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William R. Kenan, Jr. Distinguished Professor

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EDUCATION

Doctor of Philosophy in Biochemistry, Department of Chemistry and Biochemistry,
University of California, Los Angeles; July, 1995.

Bachelor of Science in Biochemistry, Minor in English Literature,
University of California, Davis; June, 1990.

PROFESSIONAL EXPERIENCE

- July, 2013 – present **William R. Kenan, Jr. Distinguished Professor**, University of North Carolina
- July, 2013 – July, 2014 **Visiting Professor**, Nuffield Department of Medicine, University of Oxford
- Sept., 2013 – July, 2014 **Visiting Fellow**, Magdalen College, University of Oxford
- July, 2013 – present **Professor, Integrative Program in Biological and Genome Sciences**, School of Medicine, University of North Carolina at Chapel Hill
- June, 2012 – present **Founder**, *Syberix, Inc.*
Biopharmaceutical venture focused on improving human health by rationally, selectively and safely drugging the microbiome.
- July, 2007 – present **Professor, Department of Chemistry**, College of Arts and Sciences, University of North Carolina at Chapel Hill.
Professor, Program in Molecular Biology and Biotechnology, School of Medicine, University of North Carolina at Chapel Hill.
Professor, Department of Biochemistry and Biophysics, School of Medicine, University of North Carolina at Chapel Hill.
Professor, Department of Microbiology and Immunology, School of Medicine, University of North Carolina at Chapel Hill.
Director of UNC Structural Biology

- Member**, UNC Lineberger Comprehensive Cancer Center, and the Program in Molecular and Cellular Biophysics.
- March, 2010 – March, 2012 **Founder, Chief Scientific Officer**, *Identizyme Defense Technologies, Inc.*
Biotechnology venture focused on rapid identification of nerve agent chemical weapons. Dissolved in 2012.
- July, 2009 – June, 2012 **Chair, Department of Chemistry**, University of North Carolina at Chapel Hill.
- June, 2007 – May, 2011 **Founder, Chief Scientific Officer**, *Exigent Pharmaceuticals, Inc.*
Biopharmaceutical venture focused on novel treatments for drug-resistant bacterial infections. Dissolved in 2011.
- September, 2006 – June, 2009 **Vice Chair, Department of Chemistry**, University of North Carolina at Chapel Hill.
- March, 2003 – June, 2007 **Associate Professor, Department of Chemistry**, College of Arts and Sciences, University of North Carolina at Chapel Hill.
Associate Professor, Department of Biochemistry and Biophysics, School of Medicine, University of North Carolina at Chapel Hill.
Director of UNC Structural Biology
Member, UNC Lineberger Comprehensive Cancer Center, the Program in Molecular and Cellular Biophysics, and the Program in Molecular Biology and Biotechnology.
- August, 1999 – March, 2003 **Assistant Professor, Department of Chemistry**, College of Arts and Sciences, University of North Carolina at Chapel Hill.
Assistant Professor, Department of Biochemistry and Biophysics, School of Medicine, University of North Carolina at Chapel Hill. Joint appointment initiated July 1, 2002.
Director of Structural Biology, UNC Program in Molecular Biology and Biotechnology. Initiated July 1, 2002.
Member, UNC Lineberger Comprehensive Cancer Center, the Program in Molecular and Cellular Biophysics, and the Program in Molecular Biology and Biotechnology.
- September, 1995 – July, 1999 **Postdoctoral Fellow**, laboratory of Wim G. J. Hol, Biomolecular Structure Center, University of Washington. Crystal structures of human topoisomerase I in covalent and non-covalent complexes with DNA.
- June, 1990 – August, 1995 **Graduate Student**, laboratory of Todd O. Yeates, Department of Chemistry and Biochemistry, University of California, Los Angeles. Protein x-ray crystallography, crystallographic methods, general biochemistry and molecular biology. Dissertation Title: “Structural Studies of Plastocyanin and Human Amyloid Beta-Peptide.”

SELECT AWARDS AND HONORS

- Honorary Fellow, Magdalen College, University of Oxford, 2014-2020.
Fellow, American Association for the Advancement of Sciences, 2013.
Visiting Fellow, Magdalen College, University of Oxford, 2014.
William R. Kenan, Jr. Distinguished Professor, 2013-present.
Visiting Professor, Structural Genomics Consortium, University of Oxford, 2013-2014.
Academic Leadership Fellow, UNC Institute for the Arts and Humanities, 2010-2011.
Phillip and Ruth Hettleman Prize for Artistic and Scholarly Achievement, 2004.

Burroughs Wellcome Fund Career Award in the Biomedical Sciences, 1999.
Outstanding Dissertation Award, University of California, Los Angeles, 1995.
NIH National Research Service Award in Biotechnology, 1994-1995.
NIH National Research Service Award in Cellular and Molecular Biology, 1991-1994.
Outstanding Teaching Award, University of California, Los Angeles, 1991.

SELECT UNIVERSITY SERVICE

Selection Committee for Distinguished Professors, UNC Chapel Hill, Aug., 2015 – present.
Chair, Department of Chemistry, UNC Chapel Hill, July, 2009 – June, 2012.
Vice Chair, Department of Chemistry, UNC Chapel Hill, Sept. 2006 – June, 2009.
Advisory Board, Office of Technology Development, UNC, August, 2012 – present.
Genome Science Building Core Design Group, UNC Chapel Hill, 2007 – 2012.
Chair, Search Committee, Structural Biology Faculty Position, Center for Integrative Chemical Biology and Drug Discovery, UNC Chapel Hill, 2008 – 2009; Search Committee, Bioinformatics Faculty Position, Department of Chemistry, 2004-2005.
Scientific Advisory Board, Center for Integrative Chemical Biology and Drug Discovery, UNC Chapel Hill, 2007-present.
Administrative Board of the UNC Program in Molecular and Cellular Biophysics, 2004-2008.
Graduate Studies Committee, Department of Chemistry, UNC Chapel Hill, 2004-2006.
Search Committees, UNC Chapel Hill: Genomics and Bioinformatics, Department of Chemistry, 2001-2003; Medicinal Chemistry, School of Pharmacy, 2001-2003; Bioinformatics, Department of Pharmacology, School of Medicine, 2002-2003; Chair, Medicinal Chemistry, School of Pharmacy, 2004-2006.
Selection Committee, Steelman Lecture Series, Department of Pharmacology, UNC School of Medicine, 2002-2003.
Graduate Student Recruiting Committee, UNC Chemistry Department, 1999-2002.

SELECT PROFESSIONAL SOCIETIES AND ACTIVITIES

Advisory Committee, *Burroughs Wellcome Career Award in the Biomedical Sciences*, August, 2005 – present.
Editorial Board, *Molecular Endocrinology*: 2005 – 2008.
Member, U.S. National Committee for Crystallography, part of the National Academy of Arts and Sciences, term 2004 – 2006.
Reviewer, Structural Biology Section of *Faculty of 1000* On-Line Biomedical Literature Review, 2002 – present
Scientific Consultant, Syrrx Pharmaceuticals, 2001 – 2003.
Ad Hoc Reviewer: *Science*, *Nature*, *Nature Structural Biology*, *EMBO Journal*, *Biochemistry*, *Journal of Biological Chemistry*, *Nucleic Acids Research*, *Journal of Bacteriology*, *Acta Crystallographica*, *Drug Discovery Today*, *Journal of Medicinal Chemistry*
NIH Study Section Reviewer, *Ad Hoc*:
Drug Discovery and Molecular Pharmacology, Feb. 17-20, 2004; Oct. 20, 2004
MSFB, June 22-23, 2006
Countermeasures Against Chemical Threats, August 10-11, 2006; April 16, 2008
MSFC, February, 2013
Cancer Center P01 Review, February, 2013
Special Emphasis Panels for NIDDK RFA November, 2014, February, 2015, and July, 2015
ACS Study Section Reviewer, Ad Hoc: “Genetic Mechanisms of Cancer”, *American Cancer Society*, Jan. 13-14, 2004.
American Crystallographic Association; Member, 1992-present
Session Co-Chair, “New Macromolecular Structures”, 2003 Annual Meeting, Cincinnati, OH.
Chair, Young Scientist Special Interest Group, 1997-1998.
Program Committee, 1998 Annual Meeting, Washington, D.C.

Session Chair, "Future of Funding in the Crystallographic Sciences"
Session Chair, "Young Scientist Poster Highlight Session"
Organizing Committee, Northwest Crystallography Workshop; Seattle, WA; June, 1998.
American Association for the Advancement of Sciences; 1991-1994, 1997-present.

PUBLICATIONS

1. **Redinbo, M.R.** and Yeates, T.O.
Structure determination of plastocyanin from a specimen with a hemihedral twinning fraction of one-half.
Acta Crystallographica, **D49**, 375-380. (1993).
2. **Redinbo, M.R.**, Cascio, D., Choukair, M.K., Rice, D., Merchant, S., and Yeates, T.O.
The 1.5 Å crystal structure of plastocyanin from the green alga *Chlamydomonas reinhardtii*.
Biochemistry, **32**, 10560-10567. (1993).
3. **Redinbo, M.R.**, Yeates, T.O., and Merchant, S.
Plastocyanin: structural and functional analysis.
Journal of Bioenergetics and Biomembranes, **26**, 49-66. (1994).
4. **Redinbo, M.R.**, Peiris, S., Stone, R.L., Dixon, J.E., and Yeates, T.O.
Crystallization and preliminary structural analysis of *Bacillus subtilis* adenylosuccinate lyase, a protein implicated in infantile autism.
Protein Science, **6**, 786-788. (1996).
5. **Redinbo, M.R.**, Stewart, L., Kuhn, P., Champoux, J.J., and Hol, W.G.J.
Crystal structures of human topoisomerase I in covalent and non-covalent complexes with DNA.
Science, **279**, 1504-1513. (1998).

See accompanying Commentary in *Science*, **279**, 1490-1491 (1998).
6. Stewart, L., **Redinbo, M.R.**, Qiu, X., Hol, W.G.J., and Champoux, J.J.
A model for the mechanism of human topoisomerase I.
Science, **279**, 1534-1541. (1998).

See accompanying Commentary in *Science*, **279**, 1490-1491 (1998).
7. **Redinbo, M.R.**, Champoux, J.J., and Hol, W.G.J.
Structural insights into the function of type IB topoisomerases.
Current Opinion in Structural Biology, **9**, 29-36. (1999).
8. Diller, D., Pohl, E., **Redinbo, M.R.**, Hovey, B., and Hol, W.G.J.
A rapid method for positioning small flexible molecules, nucleic acids, and large protein fragments into experimental electron density maps.
Proteins, **36**, 512-525. (1999).
9. Diller, D., **Redinbo, M.R.**, Pohl, E., and Hol, W.G.J.
A database method for automated map interpretation in protein crystallography.
Proteins, **36**, 526-541. (1999).
10. **Redinbo, M.R.**, Stewart, L., Champoux, J.J., and Hol, W.G.J.
Structural flexibility in human topoisomerase I revealed in multiple non-isomorphous crystal structures.
Journal of Molecular Biology, **292**, 685-696. (1999).
11. **Redinbo, M.R.**, Champoux, J.J., and Hol, W.G.J.

Novel insights into catalytic mechanism from a crystal structure of human topoisomerase I in complex with DNA.

Biochemistry, **39**, 6832-6840. (2000).

12. Wills, E.A., **Redinbo, M.R.**, Perfect, J., and Del Poeta, M.
New potential targets for antifungal development.
Emerging Therapeutic Targets, **4**, 1-32. (2000).
13. Watkins, R.E., Wisely, G.B., Moore, L.B., Collins, J.L., Lambert, M.H., Williams, S.P., Willson, T.M., Kliewer, S.A., and **Redinbo, M.R.**
The human nuclear xenobiotic receptor PXR: structural determinants of directed promiscuity.
Science, **292**, 2329-2333. (2001).

Commentaries on this paper include: *Business Week*, July 9, 2000; p. 69; *Trends in Pharmaceutical Sciences*, **23**, 49-50; *Raleigh News and Observer*, June 15, 2001, p. B1; *Bloomberg News On-Line*, June 15, 2001; *Reuters Health*, June 15, 2001; *Scientific American On-Line*, June 15, 2001.
14. Watkins, R.E., Noble, S.N., and **Redinbo, M.R.**
Structural insights into the promiscuity and function of the human pregnane X receptor.
Current Opinion in Drug Discovery and Development, **5**, 150-158. (2002).

Received the cover of this issue of *Current Opinion in Drug Discovery and Development*.
15. Xue, Y., Ratcliff, G.C., Wang, H., Davis-Searles, P.R., Gray, M.D., Erie, D.A., and **Redinbo, M.R.**
A minimal exonuclease domain of WRN forms a hexamer on DNA and possesses both 3'-5' exonuclease and 5'-protruding strand endonuclease activities.
Biochemistry, **41**, 2901-2912. (2002).
16. Berretty, R.-P., Hsu, D., Kettner, L., Mascarenhas, A., **Redinbo, M.R.**, Snoeyink, J., and Watkins, R.E.
Ligand binding to the pregnane X receptor by geometric matching of hydrogen bonds.
Currents in Computational Molecular Biology (RECOMB). Florea, L., Walenz, B., Hannenhalli, S., Editors. pp. 22-23. (2002).
17. Bencharit, S., Morton, C.L., Howard-Williams, E.L., Danks, M.K., Potter, P.M., and **Redinbo, M.R.**
Structural insights into CPT-11 activation by mammalian carboxylesterases.
Nature Structural Biology, **9**, 337-342. (2002).
18. Leshner, D.-T.T., Pommier, Y., Stewart, L., and **Redinbo, M.R.**
8-oxoguanine rearranges the active site of human topoisomerase I.
Proceedings of the National Academy of Sciences USA, **99**, 12102-12107. (2002).
19. Goodwin, B., **Redinbo, M.R.**, and Kliewer, S.A. (2002).
The regulation of Cyp3A gene expression by the pregnane X receptor.
Annual Reviews of Pharmacology and Toxicology, **42**, 1-23.
20. Watkins, R.E., Maglich, J.M., Moore, L.B., Wisely, G.B., Noble, S.N., Davis-Searles, P.R., Lambert, M.H., Kliewer, S.A., and **Redinbo, M.R.**
2.1 Å crystal structure of human PXR in complex with the St. John's wort compound hyperforin.
Biochemistry, **42**, 1430-1438. (2003).
21. Chrencik, J.E., Burgin, A.B., Pommier, Y., Stewart, L., and **Redinbo, M.R.**
Structural impact of the leukemia drug Ara-C on the covalent human topoisomerase I DNA complex.
Journal of Biological Chemistry, **278**, 12461-12466. (2003).
22. Bencharit, S., Morton, C.L., Xue, Y., Potter, P.M. and **Redinbo, M.R.**
Structural basis of heroin and cocaine metabolism by a promiscuous human drug-processing enzyme.

Nature Structural Biology, **10**, 349-356. (2003).

Received the cover of this issue of *Nature Structural Biology*. Commentaries on this paper include *Science Now*, April 7, 2003, and *Nature Reviews Drug Discovery*, **2**, 511 (2003).

23. Bencharit, S., Morton, C.L., Hyatt, J.L., Kuhn, P., Danks, M.K., Potter, P.M., and **Redinbo, M.R.**
Crystal structure of human carboxylesterase 1 complexed with the Alzheimer's drug tacrine: from binding promiscuity to selective inhibition.
Chemistry and Biology, **10**, 341-349. (2003).

See accompanying Preview in *Chemistry and Biology*, **10**, 295-297 (2003). Commentaries on this paper include *Science Now*, April 7, 2003, and *Nature Reviews Drug Discovery*, **2**, 511 (2003).
24. Watkins, R.E., Davis-Searles, P.R., Lambert, M.H., and **Redinbo, M.R.**
Coactivator binding promotes the specific interaction between ligand and the pregnane X receptor.
Journal of Molecular Biology, **331**, 815-821. (2003).
25. **Redinbo, M.R.**, Bencharit, S., and Potter, P.M.
Human carboxylesterase 1: from drug metabolism to drug discovery.
Biochemical Society Transactions, **31**, 620-624. (2003).
26. Wierdl, M., Morton, C.L., Nguyen, N., **Redinbo, M.R.**, and Potter, P.M.
Molecular modeling of CPT-11 metabolism by carboxylesterases: Use of pnb CE as a model.
Biochemistry, **43**, 1874-1882. (2004).
27. Chrencik, J.E., Staker, B.L., Burgin, A.B., Pourquier, P., Pommier, Y., Stewart, L., and **Redinbo, M.R.**
Mechanisms of camptothecin resistance by human topoisomerase I mutations.
Journal of Molecular Biology, **339**, 773-784. (2004).
28. **Redinbo, M.R.**
Promiscuity: what protects us, perplexes us.
Drug Discovery Today, **9**, 431-432. (2004).
29. Thapar, R., Marzluff, W.F., and **Redinbo, M.R.**
Electrostatic contribution of serine phosphorylation to the Drosophila SLBP-histone mRNA complex.
Biochemistry, **43**, 9401-9412. (2004).
30. Chillemi, G., **Redinbo, M.**, Bruselles, A., and Desideri, A.
Role of the linker domain and the 203-214 N-terminal residues in the human topoisomerase I DNA complex dynamics.
Biophysical Journal, **87**, 4087-4097. (2004).
31. Antony, S., Theruvathu, J.A., Brooks, P.J., Leshner, D.-T.T., **Redinbo, M.**, and Pommier, Y.
Enhancement of camptothecin-induced topoisomerase I cleavage complexes by the acetaldehyde adduct N₂-ethyl guanine.
Nucleic Acids Research, **32**, 5685-5692. (2004).
32. Chrencik, J.C., Orans, J., Moore, L.B., Xue, Y., Peng, L., Collins, J.C., Wisely, G.B., Lambert, M.H., Kliwer, S.A., and **Redinbo, M.R.**
Structural disorder in the complex of human PXR and the macrolide antibiotic rifampicin.
Molecular Endocrinology, **19**, 1125-1134. (2005).
33. **Redinbo, M.R.** and Potter, P.M.
Mammalian carboxylesterases: from drug targets to protein therapeutics.
Drug Discovery Today, **10**, 313-325. (2005).

34. Ortlund, E.A., Lee, Y., Solomon, I.H., Hager, J.M., Safi, R., Choi, Y., Guan, Z., Tripathy, A., Raetz, C.R.H., McDonnell, D.P., Moore, D.D., and **Redinbo, M.R.**
Modulation of human nuclear receptor LRH-1 activity by phospholipids and SHP.
Nature Structural and Molecular Biology, **12**, 357-363. (2005).
- See highlight in *Nature Reviews Cancer*, **5**, 246 (2005); preview in *Cell Metabolism*, **1**, 153-155 (2005).
35. Huang, H., Fleming, C.D., Nishi, K., **Redinbo, M.R.**, and Hammock, B.D.
Stereospecific hydrolysis of pyrethroid-like fluorescent substrates by human and other mammalian liver carboxylesterases.
Chemical Research in Toxicology, **18**, 1371-1377. (2005).
36. Carnahan, V.E. and **Redinbo, M.R.**
Structure and function of the human nuclear xenobiotic receptor PXR.
Current Drug Metabolism, **6**, 357-367. (2005).
37. Fleming, C.D., Bencharit, S., Edwards, C.C., Hyatt, J.L., Tsurkan, L., Feng, B., Fraga, C., Morton, C.L., Howard-Williams, E.L., Potter, P.M., and **Redinbo, M.R.**
Structural insights into drug processing by human carboxylesterase 1: tamoxifen, mevastatin and inhibition by benzil.
Journal of Molecular Biology, **352**, 165-177. (2005).
38. Orans, J., Teotico, D.G., and **Redinbo, M.R.**
The nuclear xenobiotic receptor PXR: recent insights and new challenges.
Molecular Endocrinology, **19**, 2891-2900. (2005).
39. Solomon, I.H., Hager, J.M., Safi, R., McDonnell, D.P., **Redinbo, M.R.**, and Ortlund, E.A.
Crystal structure of the human LRH-1 DBD DNA complex reveals Ftz-F1 domain positioning is required for receptor activity.
Journal of Molecular Biology, **354**, 1091-1102. (2005).
40. Ingraham, H.A. and **Redinbo, M.R.**
Orphan nuclear receptors adopted by crystallography.
Current Opinion in Structural Biology, **15**, 1-8. (2005).
41. Noble, S.N., Carnahan, V.E., Moore, L.B., Luntz, T., Wang, H., Ittoop, O.R., Stimmel, J.B., Davis-Searles, P.R., Watkins, R.E., Wisely, G.B., LeCluyse, E.L., Tripathy, A., McDonnell, D.P., and **Redinbo, M.R.**
Human PXR forms a tryptophan zipper-mediated homodimer.
Biochemistry, **45**, 8579-8589. (2006).
- See highlight in *Nature Chemical Biology*, **2**, 405 (2006), and in *Faculty of 1000 Biology*.
42. Huang, H., Wang, H., Sinz, M., Zoeckler, M., Staudinger, J., **Redinbo, M.R.**, Teotico, D.T., Locker, J., Kalpana, G.V., and Mani, S.
Inhibition of drug metabolism by blocking the activation of nuclear receptors by ketoconazole.
Oncogene, **26**, 258-268. (2006).
43. Bencharit, S., Edwards, C.C., Morton, C.L., Howard-Williams, E.L., Kuhn, P., Potter, P.M., and **Redinbo, M.R.**
Multisite promiscuity in the processing of endogenous substrates by human carboxylesterase 1.
Journal of Molecular Biology, **363**, 201-214. (2006).
44. Wang, H., Huang, H., Li, H., Teotico, D.G., Sinz, M., Baker, S.D., Staudinger, J., Kalpana, G., **Redinbo, M.R.**, and Mani, S.
Activated PXR is a target for ketoconazole and its analogues.
Clinical Cancer Research, **13**, 2488-2495. (2007).

45. Xue, Y., Chao, E., Zuercher, W.J., Willson, T.M., Collins, J.L., and **Redinbo, M.R.**
Crystal structure of the PXR-T1317 complex provides a scaffold to examine the potential for receptor antagonism.
Bioorganic and Medicinal Chemistry, **15**, 2156-2166. (2007).
46. Wadkins, R.M., Hyatt, J.L., Edwards, C.C., Tsurkan, L., **Redinbo, M.R.**, Wheelock, C.E., Jones, P.D., Hammock, B.D., and Potter, P.M.
Analysis of mammalian carboxylesterase inhibition by trifluoromethylketone-containing compounds.
Molecular Pharmacology, **71**, 713-723. (2007).
47. Xue, Y., Moore, L.B., Orans, J., Peng, L., Bencharit, S., Kliewer S.A., and **Redinbo, M.R.**
Crystal structure of the pregnane X receptor-estradiol complex provides insights into endobiotic recognition.
Molecular Endocrinology, **21**, 1028-1038. (2007).
48. Fleming, C.D., Edwards, C.C., Kirby, S.D., Maxwell, D.M., Potter, P.M., Cerasoli, D.M., and **Redinbo, M.R.**
Crystal structures of human carboxylesterase 1 in covalent complexes with the chemical warfare agents soman and tabun.
Biochemistry, **46**, 5063-5071. (2007).
49. Miley, M.J., Zielinska, A.K., Keenan, J.E., Bratton, S.M., Radomska-Pandya, A., and **Redinbo, M.R.**
Crystal structure of the cofactor-binding domain of the human phase II drug-metabolism enzyme UDP-glucuronosyltransferase 2B7.
Journal of Molecular Biology, **369**, 498-511. (2007).
50. Lujan, S.A., Guogas, L.M., Ragonese, H., Matson, S.W., and **Redinbo, M.R.**
Disrupting antibiotic resistance propagation by inhibiting the conjugative DNA relaxase.
Proceedings of the National Academy of Sciences USA, **104**, 12282-12287. (2007).

Coverage included a 3-minute live national television interview with Hannah Storm on the *CBS Early Show* (July 13, 2007), in print at *BBC On-Line*, *Scientific American* (both print and on-line editions), the *Raleigh News and Observer* (and subsequently picked up by nationally be numerous newspapers), *Daily India*, *Manchester Today* (and dozens of international newspapers), and on the radio at WCHL in Chapel Hill and the South African Broadcasting Company. Scientific highlights include *Nature Reviews Drug Discovery* (September, 2007).
51. Ortlund, E.A., Bridgham, J.T., **Redinbo, M.R.**, and Thornton, J.W.
Crystal structure of an ancient protein: evolution by conformational epistasis.
Science, **317**, 1544-1548. (2007).

Coverage of this paper includes a news article in the same issue of *Science*, in *Nature Reviews Molecular Cell Biology*, and articles in the *New York Times*, *Raleigh News and Observer*, *Daily India*, *New Zealand Today*, and several other international papers, as well as an interview on WCHL radio. It was also chosen as Exceptional with the highest score possible of 9 on *Faculty of 1000 Biology*.
52. Schaaf, G., Ortlund, E.A., Tyeryar, K., Mousley, C., Ile, K., Garret, T., Ren, J., Woolls, M., Raetz, C.R.H., **Redinbo, M.R.**, and Bankaitis, V. A.
Functional anatomy of phospholipid binding and regulation of phosphoinositide homeostasis by proteins of the Sec14-superfamily.
Molecular Cell, **29**, 191-206. (2008).

Highlighted by *Faculty of 1000 Biology*.
53. Potts, R.G., Lujan, S.A., and **Redinbo, M.R.**
Winning the asymmetric war: new strategies for combating antibacterial resistance.
Future Microbiology, **3**, 119-123. (2008).

54. Xiong, Y., Patana, A.S., Miley, M.J., Zielinska, A.K., Bratton, S.M., Miller, G.P., Goldman, A., Finel, M., **Redinbo, M.R.**, Radominska-Pandya, A.
The first aspartic acid of the DQxD motif for human UDP-glucuronosyltransferase 1A10 interacts with UDP-glucuronic acid during catalysis.
Drug Metabolism and Disposition, **36**, 517-522. (2008).
55. Wierdl, M., Tsurkan L., Hyatt, J.L., Edwards, C.C., Hatfield, M.J., Morton, C.L., Houghton, P.J., Danks, M.K., **Redinbo, M.R.**, and Potter, P.M.
An improved human carboxylesterase for enzyme/prodrug therapy with CPT-11.
Cancer Gene Therapy, **15**, 183-192. (2008).
56. Wang, H., Li, H., Moore, L.B., Johnson, M.D.L., Maglich, J.M., Goodwin, B., Ittoop, O.R.R., Wisely, B., Creech, K., Parks, D.J., Collins, J.L., Willson, T.M., Kalpana, G.V., Xie, W., **Redinbo, M.R.**, Moore, J.T., and Mani, S.
The phytoestrogen coumestrol is a naturally-occurring antagonist of the human pregnane X receptor (PXR).
Molecular Endocrinology, **22**, 838-857. (2008).
57. Teotico, D.G., Frazier, M.L., Ding, F., Dokholyan, N.V., Temple, B.R.S., and **Redinbo, M.R.**
Active nuclear receptors exhibit highly correlated AF-2 domain motions.
PLoS Computational Biology, **4**, e1000111. (2008).

Received the “cover” of the July 2008 issue of the on-line journal *PLoS Computational Biology*.
58. Teotico, D.G., Bischof, J.J., Peng, L., Kliewer, S.A., and **Redinbo, M.R.**
Structural basis of PXR activation by the hops constituent colupulone.
Molecular Pharmacology, **74**, 1512-1520. (2008).

Received the cover of the December 2008 issue of *Molecular Pharmacology*.
59. Guogas, L.M., Kennedy, S.A., Lee, J.-H., and **Redinbo, M.R.**
A novel fold in the TraI relaxase-helicase C-terminal domain is essential for conjugative DNA transfer.
Journal of Molecular Biology, **386**, 554-568. (2009).
60. Kennedy, S.A., Frazier, M.L., Steiniger, M., Mast, A.M., Marzluff, W.F., and **Redinbo, M.R.**
Crystal structure of the HEAT domain from the pre-mRNA processing factor Symplekin.
Journal of Molecular Biology, **392**, 115-128. (2009).
61. **Redinbo, M.R.** and Cheng, Y.
Review of “Nuclear receptors as drug targets: Methods and principles in medicinal chemistry”, Volume 39. Edited by Eckhardt Ottow and Hilmar Weinmann (Berlin, Germany). Series edited by Mannhold & Ku.
Journal of the American Chemical Society, **131**, 4552. (2009).
62. Ekins, S., Kortagere, S., Iyer, M., Reschly, E.J., Lill, M.A., **Redinbo, M.R.**, and Krasowski, M.D.
Challenges predicting ligand-receptor interactions of promiscuous proteins: the nuclear receptor PXR.
PLoS Computational Biology, **5**, e1000594. (2009).
63. Biswas, A., Mani, S., **Redinbo, M.R.**, Krasowski, M.D., Li, H., Ekins, S.
Elucidating the ‘Jekyll and Hyde’ nature of PXR: the case for discovering antagonists or allosteric antagonists.
Pharmaceutical Research, **26**, 1807-1815. (2009).
64. Radominska-Pandya, A., Bratton, S.M., **Redinbo, M.R.**, and Miley, M.J.
The crystal structure of human UDP-glucuronosyltransferase 2B7 C-terminal end is the first authentic UGT target to be revealed: the significance for UGTs from both the 1A and 2B families.
Drug Metabolism Reviews, **42**, 508-516. (2009).

65. Orans, J., Johnson, M.D.L., Coggan, K.A., Sperlazza, J.R., Heiniger, R.W., Wolfgang, M.C., and **Redinbo, M.R.**
Crystal structure analysis reveals *Pseudomonas* PilY1 as an essential calcium-dependent regulator of bacterial surface motility.
Proceedings of the National Academy of Sciences USA, **107**, 1065-1070. (2010).

Highlight on the AAAS Science Update Daily radio broadcast on February 11, 2010. Also highlighted on the AAAS Science Update weekly podcast, January 22, 2010. Covered by national and international news outlets, including UPI.
66. Hemmert, A.C., Otto, T.C., Weirld, M., Edwards, C.C., Fleming, C.D., MacDonald, M., Cashman, J.R., Potter, P.M., Cerasoli, D.M., and **Redinbo, M.R.**
Human carboxylesterase 1 stereoselectively binds the nerve agent cyclosarin and spontaneously hydrolyzes the nerve agent sarin.
Molecular Pharmacology, **77**, 1065-70. (2010).
67. Nash, R.P., Habibi, S., Cheng, Y., Lujan, S., and **Redinbo, M.R.**
The mechanism and control of DNA transfer by the conjugative relaxase of resistance plasmid pCU1.
Nucleic Acids Research, **38**, 5929-5943. (2010).
68. Holmes, R.S., Wright, M., Laulederkind, S.J.F., Cox, L.A., Hosokawa, M., Imai, T., Ishibashi, S., Lehner, R., Miyazaki, M., Perkins, E.J., Potter, P.M., **Redinbo, M.R.**, Robert, J., Satoh, T., Yamashita, T., Yan, B., Yokoi, T., Zechner, R. and Maltais, L.
Recommended nomenclature for five mammalian carboxylesterase gene families: human, mouse and rat genes and proteins.
Mammalian Genome, **21**, 427-441. (2010).
69. Parsonage, D., Newton, G., Holder, R., Wallace, B.D., Paige, C., Hamilton, C.J., Dos Santos, P., **Redinbo, M.R.**, Reid, S., and Claiborne, A.
Characterization of *N*-acetyl- α -D-glucosaminyl L-malate synthase (BshA) and deacetylase (BshB) functions for bacillithiol biosynthesis in *Bacillus anthracis*.
Biochemistry, **49**, 8398-8414. (2010).
70. Wallace, B.D., Wang, H., Lane, K.T., Scott, J.E., Orans, J., Koo, J.S., Venkatesh, M., Jobin, C., Yeh, L.-A., Mani, S., and **Redinbo, M.R.**
Alleviating cancer drug toxicity by inhibiting a bacterial enzyme.
Science, **330**, 831-835. (2010).

See accompanying Perspectives in *Science*, **330**, 766-767. Subject of 20 min piece on NPR's national radio program *The Story*, in the international print media, and in *C&E News*.
71. Hemmert, A.C. and **Redinbo, M.R.**
A structural examination of agrochemical processing by human carboxylesterase 1.
Journal of Pesticide Science, **35**, 250-256. (2010).
72. Edwards, J.S., Kumbhar, A., Roberts, A., Hemmert, A.C., Edwards, C.C., Potter, P.M., and **Redinbo, M.R.**
Immobilization of active human carboxylesterase 1 in biomimetic silica nanoparticles.
Biotechnology Progress, **27**, 863-869. (2011).
73. Cheng, Y., McNamara, D.E., Miley, M.J., Nash, R.P., and **Redinbo, M.R.**
Functional characterization of the multi-domain F plasmid TraI relaxase-helicase.
Journal of Biological Chemistry, **286**, 12670-82. (2011).
74. Hemmert, A.C., Otto, T.C., Chica, R.A., Wierld, M., Edwards, J.S., Lewis, S.L., Edwards, C.C., Tsurkan, L., Cadieux, C.L., Kasten, S.A., Cashman, J.R., Mayo, S.L., Potter, P.M., Cerasoli, D.M., and **Redinbo, M.R.**
Nerve agent hydrolysis activity designed into a human drug metabolism enzyme.

PLoS One, **6**, e17441. (2011).

Highlighted in *C&E News* and *Nature Medicine*:

- <https://cen.acs.org/articles/91/i38/Bioshield-Against-Chemical-Weapons.html>
- <http://blogs.nature.com/spoonful/2013/09/in-wake-of-syrian-chemical-attacks-scientists-look-to-improve-sarin-antidotes.html>

75. Lomino, J.V., Tripathy, A., and **Redinbo, M.R.**
Triggered *Mycobacterium tuberculosis* heparin binding hemagglutinin adhesin folding and dimerization.
Journal of Bacteriology, **193**, 2089-2096. (2011).
76. Ahmad, S., Hughes, M.A., Lane, K.T., **Redinbo, M.R.**, Yeh, L.-A., and Scott, J.E.
A high-throughput assay for discovery of bacterial β -glucuronidase inhibitors.
Current Chemical Genomics, **5**, 13-20. PMID: 21643506. PMICD: PMC3106358. (2011).
77. Nash, R.P., Niblock, F.C., and **Redinbo, M.R.**
Tyrosine partners coordinate DNA nicking by the *Salmonella typhi* plasmid pCU1 relaxase enzyme.
FEBS Letters, **585**, 1216-1222. PMID: 21439279. PMICD: PMC3086049. (2011).
78. Cheng, Y. and **Redinbo, M.R.**
Activation of the human nuclear xenobiotic receptor PXR by the reverse transcriptase-targeted anti-HIV drug PNU-142721.
Protein Science, **20**, 1713-1719. PMID: 21805522. PMICD: PMC3218365. (2011).
79. Cheng, Y., Frazier, M.L., Lu, F., Cao, X., and **Redinbo, M.R.**
Crystal structure of the plant epigenetic protein arginine methyltransferase 10.
Journal of Molecular Biology, **414**, 106-122. PMID: 21986201. PMICD: PMC3217299. (2011).
80. Navaratnarajah, P., Steele, B., **Redinbo, M.R.**, and Thompson, N.L.
Rifampicin-independent interactions between the pregnane X receptor ligand binding domain and peptide fragments of co-activator and co-repressor proteins.
Biochemistry, **51**, 19-31. PMID: 22185585. (2011).
81. Johnson, M.D.L., Garrett, C.K., Bond, J.E., Coggan, K.A., Wolfgang, M.C. and **Redinbo, M.R.**
Pseudomonas aeruginosa PilY1 binds integrin in an RGD- and calcium-dependent manner.
PLoS One, **6**, e29629. PMID: 22242136. PMICD: PMC3248442. (2011).
82. LoGuidice, A., Wallace, B.D., Bendel, L., **Redinbo, M.R.**, and Boelsterli, U.A.
Pharmacologic targeting of bacterial β -glucuronidase alleviates nonsteroidal anti-inflammatory drug-induced enteropathy in mice.
Journal of Pharmacology and Experimental Therapeutics, **341**, 447-454. PMID: 22328575. PMICD: PMC3336811. (2012).
- See accompanying Highlight in *J. Pharm. Exp. Ther.*, **341**, 306.
83. Nash, R.P., McNamara, D.E., Ballentine, W.K., Matson, S.W., and **Redinbo, M.R.**
Investigating the impact of bisphosphonates and structurally related compounds on bacteria containing conjugative plasmids.
Biochemical and Biophysical Research Communications, **424**, 697-703. PMID: 22796221. PMICD: PMC3423897. (2012).
84. Wallace, B.D., Edwards, J.S., Wallen, J.R., Moolman, W.J., van der Westhuyzen, R., Strauss, E., **Redinbo, M.R.**, and Claiborne, A.
Turnover-dependent covalent inactivation of *Staphylococcus aureus* coenzyme A-disulfide reductase by coenzyme A-mimetics: mechanistic and structural insights.

- Biochemistry*, **51**, 7699-7711. PMID: 22954034. PMICD: PMC3506119. (2012).
85. Hobbes, C.A., Blanchard, M.G., Alijevic, O., Tan, C.D., Kellenberger, S., Bencharit, S., Cao, R., Kesimer, M., Walton, W.G., Henderson, A.G., **Redinbo, M.R.**, Stutts, M.J., and Tarran, R.
Identification of SPLUNC1's ENaC-inhibitory domain yields novel strategies to treat sodium hyperabsorption in cystic fibrosis airway cultures.
American Journal of Physiology – Lung Cellular and Molecular Physiology, **305**, L990-L1001. PMID: 24124190. PMICD: PMC3882538. (2013).
 86. Porsch, E., Johnson, M.D.J., Broadnax, A., Garrett, C.B., **Redinbo, M.R.**, and St. Geme, J.
The calcium binding properties of the *Kingella kingae* PilC1 and PilC2 proteins have differential effects on type IV pilus-mediated adherence and twitching motility.
Journal of Bacteriology, **195**, 886-895. PMID: 23243304. PMICD: PMC3562114. (2013).
 87. Wallace, B.D. and **Redinbo, M.R.**
Xenobiotic-Sensing Nuclear Receptors Involved in Drug Metabolism: A Structural Perspective.
Drug Metabolism Reviews, **45**, 79-100. PMID: 23210723. (2013).
 88. Boelsterli, U.A., **Redinbo, M.R.**, and Saitta, K.
Multiple NSAID-Induced Hits Injure the Small Intestine: Underlying Mechanisms and Novel Strategies.
Toxicological Sciences, **131**, 654-667. PMID: 23091168. PMICD: PMC3551426. (2013).
 89. Mani, S. Dou, W. and **Redinbo, M.R.**
PXR Antagonists and Implications in Drug Metabolism.
Drug Metabolism Reviews, **45**, 60-72. PMID: 23330542. PMICD: PMC3583015. (2013).
 90. Wallace, B.D. and **Redinbo, M.R.**
The Human Microbiome is a Source of Therapeutic Drug Targets.
Current Opinion in Chemical Biology, **17**, 379-384. PMID: 23680493. PMICD: PMC3679281. (2013).
 91. Edwards, J.S., Betts, L., Frazier, M.L., Pollet, R.M., Kwong, S.M., Walton, W.G., Ballentine, W.K., Huang, J.J., Habibi, S., Del Campo, M., Meier, J.L., Dervan, P.B., Firth, N., and **Redinbo, M.R.**
Molecular Basis of Antibiotic Multiresistance Transfer in *Staphylococcus aureus*.
Proceedings of the National Academy of Sciences USA, **110**, 2804-2809. PMID: 23359708. PMICD: PMC3581901. (2013).
- Featured in “This Week in PNAS”, and highlighted in *C&E News* and by the *AAAS Science Update Daily*.
92. Li, H., **Redinbo, M.R.**, Venkatesh, M., Ekins, S., Chaudhary, A., Bloch, N., Negassa, A., Mukherjee, P., Ganjam, K., and Mani, S.
Novel Yeast-Based Strategy Unveils Antagonist Binding Regions on the Nuclear Xenobiotic Receptor PXR
Journal of Biological Chemistry, **288**, 13655-13668. PMID: 23525103. PMICD: PMC3650402. (2013).
 93. Wallace, B.D., Betts, L., Talmage, G., Pollet, R.M., Holman, N.S., and **Redinbo, M.R.**
Structural and Functional Analysis of the Human Nuclear Xenobiotic Receptor PXR in Complex with RXR α
Journal of Molecular Biology, **425**, 2561-2577. PMID: 23602807. PMICD: PMC3699901. (2013).
 94. Roberts, A.B., Wallace, B.D., Venkatesh, M.K., Mani, S., and **Redinbo, M.R.**
Molecular Insights into Microbial β -Glucuronidase Inhibition to Abrogate CPT-11 Toxicity.
Molecular Pharmacology, **84**, 208-217. PMID: 23690068. PMICD: PMC3716326. (2013).
 95. Saitta, K.S., Zhang, C., Lee, K.K., Fujimoto, K., **Redinbo, M.R.**, and Boelsterli, U.A.
Bacterial Beta-Glucuronidase Inhibition Protects Mice Against Enteropathy Induced by Indomethacin, Ketoprofen, or Diclofenac: Mode of Action and Pharmacokinetics.
Xenobiotica, **44**, 28-35. PMID: 23829165. PMICD: PMC3972617. (2014).

96. Mani, S., Boelsterli, U.A. and **Redinbo, M.R.**
Interrogating and Modulating Mammalian-Microbial Communication for Improved Health.
Annual Review of Pharmacology and Toxicology, **54**, 559-580. PMID: 24160697. PMCID: PMC3947301.
(2014).
97. Marden, J.N., Diaz, M.R., Walton, W.G., Gode, C.J., Betts, L., Urbanowski, M.L., **Redinbo, M.R.**, Yahr, T.L., and Wolfgang, M.C.
An Unusual CsrA Family Member Operates in Series with RsmA to Amplify Post-Transcriptional Responses in *Pseudomonas aeruginosa*.
Proceedings of the National Academy of Sciences USA, **110**, 15055-15060. PMID: 23980177. PMCID: PMC3773774. (2013).
98. Cheng, Y., Johnson, M.D.L., Burillo-Kirch, C., Mocny, J.C., Anderson, J.E., Garrett, C.K., **Redinbo, M.R.**, and Thomas, C.E.
Mutation of the Conserved Calcium-Binding Motif in *Neisseria gonorrhoeae* PilC1 Impacts Adhesion but not Piliation.
Infection and Immunity, **81**, 4280-4289. PMID: 24002068. PMCID: PMC3811810. (2013).
99. Garland, A.L., Walton, W.G., Coakley, R.D., Tan, C.D., Gilmore, R.C., Hobbs, C.A., Tripathy, A., Clunes, L.A., Bencharit, S., Stutts, M.J., Betts, L., **Redinbo, M.R.**, and Tarran, R.
Molecular Basis for pH-Dependent Mucosal Dehydration in Cystic Fibrosis Airways.
Proceedings of the National Academy of Sciences USA, **110**, 15973-15978. PMID: 24043776. PMCID: PMC3791714. (2013).
100. Tarran, R. and **Redinbo, M.R.**
Mammalian Short Palate Lung and Nasal Epithelial Clone 1 (SPLUNC1) in pH-Dependent Airway Hydration.
The International Journal of Biochemistry and Cell Biology, **52C**, 130-135. PMID: 24631954. PMCID: PMC4048990. (2014).
101. McLaughlin, K.M., Nash, R.P., and **Redinbo, M.R.**
Unique Helicase Determinants in the Essential Conjugative TraI Factor from *Salmonella typhimurium* Plasmid pCU1.
Journal of Bacteriology, **196**, 3082-90. PMID: 24936053. PMCID: PMC4135661. (2014).
102. Venkatesh, M., Mukherjee, S., Wang, H., Sun, K., Benechet, A.P., Qiu, Z., Maher, L., **Redinbo, M.R.**, Phillips, R.S., Fleet, J.C., Kortagere, S., Mukherjee, P., Fasano, A., Dumas, M.E., Le Ven, J., Nicholson, J.K., Khanna, K.M., and Mani, S.
Symbiotic Bacterial Metabolites Regulate Gastrointestinal Barrier Function via the Xenobiotic Sensor PXR and Toll-like Receptor 4.
Immunity, **41**, 296-310. PMID: 25065623. PMCID: PMC4142105. (2014).
103. **Redinbo, M.R.**
The Microbiota, Chemical Symbiosis, and Human Disease.
Journal of Molecular Biology, **426**, 3877-3891. PMID: 25305474. PMCID: PMC4252811. (2014).
104. Wallace, B.D., Roberts, A.B., Pollet, R.M., Ingle, J.D., Biernat, K.A., Pellock, S.J., Venkatesh, M.K., Guthrie, L., O'Neal, S.K., Robinson, S.J., Dollinger, M., Figueroa, E., McShane, S.R., Cohen, R.D., Jin, F., Frye, S.V., Zamboni, W.C., Pepe-Ranney, C., Mani, S., Kelly, L., and **Redinbo, M.R.**
Structure and Inhibition of Microbiome β -Glucuronidases Essential to the Alleviation of Cancer Drug Toxicity.
Chemistry and Biology, **22**, 1238-1249. (2015).

Highlighted in *C&E News* **93**, 32-33 (Sept. 14, 2015), and in the international media.

PATENTS ISSUED

“Methods for Sensitizing Tumor Cells to Chemotherapeutic Prodrug CPT-11”. US Patent 9,068,174. Issued June 30, 2015. Potter, P.M., Weirld, M., **Redinbo, M.R.**

“Selective Beta-Glucuronidase Inhibitors as a Treatment for Side Effects of Camptothecin Antineoplastic Agents.” U.S. Patent 8,557,808. Issued October 15, 2013. **Redinbo, M.R.**, Mani, S., Williams, A., Scot, J., Yeh, L.-A., Wallace, B.W., Lane, K.T.

“Compositions and Methods for Inducing or Inhibiting Activities of Selected Human Cells.” US Patent Number 8,124,393. Issued February 28, 2012. Potter, P.M., Weirld, M., **Redinbo, M.R.**

“Compositions and Methods for Inducing or Inhibiting Activities of Selected Human Cells.” US Patent Number 7,906,637. Issued March 15, 2011. Potter, P.M., Weirld, M., **Redinbo, M.R.**

FUNDING

Current

"Improving CPT-11 Efficacy Using Structural and Chemical Biology"

PI: Matthew R. Redinbo

2 calendar months effort; October 1, 2014 – September 30, 2019

Agency: NIH-National Cancer Institute; Type: R01 CA98468

Total Direct to Redinbo: \$875,000

"Development of Novel Drugs to Alleviate CPT-11 Toxicity"

PI: Sridhar Mani (Einstein), Co-PI: Matthew R. Redinbo

1 calendar month effort; April 1, 2012 – March 31, 2017

Agency: NIH-National Cancer Institute; Type: R01 CA161879

Total Direct to Redinbo: \$415,000

“SPLUNC1-Derived Peptides as ENaC Antagonists”

PI: Robert Tarran (UNC), Co-I: Matthew R. Redinbo

0.5 calendar months effort; May 10, 2012 – March 31, 2017

Agency: NIH-NHLBI; Type: R01 HL108927

Total Direct to Redinbo: \$240,000

Completed

“Structure and Inhibition of the Conjugative DNA Relaxase-Helicase”

P.I.: Matthew R. Redinbo

June 1, 2008 – May 31, 2014

Agency: NIH-Natl. Inst. Aller. Infec. Dis; Type: R01 AI78924

Total Direct: \$1,250,000

"Improving CPT-11 Efficacy Using Structural and Chemical Biology"

PI: Matthew R. Redinbo

February 1, 2003 – January 31, 2014

Agency: NIH-National Cancer Institute; Type: R01 CA98468

Total Direct: \$2,060,000

“Enzyme Production for Nerve Agent Detection and Elimination”

P.I.: Matthew R. Redinbo

April 1, 2010 – March 31, 2013

Agency: DARPA; Type: Research Grant
Total Direct: \$58,000

“Novel Protein-Based Therapeutics for Nerve Agent Detoxification”
P.I.: Matthew R. Redinbo
October 1, 2006 – May 31, 2012
Agency: NIH-Natl. Inst. Neur. Dis. Stroke; Type: U01 NS58089
Total Direct: \$726,000

“Yersinia Autotransporters (Yaps): Structure, Function and Host Response to Plague”
P.I.: Virginia L. Miller (UNC Chapel Hill); Co-P.I.: Matthew R. Redinbo
March 1, 2009 – February 28, 2011
Agency: NIH; Type: Southeast Regional Center of Excellence for Emerging Infections & Biodefense
Total Direct: \$284,915

"Structure and Function of the Human Pregnane X Receptor"
PI: Matthew R. Redinbo
July 1, 2002 – June 30, 2008
Agency: NIH-Natl. Inst. Diabetes, Digestive, Kidney Disease; Type: R01 DK62229
Total Direct: \$1,250,000

“Novel Therapeutic Approaches for Narcotic Overdose”
P.I.: Philip M. Potter (St. Jude); Co-P.I.: Matthew R. Redinbo
September 1, 2005 – May 31, 2009
Agency: NIH-Natl. Inst. Drug Abuse; Type: R01 DA18116
Total Direct: \$311,000

“Acquisition of a State of the Art Crystallographic Cluster”
P.I.: John E. Sodek (UNC); Co-P.I.: Matthew R. Redinbo
December 12, 2006
Agency NIH-NCRR Shared Instrumentation Grant: Type: RR23437
Total Direct: \$437,000

“Structural Studies of Human Drug Targets”
P.I.: Matthew R. Redinbo
August 1, 2005 – July 31, 2007
Agency: Pharmacopeia, Inc. Type: Research Grant
Total Direct: \$150,000

“Structural Basis of CYP3A4 Induction by Human PXR”
P.I.: Matthew R. Redinbo
July 1, 2004 – June 30, 2007
Agency: Pfizer, Inc. Type: Research Grant
Total Direct: \$230,000

"Structure and Mechanism of Human Topoisomerase I"
PI: Matthew R. Redinbo;
April 1, 2001 – December 31, 2005
Agency: NIH-National Cancer Institute; Type: R01 CA90604
Total Direct: \$622,500

Career Award In the Biomedical Sciences
PI: Matthew R. Redinbo; September 1, 1999 – August 31, 2004
Agency: Burroughs Wellcome Fund; Type: Award
Total Direct: \$384,000

"Structural Genomics and High-Throughput Methods for Human Nuclear Receptors"

PI: Matthew R. Redinbo; September 1, 2001 – August 31, 2003

Agency: Burroughs Wellcome Fund; Type: Award

Total Direct: \$20,000

"Crystallographic Analysis of the Human Pregnane X Receptor"

PI: Matthew R. Redinbo; March 1, 2001 – December 31, 2002

Agency: GlaxoSmithKline; Type: Glaxo-UNC Collaborative

Total Direct: \$93,750

UNIVERSITY ADMINISTRATIVE ROLES

Chair, Department of Chemistry, University of North Carolina at Chapel Hill, 2009-2012

Recruited seven Assistant Professors to a faculty of 45

Absorbed 25% cut in state support while increasing student enrollment and research funding

Completed three building construction projects and one building renovation

Vice Chair, Department of Chemistry, University of North Carolina at Chapel Hill, 2006-2009

INVITED ACADEMIC LECTURES

1. "Relax to the Max: Crystal Structure and Mechanism of Human Topoisomerase I." National Institutes of Environmental Health Sciences, Research Triangle Park, NC; February 10, 2000.
2. "Structural Analysis of Human Topoisomerase I: Catalytic Mechanism and Evolutionary Origins." St. Jude Children's Research Hospital, Memphis, TN; May 11, 2000.
3. "Structural Insights into Xenobiotic Metabolism." Blaffer Lecture Series, M.D. Anderson Cancer Center, University of Texas Medical Center, Houston, TX; September 11, 2001.
4. "Structural Insights into Xenobiotic Recognition and Metabolism." Northwestern University School of Medicine, Chicago, IL; December 18, 2001.
5. "Structural Insights into Xenobiotic Recognition and Metabolism." National Institutes of Environmental Health Sciences, Research Triangle Park, NC; April 12, 2002.
6. "Structural Insights into Drug Metabolism." Northwestern University, Evanston, IL. May 20, 2002.
7. "The Promiscuous Recognition and Metabolism of Human Drugs: From Receptors to Enzymes." University of North Carolina at Chapel Hill, Department of Chemistry, Chapel Hill, NC. September 11, 2002.
8. "Structural Insights into Human Drug Recognition and Metabolism." University of North Carolina at Chapel Hill, Department of Biochemistry and Biophysics, Chapel Hill, NC. September 24, 2002.
9. "The Promiscuous Recognition and Metabolism of Human Drugs: From Receptors to Enzymes." Lerner Research Institute, The Cleveland Clinic Foundation, Cleveland, OH. October 10, 2002.
10. "Structural Insights into Drug Recognition and Metabolism: From Receptors to Enzymes." Department of Biochemistry, UT Southwestern Medical Center, Dallas, TX; January 23, 2003.
11. "Drugs, Receptors and Enzymes: Structural Insights into Molecular Promiscuity." Biological Chemistry Seminar Series, Department of Chemistry, University of North Carolina at Chapel Hill; February 5, 2003.
12. "The Promiscuous Recognition and Metabolism of Human Drugs: From Receptors to Enzymes." University of North Carolina at Greensboro, Department of Chemistry and Biochemistry, Greensboro, NC. February 7, 2003.
13. "The Recognition and Clearance of Human Drugs Like Heroin and Cocaine." North Carolina Central University, Departments of Biology, Chemistry and Physics, Durham, NC. April 25, 2003.
14. "Structural Determinants of PXR Function." Environmental Protection Agency, Research Triangle Park, NC; June 5, 2003.
15. "Human Drug Recognition and Elimination by Directed Promiscuity." University of North Carolina at Chapel Hill, Department of Pharmacology, Chapel Hill, NC. September 2, 2003.
16. "Precision and Promiscuity in Drug Action and Metabolism." University of North Carolina at Chapel Hill, Department of Medicinal Chemistry, School of Pharmacy, Chapel Hill, NC. December 4, 2003.

17. "Structural and Functional Analysis of Human PXR." National Institutes of Environmental Health Sciences, Research Triangle Park, NC. April 6, 2004.
18. "Structural Basis of Drug Recognition and Narcotic Metabolism." Wake Forest University School of Medicine, Winston-Salem, NC. April 20, 2004.
19. "Human Drug Recognition and Metabolism." Division of Drug Delivery and Disposition, UNC School of Pharmacy, Chapel Hill, NC. September 28, 2004.
20. "Structural Insights into Drug Recognition and Metabolism." Department of Environmental and Molecular Toxicology, North Carolina State University, Raleigh, NC. October 19, 2004.
21. "Drug Recognition and Metabolism." Hettleman Prize Lecture, University of North Carolina at Chapel Hill, Chapel Hill, NC. November 3, 2004.
22. "Playing Molecular Defense: Structural Insights into Drug Detection and Metabolism." Department of Chemistry, Eastern Carolina University, Greenville, NC. February 4, 2005.
23. "Playing Molecular Defense: Structural Insights into Drug Detection and Metabolism." Structure and Chemistry Seminar Series, The Scripps Research Institute, La Jolla, CA. February 24, 2005.
24. "Playing Molecular Defense: Structural Insights into Drug Detection and Metabolism." Department of Chemistry and Biochemistry, University of California at Los Angeles, Los Angeles, CA. February 25, 2005.
25. "Human Nuclear Receptors in the Development and Treatment of Disease." Pathology Grand Rounds, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC. August 18, 2005.
26. "DNA Manipulation by Conjugative Relaxases: Implications for Antibiotic Resistance Propagation." Department of Biochemistry and Biophysics, University of North Carolina at Chapel Hill, Chapel Hill, NC. November 10, 2005.
27. "Combating Antibiotic Resistance Using Structural and Chemical Biology." Department of Chemistry and Biochemistry, University of Texas at Austin, Austin, TX. February 17, 2006.
28. "Combating Antibiotic Resistance Using Structural and Chemical Biology." Department of Chemistry, Wake Forest University, Winston-Salem, NC. March 1, 2006.
29. "Human Nuclear Receptors in Drug and Endobiotic Homeostasis." Department of Molecular and Cellular Biochemistry, The Ohio State University, Columbus, OH. April 18, 2006.
30. "Combating Antibiotic Resistance Using Structural and Chemical Biology." Department of Biological Sciences, Vanderbilt University, Nashville, TN. May 4, 2006.
31. "Human Nuclear Receptors: Ancient Precursors and Modern Marvels." Department of Chemistry, UNC Chapel Hill. September 13, 2006.
32. "Crystal Structure of an Ancient Protein: Evolution by Conformational Epistasis." Receptor Mechanisms Discussion Group, National Institutes of Environmental Health Sciences, Research Triangle Park, NC; April 3, 2007.
33. "Motion and Antagonism of the Human Nuclear Xenobiotic Receptor PXR." Department of Biochemistry, Albert Einstein College of Medicine, Bronx, NY; May 1, 2007.
34. "Human Nuclear Receptors: Ancient Precursors and Modern Marvels." Department of Biochemistry and Biophysics, Johns Hopkins School of Medicine, Baltimore, NJ; May 9, 2007.
35. "Killing Antibiotic Resistant Bacteria and Disrupting Resistance Propagation." Department of Chemistry and Biochemistry, University of North Carolina at Greensboro; September 7, 2007.
36. "Motion and Antagonism in the Human Nuclear Xenobiotic Receptor PXR." Structural Biology and Biophysics Program, Duke University; December 3, 2007.
37. "Targeting Antibiotic Resistant Bacteria by Disrupting Resistance Propagation." St. Jude Children's Research Hospital, Memphis, TN; March 5, 2008.
38. "Targeting Antibiotic Resistant Bacteria by Disrupting Resistance Propagation." Emory University, Atlanta, GA. April 28, 2008.
39. "Targeting Antibiotic Resistant Bacteria by Disrupting Resistance Propagation." Utah State University, Logan, UT. November 12, 2008.
40. "Targeting Antibiotic Resistant Bacteria by Disrupting Resistance Propagation." Purdue University, West Lafayette, IN. January 14, 2009.
41. "Waging the Battle Against Antibiotic Resistant Bacteria." 2009 UNC Mini Medical School, Chapel Hill, March 10, 2009.
42. "Inhibiting GI Targets to Improve Antibiotic and Anticancer Drug Efficacy." Center for Gastrointestinal Biology and Disease, University of North Carolina at Chapel Hill, April 23, 2009.

43. "Structural Studies of Microbial Targets: Drug Resistance, Efficacy and Infection." Loyola University School of Medicine, Chicago, IL. May 13, 2009.
44. "Structural Studies of Microbial Targets: Drug Resistance, Efficacy and Infection." University of North Carolina at Chapel Hill. September 23, 2009.
45. "From Atomic Structure to Bacterial Disruption: Molecular Insights into Microbial Mobility and Chemotherapeutic Efficacy." Wake Forest University School of Medicine, Winston-Salem, NC. April 6, 2010.
46. "From Atomic Structure to Cellular Function: Chemistry in the Biological Realm." Keynote Speaker, Blue Ridge Section, American Chemical Society, Annual Awards Banquet. Radford University, Radford, VA. April 14, 2010.
47. "Structural Insights into Microbial Function." Department of Microbiology and Immunology, University of North Carolina at Chapel Hill; October 26, 2010.
48. "Structural Insights into Microbial Function." Highlands Chemistry Seminar Series, Virginia Tech, Blacksburg, VA; October 29, 2010.
49. "Structure-Function Analysis of Microbial Enzymes and Factors." Molecular and Cellular Biophysics Seminar Series, University of North Carolina at Chapel Hill; April 12, 2011.
50. "Structural Insights into Microbial Function." Department of Biochemistry and Biophysics, Washington University School of Medicine, St. Louis, MO; May 25, 2011.
51. "How Bacteria Help and Hurt Us." Department of Biochemistry, University of Maryland School of Medicine, Baltimore, MD; October 24, 2011.
52. "Designing and Implementing Mentoring Programs for Early-Career Faculty." UNC Center for Faculty Excellence; January 27, 2012.
53. "Some Ups and Downs of Bacterial Symbiosis." Epithelial Cell Biology Seminar Series, UNC Chapel Hill; March 2, 2012.
54. "A Walk after Dinner: Unbalance in Human-Microbial Symbiosis." Molecular Biology Institute Seminar Series, University of California, Los Angeles; March 15, 2012.
55. "Imbalances in Human-Bacterial Symbiosis." National Institutes of Environmental Health Sciences, Research Triangle Park, NC; April 19, 2012.
56. "Regulating Symbiotic Bacteria in Your Body." Keynote Speaker; Cellular, Molecular and Biomedical Sciences Program Retreat, University of Vermont, Grande Isle Lake House, VT; August 15, 2012.
57. "Regulating Symbiotic Bacteria in Your Body." Structural Genomics Consortium, Oxford University, Oxford, UK; September 6, 2012.
58. "Drugging the Human Microbiome." University of Virginia, Department of Chemistry, January 25, 2013.
59. "Modulating Microbiology Using Structural and Chemical Biology." Department of Microbiology and Immunology, University of Michigan, March 7, 2013.
60. "Nuclear Receptor State and Structure." National Institutes of Environmental Health Sciences, RTP, NC, April 2, 2013.
61. "Interrogating Human-Microbial Dynamics using Structural and Chemical Biology." Department of Biochemistry, Duke University School of Medicine, May 6, 2013.
62. "Atomic Insights into Human Disease." University of Durham, Durham, United Kingdom; October 29, 2013.
63. "Atomic Insights into Human Disease." Structural Genomics Consortium, University of Oxford, United Kingdom; December 13, 2013.
64. "The Human Microbiome Can Be Safely and Selectively Modulated for Therapeutic Gain." John Innes Centre; Norwich, UK. 6 May 2014.
65. "Microbial Symbiosis at the Mucosa: Molecular and Chemical Insights." University of Glasgow, Scotland, UK. 20 May 2014.

INVITED CONFERENCE LECTURES

1. "Crystal Structures of Human Topoisomerase I DNA Complexes and a Proposed Binding Mode of the Anti-Cancer Drug Camptothecin." 11th Naito Conference on Structural Genomics – Passage to Drug Design, Shonan Village Center, Kanagawa, Japan; October 15, 1999.
2. "The DNA-Binding and Relaxation Activities of Human Topoisomerase I." RIKEN Symposium on Structural Biology of Signal Transduction and DNA Recognition, Tokyo, Japan; October 12, 1999.

3. "The Human Nuclear Xenobiotic Receptor PXR: How is Promiscuity Achieved?" 29th Annual Mid-Atlantic Protein Crystallography Meeting; Williamsburg, VA; May 24, 2001.
4. "The Human Nuclear Xenobiotic Receptor PXR: Structural Determinants of Directed Promiscuity." Gordon Research Conference on Drug Metabolism; Holderness School, Plymouth, NH; July 10, 2001.
5. "The Werner Syndrome Exonuclease Forms a Hexamer on DNA and Exhibits Novel Nuclease Functions." 2002 Keystone Symposium: *Helicases, Cancer and Aging*; Lake Tahoe, CA, March 13, 2002.
6. "Structural Basis of the Activation of Human PXR by the St. John's Wort Compound Hyperforin." 2002 Keystone Symposium: *Nuclear Receptor Superfamily*; Snowbird, UT, April 14, 2002.
7. "The Human Nuclear Xenobiotic Receptor PXR: Structural Determinants of Directed Promiscuity." 19th Congress of the International Union of Crystallography, Geneva, Switzerland; August 23, 2002.
8. "The Human Nuclear Xenobiotic Receptor PXR: Structural Determinants of Directed Promiscuity." *Annual National Meeting of the American Society for Pharmacology and Experimental Therapeutics*, part of the Experimental Biology National Meeting. San Diego, CA. April 14, 2003.
9. "The Human Nuclear Xenobiotic Receptor PXR: Structural Determinants of Directed Promiscuity." *Nuclear Receptors as Drug Targets*, presented by IBC Life Sciences. Philadelphia, PA. May 20, 2003.
10. "Structural Determinants of PXR Function." Nuclear Receptor Regulation of Hepatobiliary Function. The American Association for the Study of Liver Diseases. Airlie, VA. May 30, 2003.
11. "Structure and Function of Human LRH-1: Monomeric Regulation of P450 Expression." 14th International Symposium on Cytochrome P450: Biochemistry, Biophysics and Bioinformatics. Dallas, TX. June 1, 2005.
12. "Securing Tenure." HHMI-Burroughs Wellcome Fund Course in Scientific Management. Chevy Chase, MD. June 8, 2005.
13. "DNA Conjugation as an Antibiotic Target." Gordon Conference on New Antimicrobial Discovery and Development. Ventura, CA. March 9, 2006.
14. "Human Nuclear Receptors in Drug and Endobiotic Homeostasis." 36th Annual Mid-Atlantic Protein Crystallography Meeting, Wake Forest University, June 2, 2006.
15. "Intellectual Property and the Assistant Professor: Valuing Technology Transfer for Young Faculty." Burroughs Wellcome Fund Annual Executive Board Meeting, Research Triangle Park, NC; October 26, 2006.
16. "Novel Protein-Based Therapeutics for Nerve Agent Detoxification." 1st Annual CounterACT Symposium, Washington, DC; April 26, 2007.
17. "Motion and Antagonism of the Human Nuclear Xenobiotic Receptor PXR." International Conference on Computational Toxicology, EPA, Research Triangle Park, NC; May 21, 2007.
18. "Novel Protein-Based Therapeutics for Nerve Agent Detoxification." 2nd Annual CounterACT Symposium, Washington, DC; April 17, 2008.
19. "Motion and Antagonism in the Human Nuclear Xenobiotic Receptor PXR." The Endocrine Society's 90th Annual Meeting, San Francisco, CA; June 15, 2008.
20. "Human Serine Hydrolases Engineered for the Catalytic Decontamination of Chemical Weapons." Army Research Office Workshop on Enzyme Stabilization. Key West, FL; December 9, 2008.
21. "Vitamin D and Bisphosphonates: Advances Beyond Osteoporosis." Meet the Professors Session, Joint Meeting of the International Society for Clinical Densitometry and the International Osteoporosis Foundation, Orlando, FL; March 12, 2009.
22. "Novel Protein-Based Therapeutics for Nerve Agent Detoxification." 3rd Annual CounterACT Symposium, Washington, DC; April 14, 2009.
23. "Novel Protein-Based Therapeutics for Nerve Agent Detoxification." 4th Annual CounterACT Symposium, San Francisco, CA; June 22, 2010.
24. "Alleviating Cancer Drug Toxicity by Inhibiting a Bacterial Enzyme." National Meeting of the American Crystallographic Association, New Orleans, LA, May 31, 2011.
25. "Novel Protein-Based Therapeutics for Nerve Agent Detoxification." 5th Annual CounterACT Symposium, Washington, DC; June 23, 2011.
26. "Life is Great Chemistry." 10th Annual NC-OPT Conference on Opportunities in Education, North Carolina State University, Raleigh, NC; October 14, 2011.
27. "Alleviating Drug Toxicity by Inhibiting a Bacterial Enzyme." Keystone Meeting on Challenges in Drug Discovery; Lake Tahoe, CA; March 21, 2012.
28. "Structural Aspects of Human Disease." Protein Structure: from Methods via Structure and Function to Drug Design. Trippenhuis, Amsterdam, Netherlands. September 3, 2012.

29. "Designing Therapeutic Microbes." Cell-Based Therapeutics: The Next Pillar of Medicine. UCSF Center for Systems and Synthetic Biology and *Science Translational Medicine*. UCSF, April 12, 2013.
30. "Modulating the Microbiome for Therapeutic Gain." Keystone Meeting on the Microbiome; Big Sky, MT; April 2, 2014.
31. "Pharmaceutical Control of the Microbiome." Conference on Individualizing Medicine, Mayo Clinic; Rochester, MN; October 8, 2014.
32. "Pharmaceutical Control of the Microbiome." Society of Toxicology Webinar on the GI Microbiota, 22 October 2014.
33. "Pharmaceutical Control of the Microbiome." American Chemical Society National Meeting, Denver, CO; 22 March 2015.
34. Keynote Speaker, 24th Annual Beaumont Health System Symposium on Molecular Pathology, Co-Sponsored by the Association for Molecular Pathology; "The Microbiome: A New Lens for Human Disease." Troy, MI; 16 September 2015.
35. "The Microbiome Contains Therapeutic Drug Targets." Food & Drug Administration: Linking the Microbiome to Health, Safety and Regulation. College Park, MD; 30 September 2015.

INVITED INDUSTRY LECTURES

1. "Crystal Structures of Human Topoisomerase I DNA Complexes and a Proposed Binding Mode of the Anti-Cancer Drug Camptothecin." Glaxo Wellcome, Research Triangle Park, NC; November 15, 1999.
2. "Drug Detection and Gene Regulation by Human PXR." Syrrx Pharmaceuticals; San Diego, CA; September 5, 2001.
3. "Structural Determinants of PXR Function." Lilly Pharmaceuticals, Sphinx Chemistry Division, Research Triangle Park, NC; June 4, 2003.
4. "Drug Recognition by Human PXR." Lilly Pharmaceuticals, Indianapolis, IN; July 22, 2003.
5. "Human Nuclear Receptors in the Development and Treatment of Disease." Pfizer Global Research and Development. Ann Arbor, MI; November 15, 2005.
6. "Human Nuclear Receptors in the Development and Treatment of Disease." Pharmacoepia, Inc.. Princeton, NJ; December 6, 2005.
7. "Antibiotic Resistance Propagation as an Antibiotic Target." Merck Pharmaceuticals, Rahway, NJ; September 19, 2006.
8. "Motion and Antagonism in the Human Nuclear Xenobiotic Receptor PXR." Schering Plough Research Institute. Kenilworth, NJ; May 16, 2007.
9. "Motion and Antagonism in the Human Nuclear Xenobiotic Receptor PXR." Sanofi-Aventis, Bridgewater, NJ; February 5, 2009.
10. "Regulating Symbiotic Bacteria in Your Body." Cubist Pharmaceuticals, Lexington, MA; October 5, 2012.
11. "The Human Microbiome Can Be Safely and Selectively Modulated for Therapeutic Gain." Novartis Research Institute, Boston, MA. 14 May 2014.

UNIVERSITY TEACHING

Chemistry 131, "Nucleic Acid Chemistry." 3 hours. Detailed functional, structural and chemical nature of the roles nucleic acids in play in biological chemistry and cellular biology.

Spring 2000: 43 students
Spring, 2001: 50 students
Spring 2002: 43 students
Spring 2004: 36 students

Chemistry 232, "Seminars in Biological Chemistry." 2 hours. Weekly seminars on biological chemistry from national and international speakers.

Spring, 2000: 12 students
Fall, 2012: 8 students

Chemistry 233, “Current Literature in Biological Chemistry.” 2 hours. Recent publications in biological chemistry are examined in a round-table type format. Graduate students at all stages participate and take turns choosing papers and leading discussion.

Fall, 2002: 17 students

Chemistry 236, “Macromolecular Crystallography Methods.” 2 hours. Cross-listed as Biochemistry and Biophysics 157. Taught with Professor Edward Collins (Depts. of Microbiology and Immunology, Biochemistry and Biophysics). Hands-on practical macromolecular crystallography including integration of theory with laboratory methods. Students determine the crystal structure of lysozyme from start to finish – crystallization, x-ray data collection and processing, experimental phasing by molecular replacement and multiple isomorphous replacement, model building and structure refinement by maximum likelihood methods, structure validation and assessment.

Spring, 2001: 6 students (New course)

Spring, 2003: 9 students

Spring, 2005: 10 students

Spring, 2007: 5 students

Spring, 2009: 10 students

Chemistry 431, “Macromolecular Structure and Metabolism.” 3 hours. Detailed functional, structural and chemical nature of the proteins and nucleic acids in biological chemistry and cellular biology.

Fall, 2004: 45 students (New course)

Fall, 2005: 42 students

Fall, 2006: 40 students

Fall, 2008: 65 students

Chemistry 438, “Macromolecular Structure and Human Disease.” 1 hour. Examining the role that protein and nucleic acid structure plays in disease treatment and understanding disease development.

Spring, 2006: 10 students (New course)

Fall, 2008: 8 students

Fall, 2010: 6 students

Chemistry 430, “Introduction to Biological Chemistry.” 3 hours. Introduction to biochemistry for chemistry and biochemistry majors.

Fall, 2007: 200 students

Fall, 2012: 200 students

Fall, 2014: 231 students

Fall, 2015: 257 students

POSTDOCTORAL FELLOWS MENTORED

1. **Paula Davis-Searles, Ph.D.** (UNC Chapel Hill); January 1, 2000 – December 31, 2001.
Not currently in science.
2. **Roopa Thapar, Ph.D.** (University of Washington); March 1, 2002 – June 1, 2003.
Current Title: *Assistant Professor, Rice University.*
3. **Brian Hogan, Ph.D.** (UNC Chapel Hill); July 1, 2002 – August 15, 2004.
Current Title: *Teaching Professor, Department of Chemistry, UNC Chapel Hill.*
4. **Eric A. Ortlund, Ph.D.** (University of South Carolina); November 1, 2002 – July 31, 2007.
Current Title: *Associate Professor, Department of Biochemistry, School of Medicine, Emory University, Atlanta, GA*
5. **Laura M. Guogas, Ph.D.** (Harvard University); February 28, 2005 – December 1, 2007. NIH Postdoctoral Fellow.
Current Title: *Laboratory Research Director, Duke Human Vaccine Institute.*
6. **Kimberly T. Lane, Ph.D.** (Duke University); SPIRE Fellow. June 1, 2006 – July 25, 2008.
Current Title: *Assistant Professor, Radford University, Radford, VA.*
7. **Michael J. Miley, Ph.D.** (Washington University); October 1, 2004 – November 1, 2008.

Current Title: *Research Assistant Professor, Department of Pharmacology, UNC Chapel Hill.*

8. **Krystle McLaughlin, Ph.D.** (University of Rochester); SPIRE Fellow. October 1, 2011 – June, 2014.
Current Title: *Assistant Professor, Lehigh University, Bethlehem, PA.*
9. **Aadra Bhatt, Ph.D.** (UNC Chapel Hill); 1 Jan 2015 – present.

GRADUATE STUDENTS MENTORED

1. **Diem-Thu Thieu Leshner, Ph.D.**, Department of Chemistry, June 1, 2000 – March 29, 2004. *Currently Lecturer in Chemistry at the College of Charleston.*
2. **Jill E. Chrencik, Ph.D.**, Department of Chemistry, June 1, 2000 – February 23, 2004. *Currently Senior Research Scientist at Pfizer, Inc.*
3. **Sompop Bencharit, D.D.S., Ph.D.**, School of Dentistry, June 1, 2000 – November, 2004. *Currently Assistant Professor, School of Dentistry, UNC Chapel Hill.*
4. **Ryan E. Watkins, Ph.D.**, Biophysics Program, Department of Biochemistry & Biophysics, June 1, 2000 – January, 2004. *Currently Core Facility Director at M.D. Anderson Cancer Center, Houston, TX.*
5. **Schroeder M. Noble, Ph.D.**, Biophysics Program, Department of Biochemistry & Biophysics, June 1, 2001 – July 30, 2005. *Currently Laboratory Research Director at Walter Reed Army Institute of Research, Silver Spring, MD.*
6. **Virginia Carnahan, M.S.**, NSF Predoctoral Fellow, Biophysics Program, Department of Biochemistry & Biophysics, June 1, 2002 – June 15, 2007. *Not currently in science.*
7. **Christopher Fleming, Ph.D.**, Biophysics Program, Department of Biochemistry & Biophysics, April 15, 2003 – June 30, 2007. *Currently Senior Research Scientist, Syngenta, Inc.*
8. **Denise Teotico, Ph.D.**, Department of Chemistry, April 15, 2003 – June 29, 2007. *Currently Research Scientist, GlaxoSmithKline.*
9. **Jillian Orans, Ph.D.**, Department of Chemistry, December 1, 2002 – Dec., 2007. *Currently Research Scientist in Research Triangle Park, NC.*
10. **Scott Lujan, Ph.D.**, Biophysics Program, Department of Biochemistry & Biophysics, April 15, 2003 – Dec., 2007. *Currently Staff Scientist at NIEHS.*
11. **Yu Xue, Ph.D.**, Department of Chemistry, September, 2000 – November, 2008. *Currently Senior Research Scientist at GlaxoSmithKline.*
12. **Sarah Kennedy, Ph.D.**, Department of Chemistry, May, 2004 – May 15, 2009. *Currently Associate Professor, Westminster College, PA.*
13. **Andrew Hemmert, Ph.D.**, Department of Biochemistry & Biophysics, September 15, 2005 – April 15, 2010. *Currently Staff Scientist in industry.*
14. **Yuan Cheng, Ph.D.**, Department of Biochemistry & Biophysics, September 15, 2005 – March 15, 2011. *Currently Staff Scientist at Bristol Meyers Squibb.*
15. **Joseph Lomino, Ph.D.**, Department of Biochemistry & Biophysics, November 15, 2005 – April 30, 2011. *Currently postdoctoral fellow at the University of Maryland School of Medicine.*
16. **Daniel Yao, M.S.**, Department of Chemistry, October 15, 2007 – May 1, 2011.
17. **Rebekah Potts, M.D., Ph.D.**, Medical Scientist Training Program, UNC, September 1, 2006 – June 30, 2011. *Currently Resident in Psychiatry, UNC Chapel Hill.*
18. **Michael Johnson, Ph.D.**, Department of Biochemistry & Biophysics, May 15, 2007 – Nov. 10, 2011. *Currently a postdoctoral fellow at St. Jude Childrens Research Hospital.*
19. **Monica Frazier, Ph.D.**, Department of Biochemistry & Biophysics, May 15, 2007 – March 30, 2012. *Currently a staff scientist at Rho, Inc., Research Triangle Park, NC.*
20. **Denise Little, M.S.**, Department of Chemistry, May 15, 2010 – April 4, 2012. *Currently an Instructor at West Point.*
21. **Jon Edwards, Ph.D.**, Department of Biochemistry & Biophysics, December 1, 2007 – April 6, 2012. *Currently a venture capitalist in Geneva, Switzerland.*
22. **Bret Wallace, Ph.D.**, Department of Chemistry, December 15, 2007 – March 26, 2012. *Currently a postdoctoral fellow at NIEHS.*
23. **Adam Roberts, Ph.D.**, Department of Biochemistry & Biophysics, May 15, 2010 – May, 2014. *Currently postdoctoral fellow at Cleveland Clinic.*
24. **Mary Aiken**, NSF Predoctoral Fellow, Department of Chemistry, May 15, 2011 – May, 2014.

Moved to different PhD laboratory.

25. **Coy Eakes, M.S.**, Department of Chemistry, February 1, 2012 – May, 2014.
Not currently in science.
26. **Julianne Huang**, Department of Chemistry, March 15, 2012 – present.
27. **Rebecca Pollet**, NSF Predoctoral Fellow, Department of Biochemistry & Biophysics, May 15, 2012 – present.
28. **Michael Little**, NSF Predoctoral Fellow, Department of Chemistry, June 1, 2013 – present.
29. **Kristin Biernet**, Department of Chemistry, 15 February 2015 – present.
30. **Samuel Pellock**, Department of Chemistry, 24 April 2015 – present.

UNDERGRADUATE STUDENTS MENTORED

1. **Escher Howard-Williams**, January, 2000 – May, 2001. *Earned MD (UNC), practicing physician.*
2. **Joel Wedd**, January, 2000 – May, 2000. *Earned MD (UNC), practicing physician.*
3. **Scott Kennedy**, January, 2000 – May, 2000. *Earned PhD (UNC), currently postdoctoral fellow.*
4. **Christine Chen**, July, 2003 – May, 2004. *Currently in PhD program (UCLA).*
5. **Courtney Jones**, September, 2003 – May, 2004. *Currently in PhD program (UNC).*
6. **Heather Bethea**, September, 2003 – May, 2004. *Earned PhD (UNC), moved to postdoctoral fellow.*
7. **Isaac Solomon**, August, 2002 – August, 2005. *Currently in MD-PhD program (Washington University).*
8. **Janet Hager**, May, 2003 – May, 2005. *Moved to JD program (Yale).*
9. **Monica Shah**, September, 2004 – May, 2005. *Moved to PhD program (Emory).*
10. **Jason Bischoff**, October, 2005 – July, 2007. *Moved to NIH post-baccalaureate program (NIEHS).*
11. **Jeffrey Keenan**, January, 2005 – August, 2006. *Moved to MD program (Maryland).*
12. **Druthi Patel**, January, 2005- August, 2006. *Moved to MD program (UNC).*
13. **Jenny Xue**, July, 2005 – May, 2008. *Moved to MD program (UNC).*
14. **Doug Ornoff**, October, 2005 – May, 2007. *Moved to MD-PhD program (UNC).*
15. **Ann Mast**, August, 2006 – May, 2008. *Remained undergraduate at UNC.*
16. **Ying Liu**, August, 2008 – May, 2009. *Remained undergraduate at UNC.*
17. **Josh Almond**, January, 2007 – May, 2008. *Moved to PhD program (Duke).*
18. **Katie Hooks**, August, 2007 – May, 2008. *Moved to MS program (Bristol).*
19. **Sara Mishamandani**, August, 2008 – December, 2008. *Remained undergraduate at UNC.*
20. **Karl Shieh**, May, 2007 – May, 2009. *Moved to MD program (UNC).*
21. **Justin Sperlazza**, January, 2008 – May, 2009. *Moved to MD-PhD program (Virginia Comm. U.)*
22. **W. Keith Ballentine**, May, 2007 – May, 2009. *Moved to MD program (UNC).*
23. **Dan McNamara**, January, 2008 – May, 2009. *Moved to PhD program (UCLA).*
24. **Sung Taek Kim**, September, 2007 – December, 2009. *Remained undergraduate at UNC.*
25. **Lisa Withers**, August, 2008 – July, 2010. *Remained undergraduate at UNC.*
26. **Angela Broadnax**, August, 2009 – August, 2010. *Moved to graduate school (UNC).*
27. **Sewon Hwang**, August, 2009 – June, 2010. *Moved to medical school (South Korea).*
28. **Taylor Pardue**, August, 2009 – May, 2010. *Remained undergraduate at UNC.*
29. **Franklin Niblock**, January 2010 – December 2010. *Remained undergraduate at UNC.*
30. **William Gray**, February, 2010 – May, 2011. *Moved to graduate school (Yale).*
31. **Christina Anyikwa**, June, 2010 – June, 2011. *Moved to medical school.*
32. **Brian Garrett**, June, 2010 – August, 2011. *Moved to graduate school (UNC).*
33. **Garrick Talmage**, February, 2010 – May 1, 2012. *Moved to MD program (Univ. Chicago).*
34. **Eileen Tran**, September, 2011 – May, 2014. *Move to MS program.*
35. **Herodes Guzman**, August, 2011 – May, 2013. *Moved to MD program (UNC).*
36. **Sara Robinson**, September, 2012 – May, 2014. *Moved to Physical Therapy program.*
37. **Christian Adams**, March, 2012 – June, 2013. *Remained undergraduate at UNC.*
38. **Sarah McShane**, November, 2012 – April, 2015. *Remained undergraduate at UNC.*
39. **Jeff Hymes**, January, 2013 – May, 2014. *In PhD program (NC State).*
40. **James Ingle**, January, 2013 – May, 2014. *Working in laboratory as technician.*
41. **Erin Moore**, May, 2014 – April, 2015. *Moved to laboratory technician position at UNC.*
42. **Kunal Patel**, August, 2012 – April, 2015. *Moved to MD program at UNC Chapel Hill.*

43. **Emma D'Agostino**, May, 2014 – present.
44. **Adair London**, August, 2014 – present.
45. **Shouri Gottiparthi**, May 2015 – present.

HIGH SCHOOL STUDENTS MENTORED

1. **Ari Sanders**, Project SEED, Durham, NC; *Entered Davidson College in Fall, 2003*
2. **Collin Emerson**, June 1-August 15, 2003. *Entered Princeton University in Fall, 2004*
3. **Sloane Miller**, June – August, 2010, June – August, 2011. *Entered UNC Chapel Hill in Fall, 2011.*