. St. Louis

Visiting Undergraduate Students Mentored

	Name	*Dates (Home University)*	*Subsequent Position*
22.	Augustine Ajuogu *Biophysical Society's Summer Course in Biophysics*	2013 (University of Illinois at Chicago)	
23.	Anastassia Kamilaris	2006 (North Carolina State Univ)	Graduate Student UNC Chapel Hill
24.	Maria Kolesnikova	2002 (Moscow State University)	Graduate Student Rice University (Seichi Matsuda)
25.	Kristofor J. Webb	1999 (Fort Lewis College)	unknown
26.	Allison Floyd	1999 (Swarthmore College)	Medical Student
27.	Chad J. Stearman	1998 (Fort Lewis College)	Graduate Student Rice University (Victor Behar)

Research Support

Active Research Support

None

Previous Research Support

SRA with Synereca Pharmaceuticals 08/14 – 01/15 $130,679 (total costs)
Antibiotic Potentiators to Treat Resistant Gram-negative Infections
To assess prospective RecA inhibitors that will lead to an IP portfolio of developable RecA inhibitors for Synereca, we will: (1) provide multi-milligram quantities of homogeneous samples of novel compounds designed to potentiate fluoroquinolone and/or polymyxin antibiotics; (2) conduct RecA biochemical assays to characterize the modes of inhibition and inhibitory potencies of the compounds; (3) conduct SOS gene expression assays in living Escherichia coli bacteria to evaluate the potencies and specificities of RecA inhibitors; (4) conduct measurements of the ciprofloxacin and colistin MIC values in the presence of RecA inhibitors; (5) communicate the results to Synereca personnel led by Dr. Richard Gammans; and (6) advise Synereca personnel in the conduct of biochemical screening and microbiological assays.
Role: PI (5% effort)

National Institutes of Health (R01 GM058114) 8/98 – 5/14 $220,000 (annual direct costs)
Last Competitive Renewal 06/09
Understanding Homology in Genetic Recombination
To delimit possible models for the RecA-mediated activities that occur in pathogenic bacteria, we will (1) systematically define and evaluate structure-function relationships among RecA proteins from 31 pathogenic bacteria using biochemical and cellular activity assays; (2) provide insight into the species-specific molecular mechanisms of RecA-DNA filament activation using directed mutagenesis and substrate analogs; and (3) demonstrate that RecA effectors can be delivered into living bacteria to produce physiological consequences. The successful realization of the Aims will provide (1) substantial and novel insights into the molecular mechanisms by which different RecA proteins from select bacterial pathogens carry out their biological functions; (2) a novel microbiological toolbox that will be central to teasing apart the various roles of RecA in pathogenicity; and (3) novel methods for the delivery of small-molecule RecA effectors into bacterial pathogens.
Role: PI (20% effort)

North Carolina Biotechnology Center 7/12 – 6/14 $120,000 (total direct costs)
Novel Potentiators of Fluoroquinolones for Gram-negative Pathogens
The rapid development and spread of antibiotic-resistant pathogens is an urgent threat to global public health and a considerable challenge for therapeutic development. Synereca Pharmaceuticals was created to address the growing problem of bacterial resistance to current therapies by developing drugs that restore or increase the effectiveness of existing conventional antibacterial agents. Bactericidal antibiotics kill bacteria through a common pathway of DNA damage, and inhibiting the bacterial DNA damage response known as "SOS" potentiates killing by these antibiotics. Synereca's initial target is RecA, a ubiquitous SOS enzyme essential for bacteria to survive antibiotic treatment. Synereca has identified several series of small-molecule RecA inhibitors that attenuate bacterial SOS and potentiate antibacterial killing in vitro. To enhance Synereca's program and attract additional investment and potential pharma partnerships, a proof-of-concept molecule (POCM) that potentiates antibacterial killing in an in vivo model of infection must be advanced from at least one series. We will characterize the biochemical activities of 20–40 commercially available analogs. Biochemically active compounds will be further evaluated using a panel of bacteriological assays to validate target specificity, determine biological potency and counter-screen against possible off-target toxicity. These experiments will guide the selection of one or more lead RecA inhibitors, which will be tested for ciprofloxacin potentiation in an established mouse model of *E. coli* infection.
Role: PI

NC TraCS $10K Pilot Grant 6/11 – 5/12 $10,000 (total direct costs)
A Chemical Approach to Target Validation for Control of Pneumococcal Disease
The human pathogen *Streptococcus pneumoniae* is a major cause of infectious disease, producing conditions such as pneumonia, sinusitis, otitis media, and meningitis. From initial colonization to establishment of disease, *S. pneumoniae* utilizes numerous strategies to evade host immune responses. The objective of the proposed work is to establish new treatment options by validating a novel therapeutic target: the pneumococcal surface endonuclease, EndA. This enzyme participates in two activities that enable the pathogen to evade its host's immune defenses. EndA's ability to degrade the DNA backbone of neutrophil extracellular traps (NETs) allows pneumococci to physically escape an emergent immune response, whereas EndA's role in transformation plays a central part in the adaptation of the pathogen to chronic host defenses. Because these activities are required for invasive infection, EndA facilitates *S. pneumoniae* infection and pathogenesis via its cardinal roles in NET escape and transformation. The proposed research seeks to leverage the existing expertise of the PI with the NC TraCS core facility at the CICBDD to use a newly validated assay to identify novel small molecules that inhibit the actions of pneumococcal EndA. The tools and knowledge gained from these studies will help establish EndA as a druggable target for the future management of pneumococcal infection.
Role: PI

NC BioStart Commercialization Grant 06/10 – 6/11 $50,000 (total costs)
Commercialization of RecA Inhibitor Technology via Synereca Pharmaceuticals
The NC BioStart Commercialization Grant Program provides funding and access to internal and external business experts to assist faculty-led companies with the commercialization of concepts for novel therapeutic small molecules, biologics, diagnostics, or devices.
Role: PI

SRA with Synereca Pharmaceuticals 06/10 – 01/12 $72,185 (total costs)
Commercialization of RecA Inhibitor Technology
To assess prospective RecA inhibitors that will lead to an IP portfolio of developable RecA inhibitors for Synereca, we will: evaluate the biological activities of prospective RecA inhibitors to determine whether they potentiate the killing of *E. coli* by sub-lethal doses of ciprofloxacin (CIP), trimethoprim (TMP), ampicillin (AMP) and gentamicin (GEN); evaluate the biological activities of prospective RecA inhibitors to determine whether they fully attenuate antibiotic-induced SOS reporter gene expression; determine whether the biological activities of prospective RecA inhibitors depend on RecA function by evaluating their abilities to selectively kill Δ*rdgB E. coli*; measure efficacies and potencies of active RecA inhibitors using (a) a fold shift in MIC for the conventional antibacterial and an IC_{50} for the shift; (b) a relative change in β-galactosidase expression and an IC_{50}; and an MIC versus the Δ*rdgB* strain (potency only); evaluate the abilities of active RecA inhibitors to potentiate *E. coli* killing by CIP, levofloxacin (LEV) and TMP-sulfamethoxazole using 10 select urine culture isolates from a combination of both inpatient and outpatient samples selected not to be multi-drug resistant. evaluate the biological activities of prospective RecA inhibitors to determine whether they potentiate the killing of *S. aureus* Seattle strain (ATCC 25923) by sub-lethal doses of CIP and TMP.
Role: PI (5% effort)

National Institutes of Health (R01 GM083059) 2/08-5/12 $40,000 (approx annual dir costs)
Intra- and Intermolecular Dynamics of Dihydrofolate Reductase
The long-range goal for this project is to understand how protein motions contribute to function and inhibition in DHFR. This proposal focuses on the *E. coli* enzyme and is guided by the following central hypothesis: Ligand binding equilibria, conformational switching, and long-range effects in E. coli DHFR function are ultimately determined by an organized set of fast, local motions. This research uses state-of-the-art solution NMR relaxation experiments, in combination with transient- and pre-steady-state enzyme kinetics, to provide a foundation for understanding how intramolecular protein motions influence binding and dissociation of ligands.
Role: co-PI (5% effort; PI Andrew L. Lee)

RecÆdo Therapeutics, Inc. 8/08 – 7/10 $ (see below)
Antibacterial RecA Inhibitors
Sponsored Research Agreement ($340,000 total direct costs) with start-up company to commercialize technology developed in our laboratory at UNC-CH. Company was never capitalized and licensing agreement was not finalized.

National Institutes of Health (R56 GM058114) 6/08 – 5/09 $220,000 (total direct costs)
Understanding Homology in Genetic Recombination
NIH Director's Bridge Award for active grant above.
Role: PI (20% effort)

UNC-CH Bridge Award Program 11/07 – 3/08 $69,000 (total direct costs)
Understanding Homology in Genetic Recombination
Bridge funding award for active grant above.
Role: PI (20% effort; no salary charged)

Robert A. Welch Foundation (C-1374) 6/00 – 5/03 $145,000 (total direct costs)
Redesigning Dimeric Aspartic Proteinases: New Methods and Applications
The major goals of this project are (1) to develop a two-tiered (coupled in vivo-in vitro) system for rapidly selecting dimeric aspartic proteinases from combinatorial genetic libraries in *Escherichia coli*, and (2) to utilize the selection to direct the evolution of new proteinases with altered substrate specificities or physical properties.

Research Corporation 1/98 – 12/02 $35,000 (total direct costs)
Towards a Generalizable Strategy for Enzyme Design: Construction of Independently Folded Polypeptide Modules
The major goal of this project is to study synthetic peptides designed to fold into beta-alpha-beta supersecondary structural units.

Louis J. Girard Ophthalmological Foundation 11/97 – 10/98 $135,000 (total direct costs)
Design and Construction of Proteolytic Agents for Noninvasive Zonulolysis of the Cataractous Lens
In order to restore sight to millions of patients suffering from blindness due to cataract in developing nations, the goals of this project were to provide a reagent which can be applied topically to the cornea, will pass through the cornea into the aqueous humor, where it will be activated to affect zonulolytic digestion, and whose substrate specificity will prevent it from damaging other areas of the eye.

Robert A. Welch Foundation (C-1374) 6/97 – 5/00 $124,000 (total direct costs)
Probing Molecular Interactions During RecA-Mediated DNA Strand Exchange Using Nonnatural DNA Bases
The overall goal of this project was to elucidate the molecular process of RecA-mediated genetic recombination by characterizing the forces of molecular recognition that control recombination events, and to establish an in vitro system that accurately reproduces the cellular process.

NSF (CHE-9713601) 7/97 – 6/98 $36,364 (total direct costs)
Probing Molecular Interactions During RecA-Mediated DNA Strand Exchange Using Nucleotide Analogs
The major goal of this project was to investigate the influence of nucleotide modifications on the kinetic parameters of the strand exchange reaction mediated the RecA protein by developing a continuous kinetic assay that takes advantage of the environmental sensitivity of the intrinsic fluorescence of 2-aminopurine and 5-methyl-pyrmidin-2-one.

Fain Foundation 9/96 $30,000 (total direct costs)
Rapid Reaction Analysis Instrumentation for a Continuous Kinetic Assay for DNA Strand Exchange
Grant to purchase instrumentation (stopped-flow rapid reaction analyzer).

Rice University 9/96 $20,000 (total direct costs)

Rapid Reaction Analysis Instrumentation for a Continuous Kinetic Assay for DNA Strand Exchange
Matching funds for Fain Foundation grant (see above).

Professional Service

Service Awards

Outstanding Faculty Award, Rice University Premedical Society, 1999
Doughtie Distinguished Faculty Associate Award, Rice University, 1998–99

Service Activities within the UNC Eshelman School of Pharmacy

2022-present	Class of 2026 Faculty Advisor
2019-present	Curriculum and Assessment Committee
2018-present	Foundational Sciences Course Stream Co-Chair
2018-present	Conflicts of Interest Committee
2021-2023	Faculty Teaching Effort Task Force
2021	Curriculum Outcomes Advisory Team (Ex officio)
2020-2021	Technology Governance Team
2018-2020	ACPE Accreditation Self-Study Steering Committee
2018-2020	ACPE Accreditation Self-Study Standards 10-13 Co-Chair
2018-2020	ACPE Accreditation Self-Study Standard 1 Reviewer
2018-2019	Curriculum Innovation Committee (CIC) Co-Chair
2018-2019	PIPC 2.0 Education Working Committee
2017-2021	Class of 2021 Faculty Advisor
2017-2018	Curriculum Innovation and Assessment Committee (CIAC)
2017-2018	CIAC Foundational Sciences Course Stream Working Group Chair
2017-2018	CIAC Curriculum Accountability and Compliance Working Group
2017	Search Committee, Technology Operations Manager (Educational Technology)
2016-2018	First-Year PharmD (PY1) Curriculum Coordinator (reports to Associate Dean for Prof. Ed.)
2016-2017	PharmD Assessment Committee
2015-2019	Class of 2019 Faculty Advisor
2015-2017	Curriculum Transformation Advisory Team
2014-2017	Curriculum Transformation Steering Committee
2014-2018	Class of 2018 Faculty Advisor
2013-2017	Class of 2017 Faculty Advisor
2014-2016	Co-developer (with Stephen Eckel) of new Curriculum 2015 Pharmacy Innovation and Problem Solving (PIPS) courses
2014-2016	Mentor, Residency Teaching Certificate Program
2015-2016	PharmAlliance Joint Masters/Short Courses Working Group
2013-2015	Co-developer (with Mike Jarstfer) of new Curriculum 2015 foundational course, Molecular Foundations of Drug Action
2014-2015	Chair, Curriculum Transformation Oversight Committee
2014-2015	Head, Curriculum 2015 Foundational Year Working Group
2014-2015	Curriculum 2015 Assessment Working Group
2014-2015	Dean's *Ad hoc* Space Planning Committee
2014-2015	Fixed-term Faculty Search Committee, Center for Integrative Chemical Biology and Drug Discovery
2012-2015	Website Advisory Group
2014	Dean's *Ad hoc* EduPorte Planning Committee
2014	Clinical Assistant Professor Search Committee, Division of Molecular Pharmaceutics
2013-2014	Chair, Curriculum Design & Execution Steering Committee
2013	Curriculum Design & Execution Pharmacy Innovation and Problem Solving Committee
2012	Curriculum Transformation Steering Committee
2012	Co-chair, Curriculum Transformation Technology and Pedagogy Committee
2009-2011	Faculty Search Committee, Center for Nanotechnology in Drug Delivery
2008-2011	Director of Graduate Studies, Pharmaceutical Sciences PhD Program
2008-2011	Chair, Graduate Education Committee

2006-2011	Graduate Education Committee
2008-2010	Secretary of the Faculty, Eshelman School of Pharmacy
2008-2010	Committee to develop Chemical Biology Training Program
2008-2010	Faculty Search Committee, Center for Integrative Chemical Biology and Drug Discovery
2007-2010	Faculty Search Committee, Chemical Biology position, Department of Biochemistry and Biophysics
2006-2008	Division Director of Graduate Studies, Medicinal Chemistry & Natural Products
2006-2007	Faculty Search Committee, Molecular Imaging Position (joint MOPH & BRIC)
2005-2008	Faculty Advisor, Pharmaceutical Sciences Graduate Student Organization
2004-2008	Web Site Committee
2006	SPA Employee Bonus Committee
2004-2006	Dean's Advisory Council, faculty representative
2003-2006	Division Director of Graduate Admissions, Medicinal Chemistry & Natural Products
2003-2006	Graduate Education Committee (GEC), *ex officio* member for graduate student recruitment
2004-05	Co-chair, Search Committee for Chair of Medicinal Chemistry & Natural Products
2004	Organized *ad hoc* advisory group for improving the School's research presence on the website
2004	Dean's *Ad hoc* Graduate Program Governance Planning Committee
2004	Dean's *Ad hoc* Website Committee, *ex officio* by request of Chair
2004	Dean's *Ad hoc* Committee to Review Policies and Procedures Regarding Faculty Appointment, Promotion, Tenure and Reappointment
2003-04	Faculty Development Committee

Service Activities within the University

The University of North Carolina at Chapel Hill

2022-present Faculty Advisor, UNC Darkside (nationally competitive men's Ultimate Frisbee team)
2022-present Chair, Board of Directors, Presbyterian Campus Ministry of Chapel Hill (PCUSA Christian community for students)
2021-present Faculty representative, Board of Directors, Presbyterian Campus Ministry of Chapel Hill (PCUSA Christian community for students)
2018-2019 Inquiry Committee for Research Integrity Office
2014-2017 Faculty representative, Board of Directors, Presbyterian Campus Ministry of Chapel Hill (PCUSA Christian community for students)
2010-2016 Administrative Board of the UNC Graduate School
2015-2016 Academic Policy Sub-committee of the Administrative Board of the UNC Graduate School
2010-2015 Fellowship Sub-committee of the Administrative Board of the UNC Graduate School
2014-2015 University Open Access Task Force
2014-2105 Mentor, Chancellor's Science Scholars Program
2010-2011 First-Year Group co-leader and mentor, Biological and Biomedical Sciences Program
2008-2011 Biomedical and Biological Sciences Program Executive Committee
2008-2010 Biomedical and Biological Sciences Program Admissions Committee

Rice University

1997-2003 Will Rice College Faculty Associate (University)
2002 Faculty, Rice University Owl Weekend (recruitment of underrepresented minority students)
2002 Judge, Rice University Undergraduate Research Symposium (University)
2000-02 Seminar Committee, 2000–02 (Dept Chem)
1999-2002 Student Awards Committee, 1999-2002 (Dept Chem)
1997-2001 Will Rice College Student Advisor for Wiess School of Natural Sciences (University)
1997-2001 Graduate Curriculum Committee (Department of Biochemistry & Cell Biology)
1999 Lecturer, Annual Rice University Advanced Placement Summer Institute (University)
1998-99 Chair, Graduate Recruiting Committee (Dept Chem)
1998 Lecturer, Annual Rice University Advanced Placement Summer Institute (University)
1998 Faculty Participant, Rice Football Information Day (Univeresity)
1997-98 Director of Organic Division Graduate Recruiting (Dept Chem)
1997-98 The University Committee on the Library (University)
1996-99 Graduate Recruiting Committee (Department of Chemistry)
1996-99 Advisor, Student Affiliates of the American Chemical Society (Dept Chem)
National Honorable Mention Chapter, 1997–98
National Commendable Chapter, 1998–99

Service to Discipline

Ad hoc Member, NIH Synthetic & Biological Chemistry A (SBCA) Study Section, 2005
Ad hoc Member, NIH International and Cooperative Projects 1 (ICP1) Study Section, 2004
Ad hoc Member, NIH Bioorganic & Natural Products (BNP) Study Section, 2003
Panel Member, NSF Division of Cellular & Molecular Biology (Prokaryotic Genetics), 2002-03
Chaired Session on "Biomolecuar Engineering and Innovations" at the 2nd German and American Symposium on the Frontiers of Chemistry, Durham, NH, August 23-25, 2002.
Organized Symposium entitled, "New Approaches to Confront Antibacterial Resistance," for the ACS Division of Medicinal Chemistry at the Spring 2007 National ACS Meeting in Chicago; the technical session will include the 2007 Team Innovation Award address by Steve Brickner for his group's role in the discovery of linezolid.
Peer Reviewer for Funding Agencies
ACS PRF
NSF Division of Chemistry
Research Corporation

The Sloan Foundation

Peer Reviewer for Publication

Biochemistry
Biophysical Journal
Biotechniques
Chemical Research in Toxicology
Journal of Organic Chemistry
Journal of the American Chemical Society
Journal of Biological Chemistry
Journal of Hazardous Materials
Journal of Inorganic Biochemistry
Nature Structural and Molecular Biology
Organic and Biomolecular Chemistry
Organic Letters
Science

Professional Organizations

American Association of Colleges of Pharmacy (AACP)
Association for Medical Education in Europe (AMEE)