CURRICULUM VITAE

1. Edward Hawrot
2.

3. Education:

1970 A.B. Honors (Chemistry), University of Detroit, Detroit, Michigan

1976 Ph.D. (Biochemistry), Harvard University

4. Professional Appointments:

1970-1975 Predoctoral Trainee (NIH Training Grant) Department of Biological Chemistry, Harvard Medical School (with Dr. Eugene P. Kennedy)

1973-1975 Teaching Fellow in Biological Chemistry, Harvard Medical School

1976-1980 Research Fellow in Neurobiology, Harvard Medical School (with Dr. Paul H. Patterson)

1980-1986 Assistant Professor, Department of Pharmacology, Yale University School of Medicine

1986-1990 Associate Professor, Department of Pharmacology, Yale University School of Medicine

1989-1990 Visiting Associate Professor (July 1, 1989 - January 31, 1990) Department of Pharmaceutical Chemistry, University of California at San Francisco

1990- Professor of Medical Science, Brown University

1990-1994 Chairman, Section of Molecular and Biochemical Pharmacology, and Director of Pharmacology Graduate Program, Brown University

1994-1996 Chairman, Department of Molecular Pharmacology & Biotechnology, Brown University

1996-2007 Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology, Brown University

2001-2008 Upjohn Professor of Pharmacology, Brown University

2007-2018 Associate Dean for the Program in Biology, Brown University

2008- Alva O. Way University Professor of Medical Science, Brown University

2018- Senior Associate Dean for the Program in Biology, Brown University

5a & b. Chapters and Books:

1. Breakefield, X.O. and Hawrot, E. Somatic Cell Genetics in Neurobiology. In Barker, J. and McKelvy, J. (Eds.): Current Methods in Cellular Neurobiology, New York, John Wiley & Sons, Inc., 1983.

2. Hawrot, E. Cultured Sympathetic Neurons in the Study of Nerve Growth Factor Action. In Black, I.B. (Ed.): Cellular and Molecular Biology of Neuronal Development, New York, Plenum Publishing Corp., 1984.

3. Jacob, L.S., Lazo, J.S., and Hawrot, E. (Eds.) The National Medical Series for Independent Study: Pharmacology, John Wiley and Sons, 1984.

4. Gershoni, J.M., Hawrot, E., Wilson, P.T., and Lentz, T.L. Protein-Blot Analysis of the Nicotinic Acetylcholine Receptor. In Changeux, J.-P., Hucho, F., Maelicke, A., and Neumann, E. (Eds.): Molecular Basis of Nerve Activity, Walter de Gruyter, Inc., Berlin & New York, 1985.

5. Aldrich, R., Dionne, J.E., Hawrot, E., and Stevens, C.F. Ion Transport through Ligand Gated Channels. In Andreoli, T.E., Hoffman, J.F., Farestil, D.D., and Schultz, S.G. (Eds.): Physiology of Membrane Disorders, Plenum, 1986.

6. Hawrot, E., Colson, K.L., Lentz, T.L., and Wilson, P.T. Synthetic Peptides in the Study of the Nicotinic Acetylcholine Receptor. In "Molecular Biology of Ion Channels" volume. Part of the series entitled "Current Topics in Membranes and Transport" 33:165-195, 1988.

7. Hawrot, E., Colson, K.L., Armitage, I.M., and Song, G.-Q. Bungarotoxin Binding to Acetylcholine Receptor-Derived Synthetic Peptides Analyzed by NMR. In Live, D., Armitage, I., and Patel D. (Eds.): Frontiers of NMR in Molecular Biology. UCLA Symposia on Molecular and Cellular Biology, New Series, Volume 109, Alan R. Liss, Inc., New York, NY, 1990.

5c. Publications:

Original Articles:

1. Hawrot, E. and Kennedy, E.P. Biogenesis of Membrane Lipids: Mutants of Escherichia coli with Temperature-Sensitive Phosphatidylserine Decarboxylase. Proc. Nat. Acad. Sci. USA 72: 1112-1116, *PMCID:* ***PMC432476***, 1975.

2. Hawrot, E. and Kennedy, E.P. Conditional Lethal Phosphatidylserine Decarboxylase Mutants of Escherichia coli. Mapping of the Structural Gene for Phosphatidylserine Decarboxylase. Mol. Gen. Genet. 148: 271-279, 1976.

3. Hawrot, E. and Kennedy, E.P. Phospholipid Composition and Membrane Function in Phosphatidylserine Decarboxylase Mutants of Escherichia coli. J. Biol. Chem. 253: 8213-8220, 1978.

4. Tyhach, R.J., Hawrot, E., Satre, M., and Kennedy, E.P. Increased Synthesis of Phosphatidylserine Decarboxylase in a Strain of Escherichia coli Bearing a Hybrid Plasmid: Altered Association of Enzyme with the Membrane. J. Biol. Chem. 254: 627-633, 1979.

5. Hawrot, E. and Patterson, P.H. Long-Term Culture of Dissociated Sympathetic Neurons. Methods Enzymol. 58: 574-584, 1979.

6. Hawrot, E. Cultured Sympathetic Neurons: Effects of Cell-Derived and Synthetic Substrata on Survival and Development. Dev. Biol. 74: 136-151, 1980.

7. Hawrot, E. Phosphatidylserine Decarboxylase from E. coli. Methods Enzymol. 71: 571-576, 1981.

8. Langley, K.E., Hawrot, E., and Kennedy, E.P. Membrane Assembly: Movement of Phosphatidylserine between the Cytoplasmic and Outer Membranes of Escherichia coli. J. Bacteriol. 152: 1033-1041, *PMCID:* ***PMC1135964***, 1982.

9. Claude, P., Hawrot, E., Dunis, D.A., and Campenot, R.B. Binding, Internalization, and Retrograde Transport of ^{125}I-Nerve Growth Factor in Cultured Rat Sympathetic Neurons. J. Neuroscience 2: 431-442, 1982.

10. Claude, P., Hawrot, E., and Parada, I. Ultrastructural Studies on the Intracellular Fate of ^{125}I-Nerve Growth Factor in Cultured Rat Sympathetic Neurons, J. Cellular Biochemistry 20: 1-13, 1982.

11. Hawrot, E. Characteristics of the Association of Nerve Growth Factor with Primary Cultures of Rat Sympathetic Neurons. J. Neurosci. Research 8: 213-224, 1982. (This volume was also published as a book; Alan R. Liss, Inc., 1983.)

12. Gershoni, J.M., Hawrot, E., and Lentz, T.L. Binding of α-Bungarotoxin to Isolated α Subunit of the Acetylcholine Receptor of Torpedo californica. Proc. Natl. Acad. Sci. USA 80: 4973-4977, *PMCID:* ***PMC384170***, 1983.

13. Wilson, P.T., Gershoni, J.M., Hawrot, E., and Lentz, T. Binding of α-Bungarotoxin to Proteolytic Fragments of the α Subunit of Torpedo Acetylcholine Receptor Analyzed by Protein Transfer on Positively Charged Membrane Filters. Proc. Natl. Acad. Sci. USA 81: 2553-2557, *PMCID:* ***PMC345101***, 1984.

14. Lentz, T.L., Wilson, P.T., Hawrot, E., and Speicher, D.W. Amino Acid Sequence Similarity between Rabies Virus Glycoprotein and Snake Venom Curaremimetic Neurotoxins. Science 222: 847-848, 1984.

15. Lentz, T.L., Chester, J., Benson, R.J.J., Hawrot, E., Tignor, G.H. and Smith, A.L. Rabies Virus Binding to Cellular Membranes Measured by Enzyme Immunoassay. Muscle and Nerve 8: 336-345, 1985.

16. Wilson, P.T., Lentz, T.L., and Hawrot, E. Determination of the Primary Amino Acid Sequence Specifying the α-Bungarotoxin Binding Site on the α-Subunit of the Acetylcholine Receptor from Torpedo californica. Proc. Natl. Acad. Sci. USA 82: 8790-8794, *PMCID:* ***PMC391523***, 1985.

17. Wilson, P.T., Lentz, T.L., and Hawrot, E. Mapping of α-Bungarotoxin Binding Site on Primary Sequence of the Acetylcholine Receptor. Second Colloquium in Biological Sciences, Ann. N. Y. Acad. Sci. 463: 243-246, 1986.

18. Rosenberg, M.B., Hawrot, E., and Breakefield, X.O. Biotinylated β-Nerve Growth Factor Binds to PC12 Cells. Ann. N. Y. Acad. Sci. 463: 214-216, 1986.

19. Hawrot, E., Wilson, P.T., Gershoni, J.M., and Lentz, T.L. α-Bungarotoxin Binding to a High Molecular Weight Component from Lower Vertebrate Brain Identified on Dodecyl Sulfate Protein Blots. Brain Res. 373: 227-234, 1986.

20. Rosenberg, M.B., Hawrot, E., and Breakefield, X.O. Receptor Binding Activities of Biotinylated Derivatives of β-Nerve Growth Factor. J. Neurochem. 46: 641-648, 1986.

21. Lentz, T.L., Benson, R.J.J., Klimowicz, D., Wilson, P.T., and Hawrot, E. Binding of Rabies Virus to Purified Torpedo Acetylcholine Receptor. Molecular Br. Research 1: 211-219, 1987.

22. Chase, B., Holliday, J., Reese, J.H., Chun, L.L.Y., and Hawrot, E. Monoclonal Antibodies with Defined Specificities for Torpedo Nicotinic Acetylcholine Receptor Cross-React with Drosophila Neural Tissue. Neuroscience 21:959-976, 1987.

23. Rosenberg, M.B., Breakefield, X.O., and Hawrot, E. Targeting of Liposomes to Cells Bearing Nerve Growth Factor Receptors Mediated by Biotinylated NGF. J. Neurochem. 48:865-875, 1987.

24. Deutch, A.Y., Holliday, J., Roth, R.H., Chun, L.L.Y., and Hawrot, E. Immunohistochemical Localization of a Neuronal Nicotinic Acetylcholine Receptor in Mammalian Brain. Proc. Natl. Acad. Sci. USA 84: 8697-8701, *PMCID:* ***PMC299613***, 1987.

25. Lentz, T.L., Hawrot, E., and Wilson, P.T. Synthetic Peptides Corresponding to Sequences of Snake Venom Neurotoxins and Rabies Virus Glycoprotein Bind to the Nicotinic Acetylcholine Receptor. Proteins 31: 298-307, 1987.

26. Dreyer, R., Hawrot, E., Sartorelli, A.C., and Constantinides, P.P. Sedimentation Field Flow Fractionation of Fused Unilamellar Vesicles: Comparison with Electron Microscopy and Gel-Filtration. Analytical Biochemistry 175: 433-441, 1988.

27. Wilson, P.T., Hawrot, E., and Lentz, T.L. Localization of α-Bungarotoxin Binding Sites within Residues 173-204 of the α Subunit of the Acetylcholine Receptor Using Synthetic Peptides. Molecular Pharmacology 34: 643-650, 1988.

28. Lentz, T.L., Hawrot, E., Donnelly-Roberts, D. and Wilson, P.T. Synthetic Peptides in the Study of the Interaction of Rabies Virus and the Acetylcholine Receptor. Adv. Biochem. Psychopharmacol. 44: 57-71, 1988.

29. Chiles, C., Hawrot, E., Gore, J. and Byck, R. Magnetic Field Modulation of Receptor Binding. Magnetic Resonance in Medicine 10: 241-245, 1989.

30. McLaughlin, J.T. and Hawrot, E. Structural Characterization of α-Bungarotoxin Binding Proteins from Aplysia californica. Molecular Pharmacology 35: 593-598, 1989.

31. Song, G.-Q., Armitage, I.M., and Hawrot, E. A Binding Site Peptide Fragment of the Nicotinic Acetylcholine Receptor: Sequence-Specific Assignment of ^{1}H-Resonances in the Dodecamer α185-196. Biochem. Pharmacol., 40: 63-65, 1990.

32. Preston-Hurlburt, P., Wilson, P.T., Dowding A.J., and Hawrot, E. Monoclonal Antibodies Directed Against a Synthetic Peptide Corresponding to the Bungarotoxin Binding Region of the Acetylcholine Receptor. Biochim. Biophys. Acta, 1033: 324-328, 1990.

33. Pearce, S.F.A., Preston-Hurlburt, P. and Hawrot, E. The Role of Tyrosine at the Ligand-binding Site of the Nicotinic Acetylcholine Receptor. Proc. Royal Soc. B, 241: 207-213, 1990.

34. Pearce, S.F.A. and Hawrot, E. Intrinsic Fluorescence Studies of Peptide Fragments from the α-Subunit of the Nicotinic Acetylcholine Receptor: Perturbations Produced Upon Binding with α-Bungarotoxin. Biochemistry, 29: 10649-10659, 1990.

35. Horne, W.A., Hawrot, E., and Tsien, R.W. ω-Conotoxin GVIA Receptors of Discopyge Electric Organ: Binding to the Nicotinic Acetylcholine receptor. J. Biol. Chem., 266: 13719-13725, 1991.

36. Tomaselli, G.F., McLaughlin, J.T., Jurman, M., Hawrot, E., and Yellen, G. Site-Directed Mutagenesis alters Agonist Sensitivity of the Nicotinic Acetylcholine Receptor. Biophys. J., 60: 721-727, *PMCID:* ***PMC1260116***, 1991.

37. Schlyer, B.D., Maki, A.H., and Hawrot, E. α-Bungarotoxin Binding to Two Acetylcholine Receptor α-Peptides and their Methylmercury-modified Analogs: Intrinsic Phosphorescence and Optically Detected Magnetic Resonance Studies. FEBS Lett., 297: 87-90, 1992.

38. Tringali, A.E., Pearce, S.F.A., Hawrot, E., and Brenner, H.C. Phosphorescence and ODMR Study of the Binding Interactions of Acetylcholine Receptor Alpha Subunit Peptides with α-Cobratoxin. FEBS Lett., 308: 225-228, 1992.

39. Basus, V.J., Song, G., and Hawrot, E. NMR Solution Structure of an α-Bungarotoxin/Nicotinic Receptor Peptide Complex. Biochemistry, 32: 12290-12298, 1993.

40. Rosenthal, J.A., Hsu, S.H., Schneider, D., Gentile, L.N., Messier, N.J., Vaslet, C.A., Shi, Q.L., and Hawrot, E. Functional Expression and Site-directed Mutagenesis of a Synthetic Gene for α-Bungarotoxin. J. Biol. Chem., 269: 11178-11185, 1994.

41. Gao, J., Song, G., and Hawrot, E. Assignments of ^{1}H-NMR Resonances of Two Synthetic Peptides by 2D-NMR. Acta Biochimica & Biophysica Sinica, (Shengwu Huaxue Yu Shengwu Wuli Xuebao) 26: 161-170, 1994

42. Gentile, L.N., and Hawrot, E. Methods for Increasing the Expression Level of a Soluble Fusion Protein Encoding a 62 Amino Acid Fragment of the α-subunit of the Nicotinic Acetylcholine Receptor (nAChR). Annals N.Y. Academy Sciences, 757: 117-211, 1995.

43. Gentile, L.N., Basus, V.J., Shi, Q-L., and Hawrot, E. Preliminary Two-dimensional ^{1}[H] NMR Characterization of the Complex Formed between an 18-amino Acid Peptide Fragment of the α-subunit of the Nicotinic Acetylcholine Receptor and α-bungarotoxin. Annals N.Y. Academy Sciences 757: 222-238, 1995.

44. McLaughlin, J., Hawrot, E., and Yellen. G. Covalent Modification of Engineered Cysteines in the Nicotinic Acetylcholine Receptor Agonist Binding Domain Inhibits Receptor Activation. Biochemical Journal, 310: 765-769, *PMCID:* ***PMC1135964***, 1995.

45. Hawrot, E., Xiao, Y., Shi, Q.-L., Norman, D. Kirkitadze, M., and Barlow, P. Demonstration of a Tandem Pair of Complement Protein Modules in $GABA_B$ Receptor 1a. FEBS Lett., 432: 103-108, 1998.

46. Spura, A., Russin, T.S., Freedman, N., Grant, M., McLaughlin, J.T., and Hawrot, E. Identification of α-Subunit Residues within the Principal Agonist Binding Region of the Nicotinic

Acetylcholine Receptor that Contribute to α-Bungarotoxin Binding. Biochemistry, 38: 4912-4921, 1999.

47. Rosenthal, J.A., Levandoski, M.M., Chang, B., Potts, J.F., Shi, Q.-L., and Hawrot, E. The Functional Role of Positively Charged Amino Acid Side Chains in α-Bungarotoxin Revealed by Site-Directed Mutagenesis of a His-tagged Recombinant α-Bungarotoxin. Biochemistry, 38: 7847-7855, 1999.

48. Grant, M.A., Gentile, L.N., Shi, Q.-L., Pellegrini, M., and Hawrot, E. Expression and Spectroscopic Analysis of Soluble Nicotinic Acetylcholine Receptor Fragments Derived from the Extracellular Domain of the α-subunit. Biochemistry, 38: 10730-10742, 1999.

49. Levandoski, M.M., Lin, Y., Moise, L., McLaughlin, J.T., Cooper, E., and Hawrot, E. Chimeric Analysis of a Neuronal Nicotinic Acetylcholine Receptor Reveals Amino Acids Conferring Sensitivity to α-Bungarotoxin. Journal of Biological Chemistry, 274: 26113-26119, 1999.

50. Levandoski, M.M., Caffery, P., Lin, Y., Rogowski, R.S., Shi, Q.-L., & Hawrot, E. Recombinant Expression of α-Bungarotoxin in *Pichia pastoris* Facilitates Identification of Mutant Toxins Engineered to Recognize Neuronal Nicotinic Acetylcholine Receptors. The Journal of Neurochemistry, 74: 1279-1289, 2000.

51. Blein, S., Hawrot, E., & Barlow, P. The Metabotropic GABA Receptor - Molecular Insights and Their Functional Consequences. Cell Mol. Life Sci., 57: 635-650, 2000.

52. Spura, A., Riel, R.U., Freedman, N.D., Agrawal, S., Seto, C, and Hawrot, E. Biotinylation of Substituted Cysteines in the Nicotinic Acetylcholine Receptor Reveals Distinct Binding Modes for α-Bungarotoxin and Erabutoxin a. Journal of Biological Chemistry, 275: 22452-22460, 2000.

53. Zeng, H., Moise, L., Grant, M.A., and Hawrot, E. The Solution Structure of the Complex Formed between α-Bungarotoxin and an 18mer Cognate Peptide Derived from the α1 Subunit of the Nicotinic Acetylcholine Receptor from *Torpedo californica*. Journal of Biological Chemistry, 276: 22930-22940, 2001.

54. Moise, L., Piserchio, A., Basus, V.J., and Hawrot, E. NMR Structural Analysis of α-Bungarotoxin and Its Complex with the Principal alpha-Neurotoxin Binding Sequence on the α7 Subunit of a Neuronal Nicotinic Acetylcholine Receptor. Journal of Biological Chemistry, 277: 12406-12417, 2002.

55. Moise, L., Zeng, H., Caffery, P., Rogowski, R., S., and Hawrot, E. Structure and Function of α-Bungarotoxin. Journal of Toxicology-Toxin Reviews, 21(3): 293-317, 2002.

56. Zeng, H. and Hawrot, E. NMR-Based Binding Screen and Structural Analysis of the Complex Formed between α-cobratoxin and an 18-Mer Cognate Peptide Derived from the α1 Subunit of the Nicotinic Acetylcholine Receptor from *Torpedo californica*. Journal of Biological Chemistry 277: 37439-37445, 2002.

57. Sanders, T. and Hawrot, E. A Novel Pharmatope Tag Inserted into the β4 Subunit Confers Allosteric Modulation to Neuronal Nicotinic Receptors. Journal of Biological Chemistry 279: 51460-51465, 2004.

58. Liu, L., Chew, G., Hawrot, E., Chi, C., and Wang, C. Two Potent α3/5 Conotoxins from Piscivorous *Conus achatinus*. Acta Biochim et Biophys Sinica (Shanghai) 39: 438-444, 2007.

59. Goldman, R.E., Kingdon, C., Wasser, J., Clark, M.A., Goldberg, R., Papandonatos, G.D., Hawrot, E., and Koren, G. Rhode Islanders' Attitudes towards the Development of a Statewide Genetic Biobank. Personalized Medicine 5: 339-359, 2008.

60. Peng, C., Han, Y., Sanders, T., Chew, G., Liu, J., Hawrot, E., and Wang, C. Alpha4/7-conotoxin Lp1.1 is a Novel Antagonist of Neuronal Nicotinic Acetylcholine Receptors. Peptides 29:1700-1707, 2008.

61. Paulo, J.A., Brucker, W.J., and Hawrot, E., Proteomic Analysis of an Alpha7 Nicotinic Acetylcholine Receptor Interactome. J. Proteome Research 8:1849-1858, *PMCID:* ***PMC289157***, 2009.

62. Paulo, J.A. and Hawrot, E. A Radio-Isotope Label-Free α-bungarotoxin Binding Assay Using Biacore Sensor Chip Technology for Real-Time Analysis. Analytical Biochemistry 389:86-88, *PMCID:* ***PMC2684811***, 2009.

63. Paulo, J.A. and Hawrot, Effect of Homologous Serotonin Receptor Loop Substitutions on the Heterologous Expression in *Pichia* of a Chimeric Acetylcholine-Binding Protein with Alpha-bungarotoxin-binding Activity. Protein Expression and Purification, 67: 76-81, *PMCID:* ***PMC2713376***, 2009.

64. Peng, C., Chen, W., Han, Y., Sanders, T., Chew, G., Liu, J., Hawrot, E., Chi, C., and Wang, C., Characterization of a Novel alpha4/4-conotoxin, Qc1.2, from Vermivorous *Conus quercinus*. Acta Biochim Biophys Sinica (Shanghai), 41: 858-864, *PMCID:* ***PMC2945775***, 2009.

65. Caffery, P.M., Krishnaswamy, A., Sanders, T., Liu, J., Hartlaub, H., Klysik, J., Cooper, E., and Hawrot, E. Engineering Neuronal Nicotinic Acetylcholine Receptors with Functional Sensitivity to α-bungarotoxin: A Novel α3-knock-in Mouse. European Journal of Neuroscience, 30:2064-2076, *PMCID:* ***PMC2818262***, 2009.

66. Moise, L., Liu, J., Pryazhnikov, E., Khiroug, L., Jeromin, A., and Hawrot, E. Kv4.2 Channels Tagged in the S1-S2 Loop for alpha-Bungarotoxin Binding Provide a New Tool for Studies of Channel Expression and Localization. Channels, Epub, March 8, 4(2): 115-123, *PMCID:* ***PMC2888848***, 2010.

67. Peng, C., Chen, W., Sanders, T., Chew, G., Liu, J., Hawrot, E., and Chi, C., Chemical Synthesis and Characterization of Two αlpha4/7-Conotoxins. Epub 2010 Aug 27, Acta Biochim Biophys Sinica (Shanghai), Oct;42(10):745-753, *PMCID:* ***PMC2945775***, 2010.

68. Peng, C., Ye, M., Wang, Y., Shao, X., Yuan, D., Jing Liu, J., Hawrot, E., Wang, C., Chi, C., A New Subfamily of Conotoxins Belonging to the A-Superfamily. Epub August 4, 2010, Peptides 31:2009-2016, *PMCID:* ***PMC3721517***, 2010.

69. Hawrot, E., Connecting the Dots between G proteins, G protein Coupled Receptors, and Neuronal Nicotinic Acetylcholine Receptors. Bioessays. Dec;35(12):1022. doi: 10.1002/bies.201300148, *PMCID:* ***PMC4357228***, 2013.

70. Mulcahy, M.J., Blattman, S.B., Barrantes, F.J. Lukas, R.J, and Hawrot, E., Resistance to Inhibitors of Cholinesterase 3 (Ric-3) Expression Promotes Selective Protein Associations with the Human α7-Nicotinic Acetylcholine Receptor Interactome. PLoS One. 10(8): e0134409. Published online 2015 Aug 10. doi: 10.1371/journal.pone.0134409, *PMCID:* ***PMC4530945*** 2015.

71. Mulcahy, M.J., Paulo, J.A., and Hawrot, E. Proteomic Investigation of Murine Neuronal α7-Nicotinic Acetylcholine Receptor Interacting Proteins. J. Proteome Res., Article ASAP, doi: 10.1021/acs.jproteome.8b00618. Publication Date (Web): October 4, 2018.

5f. Abstracts:

1. Hawrot, E. and Kennedy, E.P. Biogenesis of Membrane Lipids: Mutants of *Escherichia coli* with Temperature-Sensitive Phosphatidylserine Decarboxylase. Fed. Proc. 34: 668 (abstract), 1975.

2. Satre, M., Hawrot, E., and Kennedy, E.P. Phosphatidylserine Decarboxylase from *Escherichia coli*. Identification of the Prosthetic Group. Fed. Proc. 35: 1529 (abstract), 1976.

3. Hawrot, E. Effects of Cell-Substratum Interactions on the Survival and Development of Cultured Sympathetic Neurons. Ninth Ann. Soc. Neurosci. Mtg. Abstr., #520, 1979.

4. Campenot, R.B., Hawrot, E., and Patterson, P.H. Retrograde Transport of Nerve Growth Factor in Cultured Rat Sympathetic Neurons. Ninth Ann. Soc. Neurosci. Mtg. Abstr., #494, 1979.

5. Claude, P., Dunis, D.A., and Hawrot, E. Binding and Uptake of ^{125}I-Nerve Growth Factor by Dissociated Sympathetic Neurons in Culture: Localization by Electron Microscopic Autoradiography. J. Cell Biol. 83: 140a, 1979.

6. Hawrot, E., Campenot, R.B., Claude, P., and Patterson, P.H. Interaction of ^{125}I-NGF with Cultured Rat Sympathetic Neurons. J. Supramol. Struct., Suppl. 4, #134, 1980.

7. Grossman, M.H., Hawrot, E., Rosenberg, M., and Breakefield, X.O. β-nerve Growth Factor-like Molecule in Human Placenta. Eleventh Ann. Soc. Neurosci. Mtg. Abstr., #48.10, 1981.

8. Claude, P., Hawrot, E., and Parada, I. The Intracellular Fate of ^{125}I-Nerve Growth Factor (^{125}I-NGF) as Determined by Electron Microscopic Autoradiography. J. Cell Biol. 91: 199a, 1981.

9. Rosenberg, M.B., Grossman, M.H., Hawrot, E., Pintar, J., and Breakfield, X.O. β-NGF-like Proteins in Human Fetal Tissues and Cultured Skin Fibroblasts. Trans. Amer. Soc. Neurochem. 13: Abstr., #351, 1982.

10. Rosenberg, M.B., Grossman, M.H., Hawrot, E., Pintar, J.E., Schwartz, J.P., and Breakefield, X.O. β-Nerve Growth Factor-like Proteins in Human Fetal Small Intestine and Adult Mouse Brain. Twelfth Ann. Soc. Neurosci. Mtg. Abstr., #53.12, 1982.

11. Hawrot, E., Gershoni, J.M., Burrage, T.G., Paladino, G.S., Lentz, T.L., and Chun, L.L.Y. Monoclonal Antibodies to Nicotinic Acetylcholine Receptor Characterized by Electro-transfer Techniques. Twelfth Ann. Soc. Neurosci. Mtg. Abstr., #91.7, 1982.

12. Burrage, T.G., Tignor, G.H., Hawrot, E., Smith, A.L., and Lentz, T.L. Co-localization of Rabies Virus and Regions of High Density Acetylcholine Receptors. J. Cell Biol. 95: 439a, 1982.

13. Gershoni, J.M., Palade, G.E., Hawrot, E., Klimowicz, D.W., and Lentz, T.L. Analysis of α-bungarotoxin Binding to Torpedo Acetylcholine Receptor by Electrophoretic Transfer Techniques. J. Cell Biol. 95: 422a, 1982.

14. Lentz, T.L., Gershoni, J.M., Wilson, P., Klimowicz, D., Hall, L.M., and Hawrot, E. Protein-Blotting Analysis of α-Bungarotoxin Binding to the Acetylcholine Receptor: Species Comparison, Proteolytic Fragments, and MBTA Specificity. Thirteenth Ann. Soc. Neurosci. Mtg. Abstr. #48.5, 1983.

15. Hawrot, E., Holliday, J., Schweitzer, B., and Chun, L.L.Y. Monoclonal Antibodies to Torpedo Nicotinic Acetylcholine Receptor that Cross-React with Specific Subsets of Mammalian Peripheral Neurons and Smooth Muscle. Thirteenth Ann. Soc. Neurosci. Mtg. Abstr. #168.4, 1983.

16. Wilson, P.T., Hawrot, E., and Lentz, T. Mapping of the α-Bungarotoxin Binding Site on the Primary Sequence of the Torpedo Acetylcholine Receptor. J. Cell Biol. 99:20a, 1984.

17. Lentz, T.L., Hawrot, E., Wilson, P.T., Benson, R.J.J., and Speicher, D. Amino Acid Sequence Homology between Rabies Virus Glycoprotein and Snake Venom Neurotoxins. First World Conference on Virus Diseases and Mental Health, Montreal, Canada, 1984.

18. Lentz, T.L., Hawrot, E., Wilson, P.T., and Speicher, D. Amino Acid Sequence Homology between Rabies Virus Glycoprotein and Snake Venom Neurotoxins. Fourteenth Ann. Soc. Neurosci. Mtg. Abstr., #262.14, 1984.

19. Rosenberg, M.B., Hawrot, E. and Breakefield, X.O. Biotinylated β-Nerve Growth Factor Binds to High Affinity NGF Receptors on PC12 Cells. Fourteenth Ann. Soc. Neurosci. Mtg. Abstr., #306.13, 1984.

20. Chase, B., Holliday, J., Reese, J., Hawrot, E. and Chun, L.L.Y. Monoclonal Antibodies to Torpedo Nicotinic Acetylcholine Receptor Label Drosophila Central Nervous System Tissue with Regional Specificity. Fourteenth Ann. Soc. Neurosci. Mtg. Abstr., #115.5, 1984.

21. Hawrot, E., Wilson, P.T., Gershoni, J.M., Boissevain, A.L. and Lentz, T.L. A High- Molecular Weight Bungarotoxin-Binding Component in Fish and Avian Brain Detected and Characterized Using Protein-Blots. Fourteenth Ann. Soc. Neurosci. Mtg. Abstr., #275.8, 1984.

22. Rosenberg, M.B., Hawrot, E., and Breakefield, X.O. Biotinylated β-Nerve Growth Factor: Receptor Binding and Liposome Targeting. FEBS Winter School on "New Trends in Neuropeptide Research: Expression, Processing, Recognition." Salzburg, Austria, March 10-16, 1985.

23. Wilson, P.T., Lentz, T.L., and Hawrot, E. Localization of the Primary Amino Acid Sequence Comprising the α-Bungarotoxin Binding Site on the α-Subunit of Torpedo Acetylcholine Receptor. Thirteenth International Congress of Biochemistry, Amsterdam, The Netherlands, 1985.

24. Wilson, P.T., Lentz, T.L., and Hawrot, E. Identification of the α-Bungarotoxin Binding Site on the Primary Amino Acid Sequence of the α Subunit from the Torpedo Electric Organ Acetylcholine Receptor. Fifteenth Ann. Soc. Neurosci. Mtg. Abstr., #55.3, 1985.

25. Hawrot, E., Rosenberg, M.B., Preston, P.E., and Breakefield, X.O. Nerve Growth Factor-Mediated Targeting of Liposomes to Cells. Amer. Soc. Biol. Chem./Division of Biol. Chem. of the Amer. Chem. Soc. Mtg., Abstract #1811, 1986.

26. Pachner, A.R., Brooks, E., Kantor, F.S., Wilson, P., Lentz, T.L., and Hawrot, E. Induction of Experimental Myasthenia in Mice by Immunization with a Synthetic Peptide of the AChR. Sixteenth Ann. Soc. Neurosci. Mtg. Abstr., #338.2, 1986.

27. Holliday, J., Deutch, A.Y., Roth, R.H., and Hawrot, E. Immunohistochemical Localization in Rat Brain of an Antigen Detected with a Monoclonal Antibody Generated against the Torpedo Nicotinic Acetylcholine Receptor. Sixteenth Ann. Soc. Neurosci. Mtg. Abstr., #225.1, 1986.

28. Lentz, T.L., Wilson, P.T., and Hawrot, E. Binding of Synthetic Rabies Virus Glycoprotein Peptides and an α-Bungarotoxin Peptide with the Acetylcholine Receptor. Sixteenth Ann. Soc. Neurosci. Mtg. Abstr., #67.2, 1986.

29. McLaughlin, J.T. and Hawrot, E. A Central Nervous System α-Bungarotoxin Binding Protein: Comparison with the Torpedo Acetylcholine Receptor. J. Cell. Biochem. Suppl. 11D:185, 1987.

30. McLaughlin, J.T. and Hawrot, E. Purification and Structural Characterization of a High Molecular Weight α-Bungarotoxin Binding Protein from Aplysia californica. Seventeenth Ann. Soc. Neurosci. Mtg. Abstr. #260.3, 1987.

31. Wilson, P.T., Hawrot, E., and Lentz, T.L. α-Bungarotoxin Binding to Synthetic Peptides Corresponding to Sequences of the α Subunit of the Acetylcholine Receptor. Seventeenth Ann. Soc. Neuroci. Mtg. Abstr. #197.5, 1987.

32. Deutch, A.Y., Goldstein, M., Holliday, J., Roth, R., and Hawrot, E. Immunohistochemical Localization of the Nicotinic Acetylcholine Receptor to Distinct Subsets of Midbrain Dopamine Neurons. Seventeenth Ann. Soc. Neurosci. Mtg. Abstr. #13.7, 1987.

33. Preston, P.E. and Hawrot, E. Characterization of Monoclonal Antibodies Directed Against a Synthetic Peptide Corresponding to a Bungarotoxin Binding Region on the α-Subunit of the Acetylcholine Receptor. Seventeenth Ann. Soc. Neurosci. Mtg. Abstr. #197.4, 1987.

34. Edelstein, S.B. and Hawrot, E. Generation and Characterization of Monoclonal Antibodies to Preselected Domains of the Delta Subunit of the Mouse Nicotinic Acetylcholine Receptor. Seventeenth Ann. Soc. Neurosci. Mtg. Abstr. #197.6, 1987.

35. Shi, Q-L., Colson, K.L., Lentz, T.L., Armitage, I.M., and Hawrot, E. Solution Conformations of Synthetic Peptides Corresponding to the Ligand-Binding Site of the Nicotinic Acetylcholine Receptor (AChR) and the Mode of Peptide Binding to α-Bungarotoxin (BGTX) as Revealed by CD, Fluorescence, and NMR. Biophys. J. 53: 94a, 1988.

36. Shi, Q-L. and Hawrot, E. Solution Conformation of Small Aromatic-Containing Peptides Related to the Ligand Binding Domain of the Nicotinic Acetylcholine Receptor. Annual AAAS Mtg., Seminar on the Protein Folding Problem, Abstract, 1988.

37. Chiles, C., Hawrot, E., Gore, J.C., and Byck, R. Effect of Magnetic Fields on Nicotinic Acetylcholine Receptor. Soc. of Magnetic Resonance in Medicine, (Abstracts of the 7th Meeting), 1:169, August, 1988.

38. Chiles, C., Hawrot, E., Gore, J.C., and Byck, R. Magnetic Field Modulation of Nicotinic Acetylcholine Receptor Function. Psychopharmacology (Abstracts of the XIVth Congress of the Collegium Internationale Neuro-Psychopharmacologium), 96: August, 1988.

39. Hawrot, E. and Shi, Q.-L. Conformational Changes During Formation of the Complex Between α-Bungarotoxin and Synthetic Peptides that Mimic a Binding Domain. Eighteenth Ann. Soc. Neurosci. Mtg. Abstr., #242.7, 1988.

40. Pearce, S.F. and Hawrot, E. A Fluorescence Spectroscopic Method for Determining Binding of α-Bungarotoxin (BGTX) to Synthetic Peptides Corresponding to the Ligand-Binding Site of the Nicotinic Acetylcholine Receptor. Biophys. J., 55:517a, 1989.

41. Song, G-Q., Armitage, I., and Hawrot, E. Binding-Induced Conformational Changes Revealed by NMR Studies of the Interaction Between α-Bungarotoxin and Peptide Models of the Ligand Binding Site on the Nicotinic Acetylcholine Receptor. Biophys. J., 55:149a, 1989.

42. Hawrot, E., Song, G-Q., and Armitage, I. Conformational Changes During Binding of the Snake Neurotoxin, α-Bungarotoxin, to Synthetic Peptides Corresponding to the Binding Domain of the Nicotinic Acetylcholine Receptor. UCLA Symposium on "Frontiers of NMR in Molecular Biology", J. of Cellular Biochemistry 13A: CA 304, page 26, 1989.

43. McLaughlin, J.T. and Hawrot, E. An α-Bungarotoxin Binding Protein from Aplysia Isolated by Bromoacetylcholine Affinity Chromatrography. Nineteenth Ann. Soc. Neurosci. Mtg. Abstr., #387.2, 1989.

44. Pearce, S.F.A., Preston-Hurlburt, P., and Hawrot, E. Tyrosine as the Negative Subsite for Ligand Binding to the Nicotinic Acetylcholine Receptor (nAChR)? Biophys. J., 57: 433a, 1990.

45. Basus, V.J. and Hawrot, E. Binding-Induced Perturbations in α-Bungarotoxin: Assignment of a Protein-Peptide Complex Based on CAMELSPIN (ROESY) Exchange Spectra. Thirty-First Experimental Nuclear Magnetic Resonance Conference, Abstr., 1990.

46. Horne, W.A., Hawrot, E., and Tsien, R.W. ω-Conotoxin GVIA Binding to the Acetylcholine Receptor. Amer. Soc. Biochem. and Mol. Biol. Meeting, Abstr. #2666, 1990.

47. Pearce, S.F.A. and Hawrot, E. Acetylcholine Binding to Nicotinic Acetylcholine Receptor (nAChR)-derived Peptide Fragments Determined by Fluorescence Quenching. Fourth Symp. of the Protein Society, 1990.

48. Basus, V.J. and Hawrot, E. Structural Studies of α-Bungarotoxin Bound to a Fragment of the Nicotinic Acetylcholine Receptor. XIV International Conference on Magnetic Resonance in Biological Systems, September, 1990.

49. Hawrot, E. and Basus, V.J. Identification of Intermolecular Contacts between α-Bungarotoxin and a Binding-Site Peptide Fragment of the Nicotinic Acetylcholine Receptor. Biophys. J., 59: 189a, 1991.

50. Pearce, S.F.A. and Hawrot, E. Time-Resolved Fluorescence Studies of α-Neurotoxins Binding to Peptides Derived from the α-Subunit of the Nicotinic Acetylcholine Receptor. Biophys. J., 59: 299a, 1991.

51. Tringali, A.E., Pearce, S.F.A., Hawrot, E., and Brenner, H.C. Triplet State Spectroscopic Studies of alpha-Cobratoxin Binding to Acetylcholine Receptor Alpha Subunit Peptides. Biophys. J., 59: 301a, 1991.

52. Tomaselli, G.F., McLaughlin, J.T., Jurman, M., Hawrot, E., and Yellen, G. Site-Directed Mutagenesis alters Agonist Sensitivity of the Nicotinic Acetylcholine Receptor. Biophys. J., 59: 33a, 1991.

53. Hawrot, E., Messier, N.J., Vaslet, C.A., Hsu, S.H., and Gentile, L.N. Expression of a Synthetic Gene for α-Bungarotoxin in E. coli. Ann. Soc. Neurosci. Mtg. Abstract #259.3 , 1992.

54. Loring, R.H., Dou, Y.M., Rossant, C, and Hawrot, E. Interactions of Dithiols with Reduced or Arsenylated Nicotinic Receptor Peptides. Ann. Soc. Neurosci. Mtg. Abstract #337.1, 1992.

55. Usselman, J.A., Hsu, S.H., Messier, N.J., Vaslet, C.A. and Hawrot, E. Purification and Nicotinic Receptor Binding Activity of a Recombinant α-Bungarotoxin. Biophys. J., 64: A116, 1993.

56. Gentile, L.N., Basus, V.J., Shi, Q-L., and Hawrot, E. Probing the Contact Zone Between α-Bungarotoxin and a Portion of the α-Subunit of the Nicotinic Acetylcholine Receptor by 2-D NMR. Biophys. J., 64: A125, 1993.

57. Gentile, L.N., Basus, V.J., and Hawrot, E. Using 2-D NMR to Probe the Contact Zone between α-Bungarotoxin and Portions of the α-Subunit of the Nicotinic Acetylcholine Receptor. Keystone Symp. on Frontiers of NMR in Molecular Biology. J. Cellular Biochemistry 17C:293, 1993.

58. Shi, Q.L. and Hawrot, E. Involvement of the Vicinal Disulfide Bond Between Cys-192 and Cys-193 in Ligand Binding to Peptide Fragments of the Nicotinic Acetylcholine Receptor. Biophys. J., 64: A376, 1993.

59. Lipscombe, D., Hawrot, E., Vaslet, C.A., Bednarski, E., and Lin, Z. Identification of N- and L-Type Ca Channel cDNA Sequences from Rat Sympathetic Neurons. Ann. Soc. Neurosci. Mtg. Abstract #11.6, 1993.

60. McLaughlin, J., Hawrot, E., and Yellen. G. Nicotinic Receptor Ligand-binding Domain Probed by Cysteine-Substitution Mutagenesis. Biophys. J., 66: A349, 1994.

61. Lin, Z., Harris, C., Hawrot, E., and Lipscombe, D. Molecular Characterization of Voltage-gated Ca Channels in Sympathetic Neurons. Twenty-Third Annual Meeting New England Pharmacologists, Pfizer Central Research Division, Groton, CT, 1994.

62. Shi, Q.L. and Hawrot, E. Role of the Vicinal Disulfide Bond between Cys-α192 and Cys-α193 in Ligand Binding to 18mer Fragments of the Nicotinic Acetylcholine Receptor. Biophys. J., 66: A213, 1994.

63. Harris, C.A., Hawrot, E., Lipscombe, D., and Lin, Z. Identity of α_1 & β Ca Channel Subunits Expressed in Rat Sympathetic Neurons. 24th Ann. Soc. Neurosci. Mtg. Abstract #34.4, 1994.

64. Rosenthal, J.A. and Hawrot, E. Site-directed Mutagenesis and Optimization of Protein Expression of Recombinant α-Bungarotoxin. Biophys. J., 68: A405, 1995.

65. Lin, Z., Hawrot, E., and Lipscombe, D. Identification of an Isoform of a B-class Calcium Channel in Rat Sympathetic Neurons. Biophys. J., 68: A383, 1995.

66. Hawrot, E., Grant, M.A., Shi, Q-L., Patrick, R., and Gentile, L.N. Expression of a Soluble 62 Amino Acid Peptide Fragment from the Extracellular Domain of the α-Subunit of the Nicotinic Acetylcholine Receptor. 25th Ann. Soc. Neurosci. Mtg. Abstract, #621.17, 1995.

67. Rosenthal, J.A., Shi, Q-L., and Hawrot, E. Purification of Recombinant α-Bungarotoxin and Two Mutants Using a 7-Residue Histidine Tag. 25th Ann. Soc. Neurosci. Mtg. Abstract, #334.4, 1995.

68. Hawrot, E., Shi, Q-L., and Rosenthal, J.A. Recombinant α-Bungarotoxin Constructs and Mutant Analysis. 5th Pan American Symposium on Animal, Plant, and Microbial Toxins, 1995.

69. Moise, L., Mothkur, S., and Hawrot, E. Functional Expression of a Synthetic Gene encoding 66 Amino Acids of the Nicotinic Acetylcholine Receptor α_7 Subunit Binding Site. Twenty-Fifth Annual Meeting New England Pharmacologists, Univ. of Mass. Medical School, Boxborough, MA, 1996.

70. Lin, Z., Haus, S., Hawrot, E., and Lipscombe, D. Functionally Distinct Isoforms of the Ca Channel α_{1B}-Subunit are Expressed in Rat Sympathetic Neurons. 26th Ann. Soc. Neurosci. Mtg. Abstract #495.11, pg. 1244, 1996.

71. Rosenthal, J.A., Chang, B., and Hawrot, E. Characterization of Recombinantly-Expressed α-Bungarotoxin and Mutant Analysis. Biophys. J. Abstr., 70: M243, 1996.

72. Shi, Q-L., Avizonis, D., Basus, V.J., and Hawrot, E. Origin of Antagonist- and Agonist-Induced Changes in the Circular Dichroism of the nAChR Peptide Fragments. Biophys. J., 70: A76, 1996.

73. Levandoski, M.M. and Hawrot, E. Expression of a Recombinant α-Bungarotoxin from Pichia pastoris. Biophysics J. 72: A101, 1997.

74. Levandoski, M.M. and Hawrot, E. Improving the Recombinant Expression of α-Bungarotoxin from Pichia pastoris. Twenty-Sixth Annual Meeting New England Pharmacologists, Boston University School of Medicine, Newton, MA, 1997.

75. Spura, A., Freedman, N., and Hawrot, E. Covalent Modification of Engineered Cysteines in the Binding Domain of the α-subunit of the Nicotinic Acetylcholine Receptor Inhibits α-Bungarotoxin Binding. 27th Ann. Soc. Neurosci. Mtg. Abstract #156.3, pg. 387, 1997.

76. Spura, A. and Hawrot, E. Covalent Modification of Engineered Cysteines in the Nicotinic Acetylcholine Receptor Inhibits Alpha-Bungarotoxin Binding: Initial Probing of “Loop 3". Twenty-Sixth Annual Meeting New England Pharmacologists, Boston University School of Medicine, Newton, MA, 1997.

77. Grant, M.A., Shi, Q.-L., and Hawrot, E. Characterization of a Soluble 68 Amino Acid Peptide Fragment from the Extracellular Domain of the Nicotinic Acetylcholine Receptor α-subunit. Biophys. J. 72: A152, 1997.

78. Shi, Q.-L., Grant, M.A., and Hawrot, E. Analysis of Change in Circular Dichroism Induced by Binding of α-Bungarotoxin to nAChR Fragments. Biophys. J. 72: A285, 1997.

79. Moise, L., Zimmerman, A.L., and Hawrot, E. Expression and Initial Characterization of a 66 Amino Acid Fragment of the Nicotinic Acetylcholine Receptor Alpha 7 Subunit Binding Site. 27th Ann. Soc. Neurosci. Mtg. Abstract #156.2, pg. 387, 1997.

80. Shi, Q-L. and Hawrot, E. The Role of the α192/193 Disulfide Bond of the Nicotinic Acetylcholine Receptor in Agonist Binding. Biophys. J. 74(2), A90, 1998.

81. Spura, A., Freedman, N., Agrawal, S. and Hawrot, E. A Novel Approach for Determining the Surface Accessibility of Individual Residues of the Nicotinic Acetylcholine Receptor. Soc. Neurosci. Abstract 24, 836, 1998.

82. Levandoski, M..M., Cooper, E., and Hawrot, E. α3α1 Chimeric Nicotinic Acetylcholine Receptor Subunits Sensitive to α-Bungarotoxin. Soc. Neurosci. Abstracts 24, 837, 1998.

83. Hawrot, E., Xiao, Y., Shi, Q.-L., Kirkitadze, M., and Barlow, P. Recombinant Expression and Characterization of the N-terminal Region from the $GABA_B$-1a Receptor that Distinguishes $GABA_B$-1a from the Otherwise Identical $GABA_B$-1b Form of the Receptor. [Abstract] "Molecular and Functional Diversity of Ion Channels and Receptors", New York Academy of Sciences, May 14-17, 1998.

84. Blein, S., Barlow, P.N., & Hawrot, E. Structural Study of the N-terminal Membrane Distal Region of $GABA_B$ Receptor Type 1a. Mol. Immunol. 35: 214, 1998.

85. Shi, Q.-L. and Hawrot, E. Conformational Stability of the Nicotinic Acetylcholine Receptor Fragments Containing the α192/193 Disulfide Bond, Biophys. J. 76: A373, 1999.

86. Moise, L., Shi, Q.-L., Pham, Q. and Hawrot, E. Structure-Function Analysis of the Bungarotoxin Binding Site on the α7 Neuronal Nicotinic Acetylcholine Receptor. Protein Science 8(Suppl. 1): 174, Abstract #690S, 1999.

87. Moise, L., Piserchio, A., Shi, Q.-L., Pham, Q. and Hawrot, E. Preliminary NMR Characterization of the Bungarotoxin Binding Site on the α7 Neuronal Nicotinic Acetylcholine Receptor. ASBMB/ASPET 2000 Meeting Abstract, Boston, June 4-8, 2000.

88. Moise, L., Piserchio, A., Shi, Q.-L., Pham, Q. and Hawrot, E. Heteronuclear NMR Studies of the Bungarotoxin Binding Site on the Chick α7 Neuronal Nicotinic Acetylcholine Receptor. The Tenth Neuropharmacology Conference: Neuronal Nicotinic Acetylcholine Receptors. New Orleans, LA, November 2-4, 2000.

89. Zeng, H., Moise, L., Grant, M.A., and Hawrot, E. NMR Solution Structure of the Complex Formed between α-bungarotoxin and an 18mer Cognate Peptide Derived from the α1 Subunit of the Nicotinic Acetylcholine Receptor from *Torpedo californica*. Soc. Neurosci. Abstracts 27 #486.12, 2001

90. Zeng, H., Sheffler, W., and Hawrot, E. Modeling of the Complex formed between the Acetylcholine Binding Protein (AChBP) and α-Cobratoxin using Combined Distance Constraints from X-ray and NMR Studies. Soc. Neurosci. Abstracts 28, #537.4, 2002.

91. Sanders, T. and Hawrot, E. Chimeric Beta Subunits of Nicotinic Acetylcholine Receptors Engineered to be α–bungarotoxin Sensitive. American Society Pharmacology and Experimental Therapeutics, Experimental Biology 2004, Washington DC, April, 2004.

92. Moise, L., Liu, J., and Hawrot, E. (2004) α-Bungarotoxin Antagonizes a $GABA_A$ Receptor. American Society Pharmacology and Experimental Therapeutics, Experimental Biology Abstract #LB583, Washington DC, April.

93. Sanders, T. and Hawrot, E. Protein Engineering of a Pharmatope into the Beta-4 Subunit of a Nicotinic Acetylcholine Receptor. (2004) American Society Biochemistry and Molecular Biology, Abstract # 33.1, Boston, FASEB JOURNAL 18 (8): C75-C75 Suppl. S, MAY 14.

94. McCann, C.M., Tapia, J.C. Caffery, P.., Hawrot, E., Sanes, J.R., and Lichtman, J.W. (2005) *In Vivo* Imaging of Synapse Formation in the Mouse Submandibular Ganglion. Soc. Neurosci. Abstracts.

95. Moise, L., Liu, J., Jeromin, A., and Hawrot, E. (2005) Kv4.2 Channels tagged for α-Bungarotoxin Binding. Soc. Neurosci. Abstracts.

96. Caffery, P., McCann, C.M., Tapia, J.C., Hartlaub, H., Klysik, J., Cooper, E., Lichtman, J.W., and Hawrot, E., (2005) A Knock-In Mouse with α-Bungarotoxin-Sensitive α3 Neuronal Nicotinic Receptors. Soc. Neurosci. Abstracts.

97. Hawrot, E., Caffery, P., Liu, J., Hartlaub, H., Krishnaswamy, A., and Cooper, E. (2007) Effect of Genetic Background on Expression of αBungarotoxin-sensitive α3-containing Neuronal Nicotinic Receptors in a Knock-in Mouse Model. Soc. Neurosci. Abstracts.

98. Sanders, T., Chew, G., and Hawrot, E. (2008) alpha-Bungarotoxin Sensitivity Introduced into Otherwise Insensitive Heteromeric Neuronal Nicotinic Acetylcholine Receptors. 18th Neuropharmacology Conference in association with IUPHAR: Ligand-Gated Ion Channels, November, Washington, D.C., USA.

99. Chew, G., Sanders, T., and Hawrot, E. (2008) Replacement of the Beta1 Subunit of Muscle Nicotinic Acetylcholine Receptors with Chimeric alpha-Bungarotoxin Sensitive Neuronal Nicotinic Subunits. 18th Neuropharmacology Conference in association with IUPHAR: Ligand-Gated Ion Channels, November, Washington, D.C., USA.

100. Peng, C., Huang, F., Liu, J., Hawrot, E., Chi, C., and Wang, C. (2008) Identification and Characterization of a Novel Framework 14 Conotoxin from a Vermivorous Snail *Conus pulicarius*. 18th Neuropharmacology Conference in association with IUPHAR: Ligand-Gated Ion Channels, November, Washington, D.C., USA.

101. Peng, C., Yuan, D., Liu, J., Hawrot, E., Chi, C., and Wang, C. (2008) Two Novel Conotoxin Antagonists of Nicotinic Acetylcholine Receptor Subtypes Derived from *Conus leopardus.* 18th Neuropharmacology Conference in association with IUPHAR: Ligand-Gated Ion Channels, November, Washington, D.C., USA.

102. Liu, J., Sanders, T., Caffery, P., and Hawrot, E. (2008) Electrophysiological and Pharmacological Characterization of a Genetically Modified Nicotinic alpha3 Subunit in Superior Cervical Ganglion Neurons from a Knock-in Mouse Expressing an alpha-Bungarotoxin Sensitive, Heteromeric Nicotinic Acetylcholine Receptor. Oral presentation at the 18th Neuropharmacology Conference in association with IUPHAR: Ligand-Gated Ion Channels, November, Washington, D.C., USA.

103. Sanders, T., and Hawrot, E. (2009) Characterization of a Knock-in Mouse Expressing αBgtx-Sensitive α3 Nicotinic Acetylcholine Receptors (nAChRs): Mouse Strain Differences as Revealed with Whole-cell Recordings from Superior Cervical Ganglion (SCG) neurons. Cold Spring Harbor Symposium on Synapses: from Molecules to Circuits & Behavior.

104. Chew, G., Sanders, T., Whitman S., Caffery, P., and Hawrot, E. (2009) Behavioral Characterization of a Knock-in Mouse Containing an α-bungarotoxin Sensitive α3 nicotinic Acetylcholine Receptor Subunit. Soc. Neurosci. Abstracts.

105. Dong, L., Wood, N., Swiatek, P.J., Casey Dunn, C., and Hawrot, E. (2011) Automated Next Generation Sequencing Data Analysis and Management. Poster Abstract accepted for the Bio-IT Conference (April 12-14, Boston, MA).

106. Mulcahy, M.J., Barrantes, .FJ., and Hawrot, E. (2013) Identifying the α7-Nicotinic Acetylcholine Receptor Interactome from a Human Neuroblastoma Cell Line. FASEB J April 9, 2013 27:884.2 – Poster Presented at Experimental Biology 2013 in Boston, MA.

107. Mulcahy, M.J., Barrantes, .FJ., and Hawrot, E. (2013) Identifying the α7-Nicotinic Acetylcholine Receptor Interactome from a Human Neuroblastoma Cell Line. 16th Annual Research Symposium on Mental Health Sciences at Butler Hospital in Providence, RI.

108. Mulcahy, M.J., Lukas, R.J., Barrantes, F.J., and Hawrot, E. (2013) Proteomic Investigation of Human α7-Nicotinic Acetylcholine Receptor Signaling Mechanisms. Biochemical Pharmacology 86(8):1227-1228 – Presented at Society for Neuroscience Satellite Symposium "Nicotinic Acetylcholine Receptors as Therapeutic Targets: Emerging Frontiers in Basic Research & Clinical Science" in San Diego, CA.

109. Mulcahy, M.J., Hawrot, E. (2014) Mass Spectrometric Investigation of human α7-nicotinic acetylcholine receptor interacting proteins in SH-SY5Y Cells. Program No. 500.15. 2014 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience. Online.

110. Mulcahy, M.J., Lukas, R.J., Barrantes, F., Hawrot, E. (2014) Proteomic investigation of human α7-nicotinic acetylcholine receptor interacting proteins. *The FASEB Journal*. 28(1 Supplement):1147.5. Presented at Experimental Biology 2014 in San Diego, CA.

5g. Invited Seminars:

2011 University of Buenos Aires, Buenos Aires, Argentina.

2008 Department of Pharmacology, Weill Medical College, Cornell University, New York, NY

2003 International Society of Toxinology, Adelaide, Australia.

2003 Centre for Neuroscience, University of Edinburgh, Edinburgh, Scotland.

2001 Mount Desert Isle Biological Laboratory, Salisbury Cove, Maine.

2000 International Society of Toxinology, Paris, France.

2000 Graduate Program in Molecular Pharmacology and Physiology, Brown University.

1998 Department of Neuroscience, Tufts University Medical School, Boston, MA.

1998 Department of Pharmacology, Boston University School of Medicine, Boston, MA.

1997 Department of Chemistry and the Edinburgh Centre for Protein Technology, University of Edinburgh, Edinburgh, U.K.

1997 Department of Physiology, McGill University, Montreal, Quebec, Canada.

1995 Department of Molecular Pharmacology, Stanford University School of Medicine, Palo Alto, CA.

1995 Biology Graduate Student Association, Department of Biology, Humboldt State University, Arcata, CA.

1995 5th Pan American Symposium on Animal, Plant, and Microbial Toxins, International Society of Toxinology, Frederick, MD.

1995 Department of Biochemistry and Cell Biology, State University of New York at Stony Brook, Stony Brook, NY.

1994 Percy L. Julian Memorial Lecture, Sigma Xi Howard University Chapter, Howard University, Washington D.C.

1994 Graduate Program in Artifical Organs, Biomaterials, and Cell Technology, Brown University, Providence RI.

1994 New York Academy of Sciences Symposium on Interacting Receptor Systems, Washington D.C.

1994 British Biophysical Society, Symposium on Structure and Function of Ion Channels, University of Liverpool, U.K.. Satellite Symposium of the meeting of the Physiological Society.

1994 Department of Biology, Morehouse College, Atlanta, GA.

1993 Department of Pharmacology, University of Massachusetts Medical School, Worcester, MA.

1992 Neuroscience Seminar, Marine Biological Laboratory, Woods Hole, MA.

1991 Department of Pharmaceutical Sciences, School of Pharmacy, Northeastern University, Boston, MA.

1991 Graduate Program in Neuroscience, Brown University, Providence, RI.

1991 Symposium organizer: New advances in neurotrophic factors and their therapeutic application. American Society Pharmacology and Experimental Therapeutics Fall Meeting, La Jolla, CA.

1990 Department of Biochemistry and Cell Biology, State University of New York at Stony Brook, Stony Brook, NY.

1990 Gordon Research Conference on Ion Channels, Colby-Sawyer College, New London, NH.

1990 Department of Bio-Medicinal Chemistry, School of Pharmacy, University of Maryland at Baltimore, Baltimore, MD.

1990 Department of Pharmacology, Wayne State University School of Medicine, Detroit, MI.

1990 Division of Biology, California Institute of Technology, Pasadena, CA.

1989 Division of Biology and Medicine, Brown University, Providence, RI.

1989 American Heart Association Annual Meeting, Established Investigators Conference, New Orleans, LA.

1989 Neurex Corporation, Redwood City, CA.

1989 Department of Molecular and Cellular Physiology, Stanford University, Stanford, CA.

1989 Fourth International Biochemical Pharmacology Symposium. NMR Methods for Elucidating Macromolecule-Ligand Interactions: An Approach to Drug Design. Yale University, New Haven, CT.

1989 Department of Biochemistry, University of California at Berkeley, Berkeley, CA.

1989 Miles Research Center, West Haven, CT.

1989 Cephalon, Inc., West Chester, PA.

1989 Department of Physiology, University of California at San Francisco, San Francisco, CA.

1989 Department of Physiology and Biophysics, University of Cincinnati Medical Center, Cincinnati, OH.

1988 Sandoz Institute for Medical Research, London, U.K.

1988 Department of Pharmacological and Physiological Sciences, The University of Chicago, Chicago, IL.

1988 Section of Neurobiology, Department of Biological Sciences, University of Southern California, Los Angeles, CA.

1988 Winter Conference on Brain Research, Steamboat Springs, CO.

1988 Barrow Neurological Institute, Phoenix, Arizona.

1988 Department of Pharmacology, University of Pittsburgh, Pittsburgh, PA.

1988 Sinai Hospital Center for Cell Biology, Detroit, MI.

1987 Bristol Myers Co., Wallingford, CT.

1987 NATO Advanced Study Institute, Targeting of Drugs: Anatomical and Physiological Considerations, Cape Sounion, Greece.

1986 Department of Anatomy and Cell Biology, State University of New York, Downstate Medical Center, Brooklyn, NY.

1986 Yale Symposium: Molecular Biology of Ion Channels, New Haven, CT.

1986 Department of Physiology and Biophysics, Harvard Medical School, Boston, MA.

1986 Department of Biochemistry, University of Wisconsin, Madison, WI.

1986 Primate Research Center, University of Wisconsin, Madison, WI.

1986 Department of Biochemistry, Stanford University, Stanford, CA.

1986 Department of Biochemistry, State University of New York at Stony Brook, Stony Brook, NY.

1986 Department of Biochemistry, Arrhenius Laboratory, University of Stockholm, Stockholm, Sweden.

1986 International Symposium on NGF and Related Substances, Monterey, CA.

5i. Patents:

1990 U.S. Patent #4,948,590. Avidin or Streptavidin Conjugated Liposomes.
2004 U.S. Patent #6,753,315 B2: α-Bungarotoxin Molecules and Uses Thereof

7i. University Service and Teaching:

1990/1991: Chairman, Section of Molecular & Biochemical Pharmacology
Chairman, Molecular Pharmacologist Search Committee
Lecturer in BIO-128
Co-ordinator and Lecturer in Pfizer-based Pharmacology course (BIO-128A)
Summer EIP Student Advisor

1991/1992: Chairman, Section of Molecular & Biochemical Pharmacology
Chairman, Molecular Pharmacologist Search Committee
Lecturer in BIO-128, BIO-125
Summer EIP Student Advisor
Biology Honors Thesis Co-Advisor (Kimberly Leibowitz)
Neuroscience Graduate Student Advisor (Sonya Williams)

1992/1993: Chairman, Section of Molecular & Biochemical Pharmacology

Chairman, Molecular Pharmacologist Search Committee
Lecturer in BIO-128, BIO-167
Ph.D. Thesis Examiner for Physiology graduate student Sang Ah Seoh
MCB Thesis Advisory Committee for Steve Bogusz, Steve Lodmell
Summer EIP Student Advisor
Neuroscience Senior Thesis Advisor (Ajay Ananda)
Neuroscience Graduate Student Advisor (Sonya Williams)
Biology Honors Thesis Advisor (James Takayesu, Dinesh Schneider)

1993/1994: Chairman, Section of Molecular & Biochemical Pharmacology
Chairman, Molecular Pharmacologist Search Committee
Ph.D. Thesis Examiner for Physiology graduate student Sharona Gordon
Lecturer in BIO-9, NEU-92, oversight of BIO-128
MCB Thesis Advisory Committee for Steve Bogusz and Steve Lodmell
B.Sc. Biology Concentration advisor (20 advisees)
Neuroscience Senior Thesis Advisor (Peter Lee)
Summer EIP Student Advisor
Thesis Advisor (Lisa Gentile, Julie Rosenthal, Zhixin Lin)
Author of Academic Plan for a proposed Department of Molecular Pharmacology & Biotechnology

1994/1995: Chairman-Designate, Department of Molecular Pharmacology & Biotechnology
Search Committee for Chairman of the Department of Pathology and Laboratory Medicine.
Chairman, Molecular Pharmacologist Search Committee
Chairman, Biotechnologist Search Committee
Member, University Radiation Safety Committee
Thesis Advisor (Julie Rosenthal, Zhixin Lin)
Rotating Graduate Students (Leonard Moise, Marianne Grant)
Biology Honors Thesis Advisor (Stephanie Jun)
Biochemistry (Sc.B.) Honors Thesis Advisor (Nathan Walsh and Belle Chang)
Independent Study (Undergraduate) Advisor (Stephanie Jun, Belle Chang, Nathan Walsh, Swathi Mothkur)
MCB Thesis Advisory Committee for Steve Bogusz and Steve Lodmell
Lecturer in BIO-9, NEU-92, BIO-273, BIO-128; oversight of BIO-128
B.Sc. Biology Concentration advisor (20 advisees)
Summer EIP Student Advisor
Presentation to the Brown University College Hill Society (A Dose of Good Medicine: Future Directions in the Design and Development of Medications)
Workshop presentation on President's Sciences Day (April 1, 1995)
Co-Advisor for Master of Medical Sciences candidate Arshad Ahsanuddin
Ph.D. awarded to advisee, Lisa Gentile
Thesis Reader: Donald Chickering (Ph. D.)
School of Medicine delegate to the 175th Anniversary meeting of the U.S. Pharmacopeial Convention

1995/1996: Chairman, Department of Molecular Pharmacology & Biotechnology
Chairman, Molecular Pharmacologist Search Committee
Member, University Research Council
Member, University Radiation Safety Committee
Chairman, Advisory Committee on Macromolecular Facilities
Member of Program in Biology Academic Awards Committee

Member, Advisory Committee to the Brown University Office of Special Studies
Thesis Advisor (Julie Rosenthal, Zhixin Lin, Leonard Moise, Marianne Grant)
Rotating Graduate Student (Armin Spura)
Biology Honors Thesis Advisor (Kenneth Shieh, Swathi Mothkur, James Han)
UTRA Advisor (Neal Freedman, Kenneth Shieh, Swathi Mothkur)
Howard Hughes Undergraduate Scholar Advisor (Louise Chen)
Thesis Advisory Committee for Steve Lodmell, Hey-Kyoung Lee, and Sean Conner
Thesis Reader: Yong Jong (Ph. D.)
Ph.D. awarded to advisees: Julie Rosenthal, Zhixin Lin
Lecturer in BIO-9, NEU-92, BIO-273, BIO-274, oversight of BIO-128
Interim course director for BIO-274 (during Professor's Miech's medical leave)
B.Sc. Biology Concentration advisor (20 advisees)
Co-advisor for Master of Medical Sciences candidate Arshad Ahsanuddin
Faculty Advisor for Group Independent Study Program in Organ System Pharmacology (17 medical students)
Member, U.S. Pharmacopeial Convention
Ph.D. awarded to Julie Rosenthal, Zhixin Lin (May 1996)

1996/1997: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, University Strategic Planning Retreat
Member, Pharmacology, MCB, Neuroscience graduate programs
Member, University Research Council
Chairman, URC Subcommittee on Patent & Copyright Policy
Member, University Radiation Safety Committee
Member, Advisory Committee to the Brown University Office of Special Studies
Thesis Advisor (MCB students: Armin Spura, Leonard Moise, Marianne Grant)
Rotating Pharmacology graduate student (Qian Jennifer Pan)
Pfizer Summer Undergraduate Research Award (Neal Freedman)
Biology Honors Thesis Advisor (Johnny Kim)
Biochemistry (B.Sc.) Honors Thesis Advisor (Christa Regan)
Early Identification Program (Leadership Alliance/Howard Hughes) Advisor (Stephanie Waldrop)
Summer undergraduate research advisor (Shantanu Agrawal)
Independent study advisor (Shantanu Agrawal)
Thesis Advisory Committee for Steve Lodmell, Hey-Kyoung Lee, and Sean Conner
Thesis Reader: Steve Lodmell
Master's advisor for Jeffrey Vallee
Lecturer in BIO-17 (64 undergraduates), BIO-110, BIO-273 (65 medical students), BIO-274
Co-course director of BIO-127 (53 students including 17 graduate students)
Member, U.S. Pharmacopeial Convention
Sponsor of Ph.D. candidate Marianne Grant's successful application for a predoctoral fellowship (18 months) from the Pharmaceutical Research Manufacturer's Association

1997/1998: Visiting Professor, Edinburgh Centre for Protein Technology, Department of Chemistry and the Institute of Molecular and Cell Biology, University of Edinburgh, Edinburgh, U.K. (On sabbatical Fall term)
Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Research Council
Chairman, URC Subcommittee on Patent & Copyright Policy

Member, University Radiation Safety Committee
Member, Advisory Committee to the Brown University Office of Special Studies
Thesis Advisor (MCB students: Armin Spura, Leonard Moise, Marianne Grant)
Rotating Molecular Pharmacology & Physiology graduate student (Yuanyuan Xiao)
Biology Honors Thesis Advisor (Stephanie Cohen)
Biochemistry (B.Sc.) Honors Thesis Advisor (Neal Freedman, Qocbao Pham)
Chemistry (B.Sc.) Honors Thesis Advisor (Shantanu Agrawal)
Independent study advisor (Shantanu Agrawal, Stephanie Cohen, Neal Freedman, Qocbao Pham)
Thesis Advisory Committee for Sean Conner
Lecturer in BIO-102 (~90 undergraduates)
Member, U.S. Pharmacopeial Convention

1998/1999: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Research Council
Chairman, URC Subcommittee on Patent & Copyright Policy
Member, University Radiation Safety Committee
Member, Advisory Committee to the Brown University Office of Special Studies
Member, Agenda Committee for University Chairs' Meetings
Thesis Advisor (MCB students: Armin Spura, Leonard Moise, Marianne Grant)
Ph.D. awarded to Marianne Grant
Thesis Advisor for Molecular Pharmacology & Physiology graduate student (Yuanyuan Xiao)
Advisor for rotating graduating student (Haoyu Zeng)
Independent study advisor (Philip Caffery)
ASPET summer research fellowship awarded to Philip Caffery
UTRA summer research assistantship awarded to Lisa Doerr (Chemistry concentrator)
PLME summer research assistantship awarded to Ryan Riel
Thesis Advisory Committee for Sean Conner (MCB)
Co-Director and Lecturer in BIO-17 (~32 undergraduates)
Member, U.S. Pharmacopeial Convention

1999/2000: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Research Council
Chairman, URC Subcommittee on Patent & Copyright Policy
Member, University Radiation Safety Committee
Member, Advisory Committee to the Brown University Office of Special Studies
Member, Agenda Committee for University Chairs' Meetings
Thesis Advisor (MCB students: Armin Spura, Leonard Moise, Wen Xie)
Thesis Advisor for Molecular Pharmacology & Physiology graduate student (Haoyu Zeng)
Independent study advisor (Lisa Doerr, Anita Grewal, Ryan Riel)
Hughes summer research fellowship awarded to Christopher Grunseich
Co-Director and Lecturer in BIO-17 (~48 undergraduates)
Alternate Member, U.S. Pharmacopeial Convention
External Ph.D. Thesis Reader for Tanya Russin, Department of Pharmacology and Therapeutics, Tufts University School of Medicine, Boston, Ma

2000/2001: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Research Council
Chairman, URC Subcommittee on Patent & Copyright Policy
Member, University Radiation Safety Committee (appointment renewed for another three years)

Member, Advisory Committee to the Brown University Office of Special Studies
Member, Agenda Committee for University Chairs' Meetings
Thesis Advisor (MCB student Leonard Moise)
Thesis Advisor for Molecular Pharmacology & Physiology graduate student (Haoyu Zeng)
Independent study advisor (Christopher Grunseich, Benjamin OConnor, Alycia Mosely, SophieDesbiens)
Supervisor of NRSA postdoctoral awardee Tanya Sanders.
Co-Director and Lecturer in BIO-17, Biotechnology in Medicine (49 undergraduates)
Section Leader in BIO-273 and BIO-274
Member, U.S. Pharmacopeial Convention

2001/2002: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Research Council
Member, University Radiation Safety Committee (appointment renewed for another three years)
Member, Advisory Committee to the Brown University Office of Special Studies
Member, Agenda Committee for University Chairs' Meetings
Thesis Advisor (MCB student Leonard Moise)
Thesis Advisor for Molecular Pharmacology & Physiology graduate student (Haoyu Zeng)
Graduate Student Advisor for MCB lab rotation student, Veronica Zelesky
Independent study advisor (Nadya Dimitrova, Ryan Anthony, Gina Kwon, Sophie Desbiens)
Supervisor of NRSA postdoctoral awardee Tanya Sanders.
Co-Director and Lecturer in BIO-17, Biotechnology in Medicine (75 undergraduates)
Section Leader in BIO-273 and BIO-274
Member, U.S. Pharmacopeial Convention

2002/2003: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Program in Biology Advisory Committee
Member, Biomedical Faculty Council
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Radiation Safety Committee
Member, Advisory Committee to the Brown University Office of Special Studies
Member, Agenda Committee for University Chairs' Meetings
Thesis Advisor (MPP student Philip Caffery)
Thesis Advisor for Molecular Pharmacology & Physiology graduate student (Haoyu Zeng; thesis defense December 2002)
Graduate Student Advisor for MCB lab rotation student, Veronica Zelesky
Thesis Advisory Committee: Veronica Zelesky (MCB), Amy Ulfers (MPP), Julian Wong (MCB)
Masters in Medical Science Thesis Committee Chairman: Arshad Naveed Ahsanuddin, M.D.
Independent study advisor (Will Sheffler, Victor Lin, Michael Goelzer)
MPP graduate rotation student Dana-Lynn Koomoa
Supervisor of postdoctoral fellows: Tanya Sanders, Leonard Moise
Co-Director and Lecturer in BIO-17, Biotechnology in Medicine (59 undergraduates)
Section Leader in BIO-273
Member, U.S. Pharmacopeial Convention

2003/2004: Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Program in Biology Advisory Committee
Member, Biomedical Faculty Council
Member, Ship Street Building Committee (Chairman: Fran McCrossan)
Member, Ship Street Oversight Committee (Chairman: Richard Besdine)

Member, NMR Spectroscopy Search Committee
Member, Molecular Toxicology Search Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Radiation Safety Committee
Member, Agenda Committee for University Chairs' Meetings
Thesis Advisor (MPP students Philip Caffery; Jing Liu)
Thesis Advisory Committees: Julian Wong (MCB), Mariana Leguia (MCB), Umut Sahin (MCB)
Independent study advisor (Hayato Urabe, Tamjeed Saleh, Kavita Mishra, Steven Aussenberg)
Supervisor of postdoctoral associates: Tanya Sanders, Leonard Moise
Co-Director and Lecturer in BIO-17, Biotechnology in Medicine (65 undergraduates)
Supervision of medical school courses BIO-273 and BIO-274; BIO-117
Lecturer in BIO-274 (2nd year medical school course)
Member, U.S. Pharmacopeial Convention
NSF EPSCoR pre-proposal coordinator (Protein Biotechnology)

2004/2005 Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Program in Biology Advisory Committee
Member, Biomedical Faculty Council
Member, Laboratories for Molecular Medicine Steering Committee (Chairman: Fran McCrossan)
Member, Search Committee for Director, Center for Computation and Visualization
Member, Center for Computation and Visualization Advisory Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member, University Radiation Safety Committee
Thesis Advisor (MPP students Philip Caffery; Jing Liu, and MCB student, Joao Paulo)
Thesis Advisory Committees: Julian Wong (MCB), Mariana Leguia (MCB), Sarah McCabe (MPP), Diana Pelosi (MPP)
Independent study advisor (Agata Budzillo, Elyssa Monzack)
Supervisor of postdoctoral associates: Tanya Sanders, Leonard Moise
Co-Director and Lecturer in Section II of BIO-350, 351, Integrated Course in Organ Systems Pharmacology/Pathophysiology (65 medical students)
Supervision of medical school courses BIO-350 and BIO-351; BIO-117
Member, U.S. Pharmacopeial Convention
NSF EPSCoR pre-proposal coordinator (Protein Biotechnology)

2005/2006 Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Council of Life Science Chairs
Member, Biomedical Faculty Council
Member, Laboratories for Molecular Medicine Steering Committee
Member, Search Committee for Director, Center for Computation and Visualization
Member, Center for Computation and Visualization Advisory Committee
Member, Brain Science Program Executive Committee
Chair, Dean's Action Group on the Associate Dean for Research position
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Co-Chairman of University Radiation Safety Committee (effective January 1, 2006)
Member, Medical Curriculum Committee's Subcommittee for Curriculum Strategic Planning
Thesis Advisor (MPP students Philip Caffery; Jing Liu, Geoffrey Chew, and MCB student, Joao Paulo)
Thesis Advisory Committees: Julian Wong (MCB), Mariana Leguia (MCB), Sarah McCabe (MPP), Diana Horrigan (nee Pelosi) (MPP)
Independent study advisor (Lee Chu) (Ayana Morales[PLME])
Leadership Alliance undergraduate advisor and sponsor for Anthony Agyapong (UMBC)

Supervisor of postdoctoral associate: Tanya Sanders
Lecturer in Section II of BIO-350, 351, Integrated Course in Organ Systems Pharmacology/Pathophysiology (65 medical students)
Co-Director BIO-17 (90 students)
Lecturer BN-302 (~16 graduate students)
Supervision of medical school courses BIO-350 and BIO-351; BIO-117
Member, U.S. Pharmacopeial Convention
NSF EPSCoR proposal coordinator of segment on Protein Biotechnology Core Facility
Recipient of the Dean's Teaching Excellence Award in recognition of exemplary teaching in BIO-350

2006/2007 Chairman, Department of Molecular Pharmacology, Physiology & Biotechnology
Member, Council of Life Science Chairs
Member, Biomedical Faculty Council
Member, Laboratories for Molecular Medicine Steering Committee
Member, Search Committee for Human Neuroscience position, Brain Science Program
Member, Search Committee for MPPB faculty search (Don Jackson replacement)
Member, Center for Computation and Visualization Advisory Committee
Member, Brain Science Program Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Co-Chairman of University Radiation Safety Committee (effective January 1, 2006)
Member, Medical Curriculum Committee's Subcommittee for Curriculum Strategic Planning
Thesis Advisor (MPP students Philip Caffery; Jing Liu, Geoffrey Chew, and MCB student, Joao Paulo)
Thesis Advisory Committees: Nathan Mao, Barbara Dancheck (MPP)
Independent study advisor (Erica Nicasio, Molly Meadows, Andrew Browne
Leadership Alliance undergraduate advisor and sponsor for Joseph Graves (Howard University)
Supervisor of Senior Research Associate: Tanya Sanders
Lecturer in Section II of BIO-350, 351, Integrated Course in Organ Systems Pharmacology/Pathophysiology (~75 medical students)
Co-Director BIO-17 (~99 students)
Lecturer BN-302 (~16 graduate students)
Lecturer BIO-217 (~7 graduate students)
Supervision of pharmacology component of medical school courses BIO-350 and BIO-351
Member, U.S. Pharmacopeial Convention; representing Brown Medical School
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI and the OVPR).

2007/2008 Interim Associate Dean for Research, Division of Biology & Medicine (January 1, 2007 – June 30, 2007)
Associate Dean for the Program in Biology (effective July 1, 2007)
Member, Research Advisory Board
Member, OVPR Cabinet
Ex officio Member, Brain Science Program Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Co-Chairman of University Radiation Safety Committee (term ended December 31, 2007)
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Thesis Advisor (MPP students Philip Caffery; Jing Liu, Geoffrey Chew, and MCB student, Joao Paulo)
Thesis Advisory Committees: Barbara Dancheck (MPP)
Independent study advisor (Andrew Browne, Michael Spertus)

Leadership Alliance undergraduate advisor and sponsor for Curtis Powell (Brigham Young, Idaho)
Supervisor of Senior Research Associate: Tanya Sanders
Lecturer in Section II of BIO-350, 351, Integrated Course in Organ Systems
Pharmacology/Pathophysiology (~75 medical students)
Lecturer in BIO-17 (~99 students)
Lecturer BN-302 (~16 graduate students)
Member, U.S. Pharmacopeial Convention; representing Brown Medical School
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI and the OVPR)

2008/2009

Associate Dean for the Program in Biology
Ex officio Member, Research Advisory Board
Member, OVPR Cabinet
Ex officio Member, Brain Science Program Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, Steering Committee of NSF ADVANCE Program at Brown University
Thesis Advisor (MPP students Jing Liu, Geoffrey Chew, and MD/PhD student William Brucker)
Thesis Advisory Committees: Barbara Dancheck (MPP)
Independent study advisor (Vernissia Tam; Neuroscience)
Leadership Alliance undergraduate advisor and sponsor for Elizabeth Gutierrez (Univ. Puerto Rico)
Supervisor of Instructor: Tanya Sanders
Lecturer in Section II of BIO-350, 351, Integrated Course in Organ Systems
Pharmacology/Pathophysiology (~75 medical students)
Lecturer in BIO-17 (~99 students)
Lecturer BIO-294A (6 graduate students)
Member, U.S. Pharmacopeial Convention; representing Brown Medical School
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI and the OVPR)
Co-Director (Co-PI) of Rhode Island NSF EPSCoR proposal submitted to NSF
Mentor for Brenna Brucker recipient of a 2009 PLME Summer Research Assistantship (SRA)
Represented the Alpert Medical School at the 12th annual meeting of the AAMC GRAND group (in Washington DC)

2009/2010

Associate Dean for the Program in Biology
Ex officio Member, Research Advisory Board
Member, OVPR Cabinet
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, Steering Committee of NSF ADVANCE Program at Brown University
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI and the OVPR)
Co-Director (Co-PI) of Rhode Island NSF EPSCoR proposal submitted to NSF

Thesis Advisor (MPP students Geoffrey Chew, and MD/PhD student William Brucker)
Leadership Alliance Advisor: Mohammad Usmani (Fordham University)
Undergraduate advisor: Brendan Barry
Supervisor of Instructor: Tanya Sanders
Member, U.S. Pharmacopeial Convention; representing Brown Medical School

2010/2011

Associate Dean for the Program in Biology
Ex officio Member, Research Advisory Board
Member, OVPR Cabinet
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, Steering Committee of NSF ADVANCE Program at Brown University
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI with subaward to Brown University): Oversee Dr. James Clifton, Facility Manager
Co-Director (Co-PI) of Rhode Island NSF EPSCoR award
Chair of Illumina Genome Analyzer and Hi-Seq Steering Committee
Interim-Director of the Center for Genomics and Proteomics (Supervisor of Lingsheng Dong)
Supervisor of Director of Research Operations, Dr. Pamela Swiatek
Thesis Advisor (MPP students Matthew Mulcahy and MD/PhD student William Brucker)
Undergraduate advisor: Larry Hong, Allison Kagawa
Faculty Advisor for Summer Research Assistantship (SRA-PLME): Hyun Woo Choo
Supervisor of Instructor: Tanya Sanders
Member of Provost's Committee on new Research Science Building (Clyde Briant Chair)
Member of Provost's Committee on Increasing Sponsored Funding (Clyde Briant Chair)

2011/2012

Associate Dean for the Program in Biology
Ex officio Member, Research Advisory Board
Member, OVPR Cabinet
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, Steering Committee of NSF ADVANCE Program at Brown University
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI with subaward to Brown University): Oversee Dr. James Clifton, Facility Manager
Co-Director (Co-PI) of Rhode Island NSF EPSCoR award
Interim-Director of the Center for Genomics and Proteomics (Supervisor of Lingsheng Dong)
Supervisor of Director of Research Operations, Dr. Pamela Swiatek
Thesis Advisor (MPP students Matthew Mulcahy and MD/PhD student William Brucker)
Undergraduate research advisor of: Rujapak Sutiwisesak (Biochemistry concentration)
Faculty Advisor for Summer Undergraduate Research Fellowship (EPSCoR-SURF): Christian Selinski (undergraduate at Providence College)
Supervisor of Instructor: Tanya Sanders, Ph.D.
Member of Provost's Committee on Research IT Priorities (Clyde Briant, Chair)

2012/2013

Associate Dean for the Program in Biology
Ex officio Member, Research Advisory Board
Member, OVPR Cabinet
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, Steering Committee of NSF ADVANCE Program at Brown University
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI with subaward to Brown University): Oversee Dr. James Clifton, Facility Manager
Co-Director (Co-PI) of Rhode Island NSF EPSCoR award
Interim-Director of the Center for Genomics and Proteomics (Supervisor of Lingsheng Dong)
Supervisor of Director of Research Operations, Dr. Pamela Swiatek
Thesis Advisor (MPP students Matthew Mulcahy and MD/PhD student William Brucker)
Undergraduate research advisor of: Helen Lord (Biochemistry concentration), Sharon Sun
Faculty Advisor for Summer Undergraduate Research Fellowship (EPSCoR-SURF): Helen Lord
Supervisor of Research Associate: Tanya Sanders, Ph.D.
Member of Provost's Committee on Research IT Priorities (Clyde Briant, Chair)

2013/2014

Associate Dean for the Program in Biology
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI with subaward to Brown University): Oversee Dr. James Clifton, Facility Manager
Co-Director (Co-PI) of Rhode Island NSF EPSCoR award
Interim-Director of the Center for Genomics and Proteomics
Supervisor of Director of Research Operations, Dr. Pamela Swiatek
Thesis Advisor (MPP student Matthew Mulcahy)
Supervisor of Research Associate: Tanya Sanders, Ph.D.

2014/2015

Associate Dean for the Program in Biology
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI with subaward to Brown University): Oversee Dr. James Clifton, Facility Manager
Co-Director (Co-PI) of Rhode Island NSF EPSCoR award
Interim-Director of the Center for Genomics and Proteomics
Supervisor of Director of Research Operations, Dr. Pamela Swiatek
Thesis Advisor (MPP student Matthew Mulcahy; successfully defended Ph.D. thesis in August 2015)
Supervisor of Research Associate: Tanya Sanders, Ph.D.

Undergraduate research advisor of: Sydney Blattman (Biochemistry concentration)

2015/2016

Associate Dean for the Program in Biology
Ex officio Member, Brown Institute for Brain Science Executive Committee
Member, Molecular Pharmacology & Physiology, MCB, Neuroscience graduate programs
Member of University Radiation Safety Committee
Member, Steering Committee of the RI-INBRE (PI: Zahir Shaikh, URI)
Member, University Conflict of Interest Board
Director of NSF EPSCoR Center for Proteomics (NSF award administered through URI with subaward to Brown University): Oversee Dr. James Clifton, Facility Manager
Co-Director (Co-PI) of Rhode Island NSF EPSCoR award
Interim-Director of the Center for Genomics and Proteomics
Supervisor of Director of Research Operations, Dr. Pamela Swiatek
Supervisor of Research Associate: Tanya Sanders, Ph.D.
Undergraduate research advisor of: Risako Kimura

7ii. Other Professional Service:

Initial review board of the Medical and Scientific Advisory Council of the Alzheimer's Association (2000 Research Grant Program)
Reviewer for Biochemistry, Journal of Biological Chemistry, Journal of Neuroscience, Biochimica Biophysica Acta, Biochemical Pharmacology, Molecular Pharmacology, Biopolymers
Invited Reviewer for Mock Site Visit Team (Harvard University/Mass. Gen. Hospital Anaesthesia Center Grant Renewal -- 1993)
Member of Award Review Committee for the John J. Abel Award in Pharmacology (The American Society for Pharmacology and Experimental Therapeutics) -- 1995

8a. Honors, Awards, and Committees:

1970 A.B. Honors degree summa cum laude
1970 Woodrow Wilson Designate
1976 Helen Hay Whitney Fellow
1983 Pharmaceutical Manufacturer's Association Foundation Faculty Development Award
1984 Neurological Sciences Ad Hoc Review Group, NIH
1985 ASBC Travel Award
1986 American Heart Association Established Investigator Award
1991 Program Project Review B Site Visit Committee, NINDS; consultant, NINDS
1992 NIH Study Section NLS-1; NIH Special Study Section-2
1992 Lecturer, Marine Biological Laboratory Neurobiology Course, Woods Hole, MA
1996 Special Reviewer, NIH Study Section NLS-1; Reviewer, NIH NLS-1 Special Emphasis Panel (ZRG1); Consultant Reviewer, NIH, NHLBI Program Project Review (PP-18)
1997 NIH/DRG/ZRG3/SSS-2, Chemistry and Related Sciences Special Emphasis Panel
1997 Burroughs-Wellcome Travel Award; Visiting Professor, Univ. of Edinburgh
1998 NIH/NIGMS Site Visit and Special Emphasis Panel
1997-2000 Member of the Executive Committee of the Division of Molecular Pharmacology of the American Society of Pharmacology and Experimental Therapeutics
2001-2006 Editorial Board of the Journal of Biological Chemistry (5-year term)

2002 NIH (CSR) Special Emphasis Panel, ZRG1 SSSP (01); Special Emphasis Panel ZRG1 MDCN-3 (01) NEURO-PPG
2003 NIH NIDA CEBRA Reviewer; NIH (CSR) Physiological Chemistry IRG Consultant
2005 NIH (CSR) Special Emphasis Panel (NIGMS-PPG) ZGM1 PPBC-1 (AN)
2005-2006 NIH (CSR) BSCT Study Section (Biophysics of Synapses, Channels, & Transporters)
2006-2009 NIH (CSR) BPNS Study Section (Biophysics of Neural Systems)
2010 NIH (CSR) ZRG1 MDCN-B(02) Special Emphasis Panel
2010 Invited to College of CSR Reviewers
2011 Elected Fellow, American Association for the Advancement of Science
2011 NIH (CSR) MNPS Study Section (ad hoc member)
2013 NIH (CSR) NINDS SNRP Study Section (ad hoc member)
2014 NIH (CSR) STOD Study Section
2015 NIH (CSR) CNNT Study Section (ad hoc member)

8b. Research Support:

1981 Muscular Dystrophy Association. Biogenesis of the Mammalian Acetylcholine Receptor.

1981 Yale University School of Medicine BSRG Fluid Research Fund. Nerve Growth Factor Receptors.

1982 NSF (BNS-8118777) Biochemistry of Nerve Growth Factor (NGF) Binding and Internalization.

1982 Pharmaceutical Manufacturers Association Starter Research Grant. Biosynthesis and Regulation of Mammalian Acetylcholine Receptor.

1982 Swebilius Cancer Research Award. Interaction of Nerve Growth Factor with Melanoma Cells.

1982 NSF Equipment Grant. Electron Microscope for Study of Neuronal Receptors and their Interaction with Viruses (PI: T.L. Lentz).

1983 Muscular Dystrophy Association. Biogenesis of the Mammalian Acetylcholine Receptor.

1983 Pharmaceutical Manufacturers Association Faculty Development Award.

1983 National Multiple Sclerosis Society. Nerve Growth Factor Receptors (declined due to overlap).

1983 NIH (NS18281) Nerve Growth Factor Receptors.

1983 The American Parkinson Disease Association. Monoclonal Antibodies as Probes of Acetylcholine Receptors.

1983 NIH (GM32629-01-03) Biogenesis of Acetylcholine Receptor.

1984 NIH (CA-28852) Program Project: Pharmacological Approaches to Cancer Chemotherapy (PI: A. Sartorelli). The Nerve Growth Factor Receptor as a Target Site in Melanomas.

1985 Muscular Dystrophy Association. Probing the Acetylcholine Receptor Ligand Binding Site.

1985 American Society of Biological Chemists Travel Award.

1986 NIH (GM32629-04-07) Acetylcholine Receptor: Biogenesis, Structure, Function.

1986 American Heart Association Established Investigator Award. Acetylcholine Receptor: Biogenesis, Structure, Function.

1986 Muscular Dystrophy Association. Probing the Acetylcholine Receptor Ligand Binding Site.
1986 NSF Equipment Grant. Acquisition of a NMR Spectrometer for Biological Studies (PI: I.M. Armitage).

1987 Muscular Dystrophy Association. Probing the Acetylcholine Receptor Ligand Binding Site.

1987 American Cancer Society (RD259). Computational Facility for Multi-Nuclear NMR Data Processing (PI: R.E. Handschumacher).

1987 NIH DRR-BRS Shared Instrumentation Grant (RR03475). High Field NMR Spectrometer for Biological Studies (PI: I.M. Armitage).

1988 NIH (1 S15 DK40847-01) Small Instrumentation Award. Molecular Graphics System: Evans & Sutherland PS390 and Stereoviewer.

1991 NSF (BNS-9021227) Structure-Function Analysis of ∀-Neurotoxins.

1991 NIH (GM32629-08-10). Acetylcholine Receptor: Structure, Function, Biogenesis.

1992 NSF (R.E.U. Supplement to IBN-9021227)

1993 NSF (R.E.U. Supplement to IBN-9021227)

1993 NIH (S.U.R.E. Supplement from NIGMS)

1993 NIH (NIGMS Supplement for Minority Graduate Student)

1994-2001 NIH (GM32629-11-14) Acetylcholine Receptor: Structure, Function, Biogenesis.

1995-1998 Smokeless Tobacco Research Council (#0527-01) Structure-Function Analysis of Neuronal Nicotinic Receptors

1996-1997 NSF (BIR-9513001; Co-PI) An Automated DNA Sequencer for Brown University

1996-1999 NIH (NS34348-01-03) Structure-Function Analysis of α-Neurotoxins.

1997-1998 NIH (RR08240) Acquisition of NMR Spectrometer.

1997-1999 NSF (DBI-9723282) 500 MHz NMR Spectrometer.

1997-1998 Burroughs Wellcome Foundation Travel Award.

1999-2002 NIH (NS34348-04-06) Structure-Function Analysis of α-Neurotoxins.

2000-2001 NIH (NS34348) Supplement for Minority Undergraduate

2000	NIH (NS34348) Infrastructure Supplement
2000-2002	Salomon Faculty Research Award (Brown University)
2000-2005	Project Leader for Project #3, Molecular Genetics of Ion Channels; Center of Biomedical Research Excellence (NIH NCCR #1 P20 RR15578)
2001-2005	NIH (GM32629-16-18) Acetylcholine Receptor: Structure, Function, Biogenesis.
2003-2005	Supplement to NIH GM32629-17-18 to support Investigations of a Human Embryonic Stem Cell Line as a Model System for Studies of Human Neuronal Nicotinic Receptors
2006-2010	NIH (GM32629-19-22) Acetylcholine Receptor: Structure, Function, Biogenesis.
2006-2009	NIH (R21 DA021282-01) Role of α3 Containing Nicotinic Receptors in Mediating Central Nicotine Effects
2006-2009	NIH (R21 DA021765-01) The Neuronal Nicotinic Acetylcholine Receptor Interactome via a Knock-In Mouse
2007	RI Research Alliance #2007-35 Acquisition of an electro-spray injected tandem mass spectrometer devoted to proteomics research support as a critical component of the Rhode Island Center for Proteomics
2009-2011	NIH (GM32629-22S1) Acetylcholine Receptor: Structure, Function, Biogenesis.
2010-2011	NIH/NCRR (1S10RR027027-01) Acquisition of an LTQ Orbitrap Velos ETD Mass Spectrometer
2010-2015	NIH (1T32GM077995-01A2) Predoctoral Training Program in Trans-Disciplinary Pharmacological Sciences
2010-2012	National Science Foundation (EPS-1005789) High-Capacity Cyber-Connectivity to the Jewelry District Campuses in Providence, RI
2010-2016	National Science Foundation (EPS-10040507; PI of subaward to Brown University) Rhode Island Experimental Program to Stimulate Competitive Research (EPSCoR: Infrastructure to Advance Life Sciences in the Ocean State
2011-2015	NIH/NIA (1R21AG038774-01A1) Effects of Alzheimer's Disease on Hippocampal alpha7-nAChR Protein Interactors
2013-2015	NIH/Office of the Director 1G20 OD016587 (PI: Hawrot, Edward), Replacement of Cage and Rack Wash System at Brown University's Biomedical Center
2015-	NIH 1RO1HL128661-01 (PI: Choudhary, Gaurav) NIH/NHLBI, Nicotinic Acetylcholine Receptors and RV Dysfunction in Pulmonary Hypertension
2016-2021	U54GM115677 (PI: Padbury, James) NIH/NIGMS IDeA Program Role: Program Coordinator (PC)

Advance-CTR; RI-Center for Clinical and Translational Science

8d. Professional Societies:

1979 American Association for the Advancement of Science
1980 Society for Neuroscience
1984 New York Academy of Sciences
1984 American Society for Biochemistry and Molecular Biology
1986 Sigma Xi
1990 Protein Society
1990 Biophysical Society
1992 American Chemical Society
1994 American Society for Pharmacology and Experimental Therapeutics
1994 Association of Medical School Pharmacology Chairs