

Curriculum Vitae**Donald M. O'Malley****August, 2016**

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Education

Ph.D. Physiology and Biophysics	Harvard Medical School, Boston, MA	January, 1989
B.S. Chemical Engineering	Lehigh University, Bethlehem, PA	June, 1979
Analyt. & Quant. Light Microscopy	Marine Biological Lab, Woods Hole, MA	Spring, 1992
Neural Systems & Behavior	Marine Biological Lab, Woods Hole, MA	Summer, 1985
Medical Mgmt. of Chem. Casualties	US Army Medical Service Corps, APG, MD	Spring, 1982
Radiation Detection & Protection	US Army Chemical Corps, Ft. McClellan, AL	Summer, 1980

External Grants

2008 – 2009 NCIIA Award: Commercialization of the Digital Maze Game (PI) \$19,500

2007 -- 2008 Massachusetts Technology Transfer Center Award: Digital Maze Games in Educational Settings. (PI) \$40,000.

2005 -- 2006 Co-Investigator on NSF SGER (\$135,000) Awarded to Dr. Latika Menon, Dept. Physics topic: Nanowire Arrays: Applications in Neuroscience. 10% time.

2002 -- 2003 Keck Foundation Award (Co-Investigator). \$750,000 direct costs to Keck/CenSSIS team, 20% time. Neural Stem Cell research on 3DFM (Fusion Microscope).

1998 -- 2002 NIH Award: Functional Organization of the Zebrafish Hindbrain (PI) \$761,400 (direct + indirect costs), 30% time. [NIH = National Institutes of Health]

1996 -- 1999 NSF Award: Calcium Signaling in the Brain of Behaving Zebrafish.(PI) \$180,000 (direct + indirect costs), 50% time. [NSF = National Science Foundation]

1996 -- 1998 SBIR-Phase II (Co-Investigator): A Device for *in vivo* Delivery of Nitric Oxide. \$50,000 direct costs, 50% time.

1992 -- 1994 NRSA Postdoc Award: Calcium Imaging in the Hippocampus--Spines and Circuits. \$60,000 direct costs, 100% time.

External Grant Sponsored

2000-2002 Sponsor/PI for NRSA Postdoctoral Fellowship awarded to Dr. Ethan Gahtan. \$58,000.

Internal Grants

1999-2000 N.U. ERC Award. In support of Engineering Research Center initiative. \$8000.

2004-2005 Provost's Research & Scholarship Development Award. (Co-PI) \$12,000.

2006-2007 Provost's Research & Scholarship Development Award. \$15,000.

Other Awards/Support

2014-2015 National Academies Fellow in Science Education

1994-1995 Howard Hughes Medical Institute Research Fellowship at SUNY Stony Brook.

1989-1990 Developmental Neurology Postdoctoral Fellowship, Dept. Neurology, MGH.

1983-1986 Research Fellowship, Dept. Physiology & Biophysics, Harvard University.

1974-1979 4-Year ROTC Scholarship (US Army), Lehigh University.

Work Experience

2003 - present Associate Professor, Dept. Biology, Northeastern University, Boston, MA.

1997- 2003 Assistant Professor, Dept. Biology, Northeastern University, Boston, MA.

1996-1997 Research Asst. Professor, Dept. Neurobiology and Behavior, SUNY, Stony Brook, NY.

1992-1995 Research Associate, Howard Hughes Medical Institute & Dept. Neurobiology & Behav., SUNY, Stony Brook, NY (with Dr. Paul R. Adams and Dr. Joseph R. Fetcho).

1990-1991 Visiting Lecturer, Univ. Colorado, Biology Programs, at Boulder & Colorado Springs.

- 1989-1990 Postdoctoral Fellow, Neurosurgical Service, Massachusetts General Hospital, Boston, MA (with Dr. Richard H. Masland).
- 1983-1989 Graduate Student, Department of Physiology and Biophysics, Harvard Medical School, Boston, MA (with Dr. Richard H. Masland).
- 1981-1983 Research Assistant, Biochemistry Department, Kansas State University, Manhattan, KS (with Dr. Thomas E. Roche; part-time).
- 1979-1983 US Army Officer, Chemical Corps, 937th Engineer Group (RDF), Fort Riley, KS.

Bibliography

Bibliography Part I. Ph.D. Thesis

O'Malley DM (1989) Co-release of acetylcholine and GABA by an amacrine cell: evidence for independent mechanisms. Ph.D. Thesis, Harvard University, January, 1989.

Bibliography Part II. Journal and Symposium Articles

1. O'Malley DM and Masland RH (1989) Co-release of acetylcholine and GABA by a retinal neuron. *Proceedings of the National Academy of Science*, **86**:3414-3418.
2. O'Malley DM, Sandell JH and Masland RH (1992) Co-release of acetylcholine and GABA by the starburst amacrine cells. *Journal of Neuroscience*, **12**:1394-1408.
3. O'Malley DM and Masland RH (1993) Responses of the starburst amacrine cells to moving stimuli. *Journal of Neurophysiology*, **69**:730-738.
4. Yu SP, O'Malley DM, Adams PR (1994) Regulation of M-Current by intracellular calcium in bullfrog sympathetic ganglion neurons. *Journal of Neuroscience*, **14**:3487-3499.
5. O'Malley DM (1994) Calcium permeability of the neuronal nuclear envelope: evaluation using confocal volumes and intracellular perfusion. *Journal of Neuroscience*, **14**:5741-5758.
6. Sobierajski L, Avila R, O'Malley DM, Wang S, Kaufman A (1995) Visualization of calcium activity in nerve cells. *Computer Graphics & Applications*, **15**:55-61.
7. Fetcho JR and O'Malley DM (1995) Visualization of active neural circuitry in the spinal cord of intact zebrafish. *Journal of Neurophysiology*, **73**:399-406.
8. O'Malley DM, Kao Y-H and Fetcho JR (1996) Imaging the functional organization of zebrafish hindbrain segments. *Neuron*, **17**:1145-1155.
9. Fetcho JR, Cox K and O'Malley DM (1997) Imaging neural activity with single cell resolution in an intact behaving vertebrate. *Biological Bulletin*, **192**:150-153.
10. Godwin DW, Che D, O'Malley DM and Zhou Q (1997) Photostimulation with caged neurotransmitters using fiber optic light guides. *Journal of Neuroscience Methods*, **73**:91-106.
11. Zhou Q, Godwin DW, O'Malley DM and Adams PR (1997) Visualization of calcium influx through channels that shape the *burst* and *tonic* firing modes of thalamic neurons. *Journal of Neurophysiology*, **77**:2816-2825.
12. Fetcho JR and O'Malley DM (1997) Imaging neuronal networks in behaving animals. *Current Opinion in Neurobiology*, **7**:832-838.

13. Fetho JR, Cox K and O'Malley DM (1998) Monitoring activity in neuronal populations with single-cell resolution in a behaving vertebrate. *Histochemical Journal*, **30**:153-167.
14. Budick SA and O'Malley DM (2000) Locomotor repertoire of the larval zebrafish: swimming, turning and prey capture. *Journal of Experimental Biology*, **203**:2565-2579.
15. Gahtan E and O'Malley DM (2001) Rapid lesioning of large numbers of identified vertebrate neurons: applications in zebrafish. *Journal of Neuroscience Methods*, **108**:97-110.
16. Gahtan E, Sankrithi N, Campos JB and O'Malley DM (2002) Evidence for a widespread brainstem escape network in larval zebrafish. *Journal of Neurophysiology*, **87**:608-614.
17. Perkins BD, Kainz PM, O'Malley DM and Dowling JE (2002) Transgenic expression of a GFP-rhodopsin C-terminal fusion protein in zebrafish rod photoreceptors. *Visual Neuroscience*, **19**:257-264.
18. Borla MA, Palecek B, Budick SA and O'Malley DM. (2002) Prey capture by larval zebrafish: evidence for fine axial motor control. *Brain Behavior & Evolution*, **60**:207-229.
19. Gahtan E and O'Malley DM (2003) Visually-guided injection of identified reticulospinal neurons in zebrafish: a survey of spinal arborization patterns. *Journal of Comparative Neurology*, **459**:186-200.
20. O'Malley DM, Zhou Q and Gahtan E (2003) Probing neural circuits in the zebrafish: a suite of optical techniques. *Methods*, **30**:49-63.
21. Papandile A, Tyas D, O'Malley DM and Warner CA (2004) Analysis of caspase-3, caspase-8 and caspase-9 enzymatic activities in mouse oocytes and zygotes. *Zygote* **12**:57-64.
22. Warner CA, Newmark JA, Comiskey M, De Fazio SR, O'Malley DM, Rajadhyaksha M, Townsend DJ, McKnight S, Roysam S, Dwyer PJ and DiMarzio CA (2004) Genetics and imaging to assess oocyte and preimplantation embryo health. *Repro. Fertil. Develop.* **16**:729-741.
23. Hill SA, Liu X-P, Borla MA, Jose JV and O'Malley DM (2005) Neurokinematic modeling of complex swimming patterns of the larval zebrafish. *Neurocomputing* **65**:61-68.
24. McElligott MB and O'Malley DM (2005) Prey tracking by larval zebrafish: axial kinematics and visual control. *Brain Behav. Evol.* **66**:177-196.
25. Larson ET, O'Malley DM and Melloni RH (2006) Aggression and vasotocin are associated with dominant-subordinate relationships in zebrafish. *Behavioural Brain Research*, **167**:94-102.
26. Knudsen DP, Arsenault JT, Hill SA, O'Malley DM and José JV (2006) Locomotive network modeling based on identified neurons in zebrafish. *Neurocomputing* **69**:1169-1174.
27. Saha S, Silverberg J, O'Malley DM and Menon L (2007) Nanowire array technologies for investigation of neural activity. *Technical Proceedings 2007 NSTI Nanotechnology Conference* **2**:795-798.
28. O'Malley DM (2008) Imaging in Depth: Controversies and Opportunities. *Methods in Cell Biology* **89**:95-128.
29. Kamali M, Day LJ, Brooks D, Zhou X, O'Malley DM (2009) Automated identification of neurons in 3D-confocal datasets from zebrafish brainstem. *J. Microscopy* **233**:114-131.
30. Lee HK, Gwalani L, Mishra V, Anandjiwala P, Sala F, Sala S, Ballesta JJ, O'Malley DM, Criado M, Loring

RH (2009) Investigating the role of protein folding and assembly in cell-type dependent expression of $\alpha 7$ nicotinic receptors using a green fluorescent protein chimera. *Brain Res* **1259**:7-16.

30. Patel Y, Saha S, DiMarzio C, O'Malley DM, Nagesha D and Sridhar S (2009) Metallic nanoparticles for biomedical imaging. *IEEE International Symposium on Biomedical Imaging: From Nano to Macro ISBI09*:759-762.
31. Sankrithi N and O'Malley DM (2010) Activation of a multisensory, multifunctional nucleus in the zebrafish midbrain during diverse locomotor behaviors. *Neuroscience*, **166**:970-993. [Cover Figure on March 2010 Vol.]
32. Ricci L, Summers CH, Larson, ET, O'Malley DM, Melloni RH (2013) Development of aggressive phenotypes: interactions of age, experience, and social status. *Animal Behaviour* **86**:245-252.
33. Westphal RE and O'Malley DM (2013) Fusion of locomotor maneuvers, and improving sensory capabilities, give rise to the flexible homing strikes of juvenile zebrafish. *Front. Neural Circuits*. **7**:108. doi: 10.3389/fncir.2013.00108.
34. Severi KE, Portugues R, Marques JC, O'Malley DM, Orger MB, Engert F (2014) Neural control and modulation of swimming speed in the larval zebrafish. *Neuron* **83**:692-707.

Bibliography Part III. Book Chapters

1. Masland RH, Cassidy C and O'Malley DM (1989) The release of acetylcholine and GABA by neurons of the rabbit retina, pp.15-26. In Weiler, R. and Osborne N. (eds.) "*The neurobiology of the inner retina*," Springer-Verlag, Berlin.
2. O'Malley DM, Burbach BJ and Adams PR (1999) Fluorescent calcium indicators: subcellular behavior and use in confocal imaging. In *Confocal Microscopy: Methods and Protocols*, 261-303, S. Paddock, Ed., Humana Press, Totowa, NJ.
3. O'Malley DM and Fetcho JR (2000) The zebrafish hindbrain: a transparent system for imaging motor circuitry. In *Imaging Living Cells*, p.14.1-14.12, R. Yuste, F. Lanni and A. Konnerth, Eds. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY.
4. O'Malley DM, Sankrithi NS, Borla MA, Parker S, Banden S, Gahtan E and Detrich HW (2004) Optical Physiology and Locomotor Behaviors of Wild-Type and Nacre Zebrafish. in *The Zebrafish: Cellular and Molecular Biology*, Detrich HW, Westerfield M and Zon LI, eds., Academic Press, San Diego, CA.

Bibliography Part IV. Other Items (including Dissertations of graduated PhD students)

1. Nature "News & Views" Article (1988): Are single retinal neurons both excitatory and inhibitory? R.F. Miller, *Nature* **336**:517-518. (Miller reviews a key finding of my Ph.D. thesis).
2. Collaboration (1994): Williams RM, Piston DW and Webb WW, Two-photon molecular excitation provides intrinsic 3-dimensional resolution for laser-based microscopy and microphotochemistry. *FASEB J.* **8**:804-813. (see Fig. 8 for our 2-photon, rapid-imaging experiment: the first 2P linescan).
3. O'Malley, DM (1994). Book Review of: "Synaptic Plasticity: Molecular, Cellular & Functional Aspects", 1993, M. Baudry, R.F. Thompson and J.L. Davis, Eds., appears in *Quarterly Review of Biology*, **69**:553-554.
4. O'Malley, DM (1996). Book Review of: "Foundations of Cellular Neurophysiology", 1995, D. Johnston and S. M-S Wu, MIT Press, Cambridge, MA; appears in *Quarterly Review of Biology*, **71**:599-600.
5. O'Malley, DM (1998). Book Review of: "Neurobiology: Ion Channels, Cells and Neural Systems", 1996,

NATO ASI series Vol 289, V. Torre and F. Conte, Eds., MIT Press, Cambridge, MA; appears in *Quarterly Review of Biology*, **73**:539.

6. O'Malley, DM and Day, L (2004). Book Review of "Cellular Physiology of Nerve and Muscle," 4th edition, 2003, Blackwell Publishing, Malden MA; appears in *Quarterly Review of Biology*: **79**:224-225.
7. O'Malley (2007) Book Review of "The War of the Soup and the Sparks", by E.S. Valenstein; appears in *Quarterly Review of Biology*, **82**:306.
8. Day (2008) The kinematics and conservation of motor patterns in larval zebrafish, Danio rerio. Leslie Day's PhD Dissertation. <http://hdl.handle.net/2047/d10016569>.
9. Westphal (2011) Ontogenetic changes in the sequencing, kinematics and sensory control of zebrafish feeding episodes. Rebecca Westphal's PhD Dissertation. http://iris.lib.neu.edu/biology_diss/20/.
10. Severi (2011) Contributions of zebrafish descending motor control neurons to visually-guided locomotor behaviors. Kristen Severi's PhD Dissertation. http://iris.lib.neu.edu/biology_diss/25/
11. Saha (2012) Response of the larval zebrafish to spinal cord injury: labeled lesions, two-photon axotomy and recovery of behaviors. Sucharita Saha's PhD Dissertation.

Bibliography Part V. Abstracts

National / International Meetings

1. Rahmatullah M, O'Malley DM, and Roche TE (1983) Effect of small chain thioesters and other effectors on bovine kidney pyruvate-dehydrogenase kinase activity. Federation Proceedings 42:2246.
2. O'Malley DM and Masland RH (1988) Co-release of acetylcholine and GABA by a retinal amacrine cell. Investigations in Ophthalmic & Visual Science, 29:273.
3. O'Malley DM and Masland RH (1988) Non-vesicular storage of GABA in the rabbit retina. Society for Neuroscience Abstracts, 14:162.
4. O'Malley DM and Masland RH (1990) The responses of cholinergic amacrine cells to some physiological stimuli. Investigations in Ophthalmic & Visual Science 31:534.
5. O'Malley DM, Lu SM, Guido W and Adams PR. (1992) Transport of calcium-green dextran in the rat visual system visualized via confocal microscopy. Society for Neuroscience Abstracts 18:142.
6. O'Malley DM, Yu SP, Burbach BJ and Adams PR (1993) Evidence against persistent nuclear/cytosolic calcium gradients in bullfrog sympathetic neurons. Society for Neuroscience Abstracts 19:1113.
7. Fetcho JR and O'Malley DM (1994) Confocal imaging of responses in populations of identified motoneurons during escape behaviors of intact zebrafish. Society for Neuroscience Abstracts 20:1592.
8. O'Malley DM and Fetcho JR (1994) Confocal imaging of calcium dynamics in spinal neurons in the intact zebrafish. Society for Neuroscience Abstracts 20:1592.
9. Che D, Godwin DW, O'Malley DM and Zhou Q (1995) Photostimulation with caged neurotransmitters using fiber optic light guides. Society for Neuroscience Abstracts 21:579.
10. Zhou Q, O'Malley DM, Godwin DW and Adams PR (1995) Imaging of calcium entry through voltage-gated calcium channels in acutely dissociated rat thalamic neurons using confocal microscopy. Society for Neuroscience Abstracts 21:578.

11. Fetcho JR, Kao Y-H and O'Malley DM (1995) Functional roles of serially homologous neurons studied by *in vivo* confocal calcium imaging in zebrafish. Society for Neuroscience Abstracts, 21:687.
12. O'Malley DM, Burbach BJ, Zhou Q, Fetcho JR and Adams PR (1995) Calibration of subcellular calcium signals: nuclear/nucleolar signals and the behavior of fluorescent indicators. Society for Neuroscience Abstracts 21:578.
13. Zhou Q, Godwin DW, O'Malley DM and Adams PR (1996) Imaging calcium transients in relay neurons in thalamic slices reveals both low and high-threshold calcium channels in the soma and proximal dendrites. Society for Neuroscience Abstracts, 22:1448.
14. O'Malley DM and Fetcho JR (1996) Calcium signals in the zebrafish Mauthner cell: large size and potentiation with repetitive stimulation. Society for Neuroscience Abstracts, 22:795.
15. Budick SA and O'Malley DM (1999) Behavioral analysis of the descending motor control system in larval zebrafish. Society for Neuroscience Abstracts, 25:117.
16. Gahtan E and O'Malley DM (2000) Analysis of spontaneous activity in control and reticulospinal (RS) ablated zebrafish larvae. Society for Neuroscience Abstracts, 26:158.
17. Budick S and O'Malley DM (2000) Minimal behavioral deficits are observed after laser-ablation of the nMLF in larval zebrafish. Society for Neuroscience Abstracts, 26:158.
18. Sankrithi N and O'Malley DM (2000) Optical recordings of nMLF neurons in larval zebrafish demonstrate asymmetrical responses to sensory stimuli. Society for Neurosci. Abstracts, 26:158.
19. Budick SA and O'Malley DM (2001) Minimal behavioral deficits are observed after laser-ablation of the nMLF in larval zebrafish. American Zoologist, 40:959.
20. Gahtan E and O'Malley DM (2001) The labeled-lesion technique: an alternative method for perturbing locomotor functions in zebrafish. Society for Neuroscience Abstracts, 27:830.5.
21. Borla MA and O'Malley DM (2001) High-speed imaging of prey capture by larval zebrafish: implications for descending motor control. Society for Neuroscience Abstracts, 27:830.7.
22. Sankrithi N, Gahtan E, Campos JB and O'Malley DM (2001) Evidence for a widespread brainstem escape network in larval zebrafish. Society for Neuroscience Abstracts, 27:830.6.
23. Zhdanova IV, Sankrithi NS, Campos JB and O'Malley DM (2002). Diurnal variation in the responsiveness of larval zebrafish to a photic stimulus. Soc. Neurosci. Abs., 28:371.14
24. Sankrithi NS, Purohit A, Jones GB and O'Malley DM (2002) Enhanced photoablation of reticulospinal neurons with a dextran conjugated photosensitizer. Society for Neuroscience Abstracts, 28:208.11.
25. Borla MA and O'Malley DM (2002). High-speed imaging of tracking swims used in the larval zebrafish prey capture behavior. Society for Neuroscience Abstracts, 28:361.18
26. O'Malley DM and Sankrithi NS (2002) The nMLF neurons of the larval zebrafish are multimodal and multifunctional. Society for Neuroscience Abstracts, 28:361.17
27. Gahtan E and O'Malley DM (2002) The anatomy and locomotor function of identified neurons in larval zebrafish. 5th Annual Zebrafish Development & Genetics Meeting, Madison, WI, June, 2002, #116.

28. O'Malley DM, Beverly MH, Parker SK, Sicoli J, Zhdanova IV and Detrich HW (2003) Design of molecular tools for the global mapping of neural activity. *Soc. Neurosci. Abs.*, 29:759.4
29. Hill SA, Borla MA, Jose JV and O'Malley DM (2003) Modeling the neural control of zebrafish locomotive behaviors. *Soc. Neurosci. Abs.*, 29:278.10
30. Hill SA, Liu X-P, Borla MA, O'Malley DM and Jose JV (2003) Complex outputs of a simple neural network: a neuro-kinematic model of zebrafish spinal cord. *presented at Dynamical Neuroscience XI: Neuronal Variability & Noise*, New Orleans, LA, Nov. 2003.
31. Hill SA, Liu X-P, Borla MA, José JV and O'Malley DM (2004) Neurokinematic modeling of zebrafish locomotor control systems. *presented at Computational & Systems Neuroscience (CoSyNe) meeting*, Cold Spring Harbor Laboratory, March, 2004.
32. Larson ET, O'Malley DM, Knyshevski I and Melloni RH (2004) Aggression and vasotocin are associated with dominant subordinate relationships in zebrafish. *Soc. Neurosci. Abs.*, Vol. 30, #88.10.
33. Borla MA, Hill SA, Jose JV and O'Malley DM (2004) Disruption of the neural controls mediating prey capture in the larval zebrafish, *Danio rerio*. *Soc. Neurosci. Abs.*, Vol. 30, #601.1.
34. Hill SA, Borla MA, O'Malley DM and Jose JV (2004) Neurokinematic modeling of the locomotive repertoire of the larval zebrafish. *Soc. Neurosci. Abs.*, Vol. 30, #601.2.
35. Uhlig N, Rosengaus RB, O'Malley D (2005) Immunocompetence in the dampwood termite *Zootermopsis angusticollis*: Encapsulation rates as a measure of cellular immunity (Poster). 76th Annual Meeting of the Entomological Society of America, Eastern Branch. Harrisburg, PA, March 20th –22nd.
36. McElligott MB, Knudsen DP, Arsenault JT, Jose JJ and O'Malley DM (2005) Perturbation of zebrafish locomotor coordinating systems using labeled lesions. at *Imaging Neurons and Neural Activity: New Methods and New Results*, March 10 -13th, CSH Laboratory, Cold Spring Harbor, NY.
37. Severi KS, Day LD, Arsenault JT, Knudsen DP, McElligott MB, Jose JV and O'Malley DM (2005) Organization of Descending Motor Control Signals in the Larval Zebrafish. *Progress in Motor Control V: A Multidisciplinary Perspective*. Aug. 17th -20th, Penn State University, State College, PA.
38. O'Malley, DM (2005) Optical Probes, Networks and Behaviors: Zebrafish Neuroscience. Strategic Conference of Zebrafish Investigators Meeting. 14-17 Sept., Mount Desert Island Biological Laboratory, MDI, Maine.
39. Day LJ, Knudsen DP, Dhanota H, Severi K, Jose JV and O'Malley DM (2005) Lesions of descending motor pathways deconstrain spinal activity patterns: results from larval zebrafish. *Soc. Neurosci. Abs.* **31**:751.11.
40. Arsenault J, Knudsen DP, Hill SA, Jose JV and O'Malley DM (2005) Generation of zebrafish swimming patterns: Identified neurons and simulated neural architectures. *Soc. Neurosci. Abs.* **31**:751.12.
41. Larson ET, O'Malley DM, McCann TE, Melloni RH (2005) Differential neuronal activation patterns associated with dominant-subordinate relationships in zebrafish. *Soc. Neurosci. Abs.* **31**:205.4.
42. Hugues E, Knudsen DP, Arsenault JA, Nutter-Upham A, O'Malley DM and José JV (2006) Neuromechanical Modeling of Zebrafish Locomotion. *Computational and Systems Neuroscience 2006*, March 5-8, 2006 - Salt Lake City, Utah.
43. Day L, Severi K and O'Malley DM (2006) Total system analysis of zebrafish locomotor control: new themes. March 9-12th, 2006, Neural Circuits meeting at CSHL, Cold Spring Harbor, NY.
44. Hugues E, Knudsen DP, Nutter-Upham A, O'Malley DM, and José JV (2006) Zebrafish Locomotor Gaits:

Neuromechanical Modeling and Experimental Results. 28th International Symposium of the Groupe de Recherche sur Le Système Nerveux Central et Le Centre de Recherche en Sciences Neurologiques. May 8-9, Université de Montréal.

45. Day LJ, Dhanota HA, Severi KS, Josephs TA, Holmes TS and O'Malley DM (2006) How do we classify the diversity of zebrafish locomotor behaviors? *Soc. Neurosci. Abs.*, **32**:448.22.
46. José JV, Hugues, E, Day L, O'Malley DM (2006) Neuromechanical modeling of larval zebrafish locomotor gaits. *Soc. Neurosci. Abs.*, 32:448.23
47. Silverberg J, Saha S, Wu Z, O'Malley DM and Menon L (2006) Development of Au Nanowires for Recording Electrical Activity in Neural Cells. Materials Research Society Fall Meeting, Nov. 27-Dec. 1st, Boston, MA, Symposium E: Abstract #E8.10.
48. Saha S, Silverberg S, O'Malley DM and Menon L (2007) Nanowire Array Technologies for Investigation of Neural Activity. 2007 NSTI Nanotechnology Conference and Trade Show, May 20-24, 2007, Santa Clara, California, U.S.A. Abstract #499.
49. O'Malley DM, Merriam S, Day LJ and Russell A (2007) Digital Maze Games: Educational Tools for Biomedical Research and Other Academic/Technical Disciplines. BIO 2007 International Convention, Boston MA, May 7-9, 2007.
50. Severi KE, Orger MB, Talsania S, Kampff AR, O'Malley DM and Engert F (2007) Diversity of visuomotor-response profiles of larval zebrafish reticulospinal neurons revealed by in vivo calcium imaging. *Soc. Neurosci. Abstracts* 2007: 924.9.
51. Bonaiuto RE, Schubert J, Trautwein M and O'Malley DM (2007) Maturation of the zebrafish prey capture behavior: changes in kinematics and sensory control. *Soc. Neurosci. Abstracts* 2007: #312.5.
52. Loring RH, Anandjiwala P, Gwalani L, Lee H-K and O'Malley DM (2008) Monitoring of alpha-7 nicotinic receptor protein folding, assembly and expression using GFP-tagged chimeric proteins. *Soc. Neurosci. Abs.* 2008: # 31.6.
53. Gioioso V and O'Malley DM (2009) *Conscious Record Memory*: Thoughts on an associative, flash-memory system that underlies human intelligence. *Soc. Neurosci. Abstracts* 2009, #92.22.
54. Severi KE, O'Malley DM, Engert F (2009) Activation of motor patterns and reticulospinal neurons by electrical stimulation in larval zebrafish brainstem. *Soc. Neurosci. Abstracts* 2009, #565.7.
55. Westphal RE and O'Malley DM (2010) Feeding strategies of the larval zebrafish and the Mexican tetra. *Soc. Neurosci. Abstracts* #777.14.
56. Severi KE, O'Malley DM, Engert F (2010). Electrical stimulation of the nMLF-midbrain region elicits the slow-swimming pattern. *Soc. Neurosci. Abstracts* #290.6.
57. O'Malley DM (2011). Did Flash Memory, a non-linguistic symbolic stream, play a role in the emergence of language? *Soc. Neurosci. Abstracts* #401.18.
58. Severi KE, O'Malley, DM, Engert F, Portugues R (2011) Behavioral characterization and neural control of swimming speed in the larval zebrafish. *Soc. Neurosci. Abstracts* #809.06.
59. Saha S, Roumis D, O'Malley DM (2011). Visualization of axon tip dynamics in the larval zebrafish after spinal axotomy. *Soc. Neurosci. Abstracts* #440.12

60. O'Malley DM (2011) Neural coding, flash memory stores and symbolic representation. Front. Neuroinform: 4th INCF Congress of Neuroinformatics. doi: 10.3389/conf.fninf.2011.08.00009. Boston MA, Sept. 4-6.
61. Ganz S and O'Malley DM (2012) From stream of consciousness to flash memory: required neuronal machinery. Neuronal Circuits Conference, Cold Spring Harbor Laboratory, March 28-30, 2012.
62. Jordan J, Westphal RE, O'Malley, DM (2013) Zebrafish predation and the evolution of innate knowledge and neural codes. Quinnipiac Neurons Conference, North Haven, CT, April 7, 2013.
63. Westphal RE and O'Malley DM (2013) Juvenile Homing Strikes: sensory decoding, motor pattern selection and innate knowledge. Gordon Neuroethology Conference: Networks, Circuits, and Modules, West Dover, VT, August 18-23, 2013.
64. O'Malley DM (2014) "Neural Words" as a substrate for both flash memory and the evolution of language. Cognitive Neuroscience Society, Boston, MA, April 5-8, 2014, Abstract E103.

Abstracts or Talks presented at Regional Meetings

1. Budick SA and O'Malley DM (1999) Laser-ablation of identified neurons in the zebrafish hindbrain. Boston Area Neuroscience Group Meeting, 2/2/99, Cambridge, MA.
2. Budick SA and O'Malley DM (1999) Locomotive repertoire of the larval zebrafish. *Towards a Behavioral Genetics of Zebrafish* meeting, Marine Biological Laboratory, 8/99, Woods Hole, MA.
3. Papandile A, O'Malley DM and Warner C (2002) Imaging oocyte apoptosis in the mouse. CenSSIS Annual Meeting, 1/29/02, Northeastern University, Boston, MA. (A.P. – NU graduate student).
4. Uhling N, Rosengaus RB and O'Malley DM (2004) Immunocompetence in the dampwood termite *Zootermopsis angusticollis*: Encapsulation rates as a measure of cellular immunity. Northeastern University Technology Expo, 11/18/04, Boston MA.
5. Day L, Laevsky G, Dunner L, Arsenault J, DiMarzio C and O'Malley DM (2005) Visualization of spinal cord damage and functional reorganization: results from the Keck 3D fusion microscope. March 2005 CenSSIS NSF Site Visit, Boston University, Boston MA.
6. Multimodal Imaging of the Larval Zebrafish CNS using the Keck 3D Fusion Microscope (2005) Leslie Day, Kristen Severi, Gary Laevsky, John Arsenault, Chuck DiMarzio, Don O'Malley CenSSIS meeting, spring 2005.
7. Day LJ, Severi KS, Knudsen DP, Arsenault JT, Hill SA, McElligott MB, Jose JV, O'Malley DM (2005) Disruption of the Neural Controls Mediating Prey-Capture and Other Locomotive Behaviors of the Larval Zebrafish. Research and Scholarship Technology Expo. March 16, 2005 Northeastern University, Boston, MA.
8. Arsenault JT, Knudsen DP, Nutter-Upham A, Jose, JV and O'Malley DM (2006) Generation of Zebrafish Swimming Patterns: Identified Neurons and Simulated Neural Architectures. Northeastern University Research & Scholarship Expo, 2006. Boston, MA.
9. Day LJ, Severi KS and O'Malley DM (2006) Lesions of Descending Motor Pathways Deconstrain Spinal Activity Patterns: Results from Larval Zebrafish. Northeastern University Research & Scholarship Expo, 2006. Boston, MA.
10. Kamali M, Day, LJ, O'Malley DM, Brooks D (2007) Semi-Automatic identification of neuronal clusters in confocal image stacks of zebrafish brainstem. CDSP Annual Workshop, March 23rd, 2007, NU.
11. Bonaiuto R, Schubert J, Trautwein M and O'Malley DM (2007) Ontogenetic Changes in Zebrafish Prey Capture Kinematics. Fifth Annual Boston Behavior Club Woods Hole Symposium.

12. "Positioning yourself for Graduate School". NU Biochemistry Club, Graduate Continuing Education Symposium. Jan. 27th 2007.
13. Day LJ, Dhanota HA, Severi KS, Josephs TA, Holmes TS and O'Malley DM (2007) How do we classify the diversity of zebrafish locomotor behaviors? *NU Research and Scholarship Expo, March, 2007*.
14. Saha S, Silverberg S, O'Malley DM and Menon L (2007) Nanowire Array Technologies for Investigation of Neural Activity. *NU Research and Scholarship Expo, March, 2007*.
15. Saha S, O'Malley DM, Menon L (2008) Development of Nanowire Technologies to Treat Spinal Cord Injuries. Graduate Materials Links Symposium on Interdisciplinary Graduate Research, Northeastern University, presented February 15th, 2008.
16. Ganz S and O'Malley DM (2012) Analysis of Human Flash Memory with Regard to its Underlying Neuronal Architecture. RISE Conference, Northeastern University, March 29th, 2012.
17. Erin Greguske, CJ Bare, Sucharita Saha, Donald M. O'Malley (2012) Use of Confocal Microscopy and High-Speed Behavioral Imaging to Study Neuronal Regeneration in the Larval Zebrafish. RISE Conference, Northeastern University, March 29th, 2012.
18. Jordan J and O'Malley DM (2013) Applications of neural coding theory to zebrafish predation. RISE: 2013, Northeastern University, March 22nd, 2013.
19. Bryant AG and O'Malley (2015a) Synaptic Learning Theory: linking cortical network events to cognitive advancement. 2015 Neuron Conference, Quinnipiac University, North Haven CT, Feb. 22, 2015.
20. Bryant AG and O'Malley (2015b) Knowledge acquisition, integration and reward: a neuronal / synaptic perspective of STEM Learning. 2015 NURDS Conference, University of New England, Biddeford ME, Mar. 8, 2015.
21. Padani S, Bunce J and O'Malley DM (2016) Involvement of AANs and neuronal communication systems in aging and Alzheimer's disease: theory and synthesis. 2016 Neuron Conference, Quinnipiac University, North Haven CT, Feb. 28, 2016.

Bibliography Part VI. Invited Lectures and Presentations

International Seminars

Invited Lecturer and Instructor for "Confocal Microscopy and Cell Physiology", Mexican Physiological Society, Short Course, 2002 Annual Meeting, 9/6- 9/8, Colima, Mexico. Lecture Title: "Spatial and Temporal Resolution of Optical Methods in Living Zebrafish".

Zebrafish Neurobiology Course. August 11-15th. 2008. University of Helsinki, Finland.

Lecture 1: Zebrafish Neuroanatomy

Lecture 2: Investigating Identified Neurons in Larval Zebrafish: A Suite of Optical Techniques

Lecture 3: Sensorimotor Control of Zebrafish Locomotion: Distributed Networks or Dedicated Circuits?

Guest Lecturer and Instructor

Cold Spring Harbor – summer 1996, 1997, Lecturer/Course Instructor - Imaging Structure & Function in the CNS, Cold Spring Harbor, NY

Invited Platform Talks

Society for Experimental Biology - 2003, "Optical investigation of descending motor control in the zebrafish: linking anatomy, physiology and behavior." American Association of Anatomists symposium on *Zebrafish Sensory and Neural Systems*, San Diego, CA, presented by E. Gahtan, Abstract #276.4.

CNS Meeting – 2004, "Neurokinematic modeling of complex swimming patterns of the larval zebrafish."

Thirteenth Annual Computational Neuroscience Meeting-2004, July 18-22, 2004, presented by Jorge Jose, Baltimore, Maryland.

Zebrafish Development and Genetics Meeting (3/19/2005) *Optical Probes, Networks and Behavior: Zebrafish and Systems Neuroscience*. Novartis Institutes for Biomedical Research, Cambridge, MA.

Neural Circuits: From Structure to Function (2006) "Total system analysis of zebrafish locomotor control: new themes." Authors: L. Day, K. Severi and D.M. O'Malley. March 9-12th, 2006, CSHL Meeting, Cold Spring Harbor, NY.

Emergence of Sentient Digital Beings in the Absence of Societal Constraints. The Fourth International Conference on Technology, Knowledge and Society, 18-20 January 2008, at Northeastern University.

Invited Seminars/Presentations

Harvard University Biological Laboratory, 8/15/98, "Functional Organization of the Zebrafish Hindbrain",

Host: Dr. John Dowling

American International University, 3/24/99, "How the Zebrafish Escapes: Imaging Neural Networks and Behavior".

MIT/Whitehead Institute – 11/12/99, "Behavioral Repertoire of the Larval Zebrafish". 1999 New England Area Zebrafish Meeting

Concord Field Station, Harvard University, 3/14/00, "Locomotive Repertoire of the Larval Zebrafish: Swimming, Turning and Prey Capture". Concord, MA.

Fourth International Conference on Cognitive and Neural Systems, Boston University, 5/26/00. "Cellular-Level Organization of Descending Motor Control Systems".

Brown University, 2/12/01, Dept. of Ecology and Evolutionary Biology. "Neural Control of Locomotion in the Larval Zebrafish".

Forsyth Dental Institute – 5/23/02, Dept. of Oral Biology, Boston, MA. "Functional Organization of the Zebrafish Hindbrain". Host: Dr. Pam Yelnick.

Rensselaer Polytechnic Institute, 12/5/02, "Functional Mapping in the Zebrafish CNS: Expected Information Load from Transgenic Zebrafish", at the Dept. of ECSE & Biomedical Engineering, RPI, Troy, New York.

Host: Dr. Badri Roysam, CenSSIS partner.

Center for Interdisciplinary Research on Complex Systems (CIRCS) at Northeastern University – 1/28/03, "Towards an Anatomical, Physiological and Behavioral Model of Vertebrate Descending Motor Control: Raw Materials". Host: Dr. Jorge Jose

Boston Behavior Club, Northeastern University, 2/4/03. "Probing the Neural Basis of the Larval Zebrafish's Locomotive Repertoire using Optical Techniques". Host: Dr. Rebecca Rosengaus.

Boston University Medical School, 4/25/03, "Optical Probing of the Neural Basis of Zebrafish Locomotive Behaviors". Host: Dr. Irina Zhdanova, Department of Anatomy and Neurobiology.

Phylonix Corp., Cambridge, MA, 9/11/03, "Optical Exploration of the Zebrafish CNS: Current and Impending Technologies". Host: Dr. Chuenlei Parng, Senior Scientist, Phylonix Corp.

Marquette University, Milwaukee, WI, 10/17/03, "Locomotor Control Systems in Larval Zebrafish: A Comprehensive Analytical Approach". Host: Dr. Jim Buchanan, Dept. Biological Sciences.

Cold Spring Harbor Laboratory, NY, 10/24/03. "Why Systems Neuroscience has Ground to a Halt: Lessons from the Larval Zebrafish." Host: Dr. Karel Svoboda, 2-Photon Imaging Laboratory.

NU-Marine Science Center, Nahant, MA. 12/3/03, "Investigation of the Neural Control of Aquatic Locomotor Behaviors: Why Zebrafish?". Host: Dr. Geoff Trussell, Dept. Biology, NU.

CenSSIS Spring Seminar Series. 4/14/04. "Imaging Neurons and Neural Circuitry in the Larval Zebrafish". Host: Prof. Michael Silevitch, Director, CenSSIS, Northeastern University.

CenSSIS Summer Research Program, 7/27/05, "Optical Imaging in Medicine and Biology", Northeastern University, Boston, MA. Presentation to CenSSIS REU Students working at NU, BU, RPI and UPRM via WebEx.

Assaying Zebrafish CNS Function with Extreme Precision: Applications in Applied Neuroscience (8/29/05) Phylonix Corporation, Cambridge, MA.

Harvard University Biological Laboratory, 3/13/06, "Organization of Locomotor Control Systems in the Larval Zebrafish", Host: Dr. Florian Engert

NUASMA Conference, 9/30/06, "Undergraduate Research Opportunities in Neuroscience for Pre-Medical Students", NU Chapter of the American Student Medical Association, Speaker/Panel Member.

UCLA, Zebrafish Research Group, 6/5/07. “Escaping the Systems Neuroscience Tar Pits: Zebrafish to the Rescue”, Host: Dr. Petronella Kettunen.

Howard University, 10/8/07, “Visuomotor Transformations in the Larval Zebrafish: From Kinematic to Neural Circuits.” Dept. Physiology, Howard University, Washington DC. Host: Jim Gnadt.

Northeastern University, 2/19/08, “Zebrafish Consciousness and the Emergence of Sentient Machines”. Host: NU NEURONS Club.

MIT, Boston Games Forum, Digital Maze Games for Gamers. Host : Boston Games Forum, 7/31/14

ENET, Cambridge, Use of Digital Maze Games in Higher Education, 9/16/14

MIT, Launch Smart, Active Learning with Digital Maze Games, 9/30/14

Mass STEM Summit, Maze Games for STEM boost student motivation / knowledge and will enhance many learning venues. Worcester DCU, 11/12/15

Campus Tech 2015, Games that Make You Think: Enlisting Synaptic Learning Theory, Hynes Auditorium, Boston, MA, 7/28/15.

Mass STEM Summit, MazeFire’s Digital Games boost student motivation and knowledge integration across STEM disciplines. Worcester DCU, 11/1/16.

Guest Lectures

2003, 2008, Joe Ayer’s Comparative Neurobiology Course

2006, 2007: John Gatley’s Drug Discovery Course

2007, 2008: IGERT-Nanomedicine Course

2008: GSEG132 Graduate Engineering Leadership Seminar

2014: Capstone: Applications of GFP and ChR2 in Systems Neuroscience

2012-2016: Intro to Behavioral Neuroscience: BioImaging & Computational Neuroscience

Collaborations

External Collaborations

Irina Zhdanova – Boston University. Effects of melatonin on larval zebrafish behaviors and neural circuitry.

Badri Roysam – RPI. Automated registration of identified neurons in successive confocal data sets taken from larval zebrafish during a sequence of experiments. (CenSSIS partner; Consultant on Global Mapping R01 grant application).

John E. Dowling – Harvard University. Generation of fos-GFP and other lines of transgenic zebrafish for global mapping of neural activity. (Consultant on Global Mapping R01 grant application).

Florian Engert – Harvard University. Visuomotor transformations in the zebrafish CNS.

Internal Collaborations, Northeastern University

Dana Brooks and Eric Miller, ECE – automated image analysis of 3D confocal data sets

Latika Menon – Physics – nanoprobe and nanowire array development

Mansoor Amiji – Pharmaceutical Sciences – Use of nanoparticles in neuroregeneration

Bill Detrich, Dept. Biology – Generation of transgenic zebrafish containing a fos-GFP construct.

Ralph Loring, Dept. Pharmacology – Confocal localization of AChR subunits: trafficking and membrane insertion.

Carol Warner, Dept. Biology – Quantitative analysis of caspase expression in mouse oocytes.

Graham Jones, Dept. Chemistry – synthesis of chlorin-e6 “killer dextrans”.

Chuck DiMarzio, Dept. Elec. Comp. Engr. – Biological tests of QTM and 3D fusion microscope.

Jorge Jose, Dept. Physics/CIRCS – neural network modeling of the vertebrate spinal cord.

Teaching Part I. Summary of Courses Taught at Northeastern University

Anatomy & Physiology III, Bio 1164 (w/ Anat. & Phys. III lab sections), 1998-2002

Current Concepts in Cell Biology (Optical Methods), Bio 1460/Bio3460, 1998-2002

Biological Imaging, BIOL 5881, 2003 – 2015

Neurobiology, BIOL3405, 2003 – 2014

Research Problem Solving, Bio G382, 2008, 2009 [Select Problems in Current Biology]

Computational Neuroscience, BIOL5801 (2012, 2013)

Intro to College, BIOL1001 (2013-2016)

Systems Neurobiology of Cognitive Decline, BIOL3409, Spring and Fall, 2016.

Graduate Seminar, Bio3690, Winter 1999, Introduction to Locomotion in Lower Vertebrates

Graduate Seminar, Bio3690, Winter 2000, Descending Pathways: A Phylogenetic Approach

Graduate Seminar, Bio3690, Winter 2001, Neural Oscillators: CPGs and Intersegmental Controls

Graduate Seminar, Bio3690, Fall 2001, A Comprehensive Model of the Zebrafish DMCS

Graduate Seminar, Bio3690, Fall 2002, Neural Stem Cells: Can we Save Superman?

Graduate Seminar, Bio 3690, Spring, 2004, Neural Regeneration

Graduate Seminar, BioG384, Spring 2008, Evolution of Biological and Artificial Intelligence

Graduate Seminar BioG384, Spring 2010, Computational Neuroscience Seminar

Teaching Part II. Advising

Former Postdoctoral Fellows-

Ethan Gahtan- 9/99 – 1/02

Earl Larson – 5/03 – 12/06

Former Graduate Students-

Naga Sankrithi - received Ph.D. 2004

Melissa Borla – received Ph.D. 2005

Sheila Power – received M.S. 2005

William McCarthy - Master's thesis advisor, graduated with M.S. in Bioinformatics.

Lara Jabr – received M.S. 2006

John Mandelman – received Ph.D. 2006 (student of Charlie Ellis)

Leslie Day – received Ph.D. 2008

Kristen Severi – received Ph.D. 2011

Rebecca Westphal – received Ph.D. 2011

Sucharita Saha – received Ph.D. 2012

Current Graduate Students-

Nick Korsantia- fMRI and Motor control systems

Research Advising – Undergraduate Research Projects

Damian Houde - helped set up lab in spring & summer, 1998.

Jasmine Haque - supervised undergraduate research, summer, 1998.

Daniel Corless – supervised directed study, summer, 1999.

Betsy Palecek – supervised senior honors thesis project, 9/99 – 6/00.

Abigail Springer - supervised undergraduate research, 1/99 – 6/99.

Amanda Maloney – supervised undergraduate research 9/00 – 6/01.

Kim Rozelle – supervised FURI/undergraduate research project 12/01 – 6/02.

Christina Zolko – supervised undergraduate honors project 5/01 – 5/02

Xiao-Ping Liu – joint summer research project with Jorge Jose lab – summer 2003

Eben Tessari – supervised directed study in theoretical neurobiology – 4/03-4/04

Veronica Dobrovitsky – directed study in neural repair – spring 2004

Mariko Howe – directed study in neural repair – spring 2004

Serena Banden – supervising undergrad research 9/03 – 12/04

Dan Knudsen – supervising undergrad research 6/04 – 6/06

John Arsenaault – supervising undergrad research 1/05 – 6/06

Harinder Dhanota – directed study in locomotor behaviors. 1/05 – 6/06

Ayla Lee – directed study in zebrafish behavior 6/05 – 12/05

Tierney Holmes—directed study in visuomotor behaviors. Summer 2006

Trisha Josephs, recorded OMR high-speed behaviors. Summer REU, 2005, 2006 (LSAMP program)

Julie Covino, Directed Study, Summer 2006

Jenna Webster, directed study in neural regeneration, Fall 2006

Michael Trautwein, directed study in prey capture kinematics and lateral line, Fall 2006
 Deanna Beatty – Summer 2007 – Kinematics of visuomotor behaviors
 Sarah Morrissey – Summer 2007 – nanoparticle and nanowire applications to regeneration
 Marissa Pinksten—Fall 2007 – development of zebrafish locomotor behaviors
 Whitney Danske—Fall 2007, kinematic analysis of swimming and turning behaviors
 Hemal Patel – Spring 2008, nanowire recording of neurons
 Valeria Gioioso – Summer, 2008, conscious record memory
 Amanda Kautzman, Spring 2008, nanowire recording of neurons
 Danielle Brewer, Spring 2009, sensory integration in larval prey detection & tracking
 Maggie Moyer, Fall 2009, Regeneration of zebrafish reticulospinal neurons.
 Kaitlin Shea, Spring 2010, Computational Neuroscience Algorithms project
 Yelena Tsabur, Spring 2010, Savants and Biological Intelligence
 Rachael Gilardetti, Summer 2009, Spinal regeneration and EM project
 Demetris Roumis, Summer/Fall 2010, Zebrafish regeneration and 2P laser axotomy.
 Samantha Ganz, 2011-2012, Flash Memory & DMR analysis
 Ariel Langevin – Spring, 2012, Computational Methods in Neuroscience
 Jake Jordan – Spring, 2013, Application of Information Theory to Zebrafish Predation
 Ron Puerta – Fall, 2013, Video Analysis of Prey Capture Evolution
 Matt Taylor – Fall, 2013, Neural System Applications of Shannon Information Theory
 Alaa Ashy w/ JaiDeep Ramachandran – Fall, 2013, Analysis of DMR circuitry and computation
 Nara Sahajian—Fall, 2013, Creation of Biology and Psychology Review Games
 Kim Cataldo – Spring 2014 – Spring 2015, Creation of Liberal Art Educ. Games (Music, Philosophy)
 Annie Bryant – Spring, 2015 – Work on Synaptic Learning Theory, Authored 2 posters
 Hope Ianiri – Fall, 2015 – Review of Chemistry Maze Games
 Ellen Dillenbeck – Fall, 2015 – authored Physics 101 Maze, History of Espionage Maze
 Shezal Padani – Fall, 2015 – Developed annotated bibliography on Sys. NB of Cognitive Decline
 Hope Danison – Spring, 2016 – Educational Video Product
 Shannon Murphy – Summer, 2016 – EdTech Marketing and Social Media Tools, HootSuite
 Eden Desta – Summer, 2016 – Authored C++ maze games, Google Analytics. Bioengineering.

Teaching Part III. Graduate Student Advisory Committees

Mahasweta Girgenrath – Ph.D. student of R. Marsh. Ph.D. awarded July 1998.
 Lars Schlichting – Masters student of F. Davis, M.S. awarded November 2000.
 Hee Kyung Li – Masters student of R. Loring, M.S. awarded September, 2002.
 Adrian Papandile – Masters student of C. Warner, M.S. awarded October, 2002
 Leslie Ling – Masters student of C. Warner, graduated Spring, 2004
 Xiao-Dong Li – Ph.D. student of F. Davis, graduated Fall, 2004
 Jennifer Priester – Masters student of W. Smith, graduated Fall 2004
 John Mandelman – Ph.D. student of C. Ellis; assumed PhD advisor role, Fall 2005
 Craig Shupenko – MS Student of Phyllis Strauss, graduated Fall, 2005
 Maggie McCrann – Masters student of Misha Sitkovsky, graduated Spring, 2008
 Susan Khampaseuth Rasakham – PhD student of Jay McLaughlin (Psych), graduated Fall, 2008.
 Matin Kamali – Masters student of Dana Brooks (ECE), graduated Spring, 2009.
 Ian Gallagher, Masters student of Fred Davis, graduated Spring, 2009
 Craig Karr – PhD Student of Ed Jarroll, graduated Summer, 2009
 Gina Escobar – PhD student of Armen Stepanyants (Physics), graduated Spring 2010
 Harry Pantazopoulos – PhD student of Fred Davis, graduated Fall 2010
 Hiba Tannoury – PhD student of Erin Cram, graduated 2012
 Anthony Westphal – PhD student of Joseph Ayers, graduated 2012
 Veronica Akle – PhD student of Irina Zhdanova, BU, graduated 2012
 Amy Peterson – MS student of Irina Zhdanova, BU, graduated 2012
 Kuo Hua Huang – PhD student of Florian Engert, Harvard, graduated 2012
 Brendan Collins – MS student of Fred Davis
 Kun Qian – PhD student of John Gatlley (Pharmaceutical Sciences)

Daniel Blustein – PhD student of Joseph Ayers, graduated, 2014
Manasa Mahathi – PhD student of Misha Sitkovsky
Lissa Riley – PhD student of Irina Zhdanova, BU, graduated July, 2015
Leon Delalio – MS student of Wendy Smith
Vivek Krishnan – MS student of Phyllis Strauss, graduated 2013
Se-Woong Park – PhD student of Dagmar Sternad, graduated 2013
Nick Korsantia – MS student of Dagmar Sternad
Julio Chapeton – PhD student of Armen Stepanyants (Physics), graduated August, 2014.
Alyssa Cecchetelli – PhD student of Erin Cram

Teaching Part IV (misc.)

Neural Computation Group, 2013 (w/ Prof. Adam Reeves): Matt Simhon, Matt Taylor, Rohan Gala, Julio Chapeton, Alaa Ashy, and Alexandra Emmendorfer.

Service Part I. National Professional Service:

National Review Panel Served on joint NSF/NIH special panel to review grants for CRCNS, Arlington, VA, May 5th/6th, 2002. [CRCNS = Collaborative Research in Computational Neuroscience initiative].

Ad Hoc Reviewer (of manuscripts, books and grants) for:

National Institutes of Health, *National Science Foundation*, J. Neuroscience, *Neuroscience*, J. Neurosci. Methods, *Quarterly Review of Biology*, J. Neurophysiology, *J. Physiology (London)*, J. Comparative Neurology, *Brain Research*, Brain Behavior & Evolution, *Journal of Photochemistry and Photobiology B: Biology*, Anatomy & Physiology Text - K. Saladin. *Brain Research Bulletin*. Nature Protocols, *Netherlands Organisation for Scientific Research*, Transactions of the American Fisheries Society, *Neurobiology of Disease*, J. of Visualized Experiments, *PLoS One*, Sinauer Associates.

Service Part II. Institutional Service

Departmental Service

Qualifying Exam Committee Chair: 1998 – 1999; 2009- 2010
Merit Appeals Committee: 2010-present
Bioclub Advisor: 1999 – 2001
Graduate Committee: 2000 – 2009
Public Relations Committee: 1998 – 2001
Bioclub Mailing List Manager: 1997 - 2009
Trustee Professorship Search Committee: spring, 1998.
Neurobiology Search Committee: 2007, 2011.
Graduate Coordinator 2012-2013
Curriculum Committee 2012-2015

College Service

Behavioral Neuroscience Steering Committee: 9/98 – 5/08
Behavioral Neuroscience Undergrad. Club Advisor: 9/03 – 5/08
College Tenure and Promotion Committee: 2006-2007

University Service

Pharmacy School Dean Search Committee: 9/01 – 3/02
Neuroscience Steering Committee: 1998 – 2008
Neuroscience Mailing List Manager 1998- present
Graduate Council Representative: 2001 – 2004
Chair, Neuroscience Steering Committee: 2006 – 2008

Confocal Support for Research & Grant Applications

1. CenSSIS - provided confocal and cellular imaging expertise in support of national engineering research center proposal for subsurface sensing and imaging. \$16,000,000 grant awarded to Northeastern University in April, 2000.
2. Carol Warner - provided supporting letter and confocal access in support of R01 grant application. Specifically provided expertise in subcellular calibration of multiple fluorophores.
3. Ralph Loring - provided supporting letter and confocal access in support of R01 grant application. Specifically provided expertise in dual wavelength imaging and colocalization issues.
4. Chuck Dimarzio – provided supporting letter for R24 Bioengineering research grant. Provided confocal images of living embryos, inert test object (optic fibers) and confocal access in support of Keck Microscope.
5. William Detrich – provided confocal imaging of GFP-kinesin fusion proteins in support of Ph.D. thesis of Ming Xuan-- graduated 1999. Providing imaging support for Parker and Hu, 2010.
6. Fred Davis – providing confocal imaging support for localization of circadian gene products for Ph.D. thesis of Xiao-Dong Li. Supported publication of “Transforming growth factor-alpha is expressed in astrocytes of the suprachiasmatic nucleus in hamsters: role of glial cells in circadian clocks” X. Li, N. Sankrithi, and F.C. Davis, *NeuroReport* 13.
7. Wendy Smith – providing confocal imaging support for the visualization of calcium transients in Manduca larval neuroendocrine cells, part of Masters thesis of Ms. Jennifer Priester in the Smith lab. 2007
8. Rebecca Rosengaus – provided confocal imaging assistance to visualize coverage of infection threads with termite immune cells. 2007-2008
9. Phyllis Straus – provided confocal support and advice for caspase and NO imaging experiments in zebrafish.
10. Jay McLaughlin – provided confocal support and advice for receptor-internalization studies, 2008.
11. Joe Kerimo & Chuck DiMarzio, ECE – 2-photon laser axotomy of identified zebrafish neurons, 2010.
12. Faculty Advisor to Confocal Management Team (Jeffrey Bouffard; Ruxandra Sirbulescu, Bob Abbott). From 2012 to present.

Service Part III. Professional Development

Membership in Professional Organizations

1985 – present	Society for Neuroscience
2000 – 2005	American Physiological Society
1999 – 2003	Sigma Xi
1987 - 1990	Association for Research in Vision and Ophthalmology

Meetings / Courses Attended:

Society for Neuroscience Annual Meetings (various cities) 1985 – 2011 (most years)
 Neurobiology of Disease, Epilepsy. SFN short course.
 Microarray Short Course, SFN meeting, 2000.
 Whitehead Institute Fall Colloquia, MIT, Boston, 1999, 2000.
 Boston Area Neuroscience Meetings, 1998, 1999, 2000.
 International Conference on Cognitive and Neural Systems, BU, 2000.
 Mexican Physiological Society Annual Meeting & Short Course, Colima, Mexico, 2002.
 Progress in Motor Control V, Penn State, PA, 2005.
 Zebrafish Principal Investigators Meeting, Mount Desert Island, ME, 2005.
 MIT-Bioinformatics Course – SAGB 28 March-4 April, 2005.
 Neural Structure and Function, CSHL, Cold Spring Harbor NY, 2006.
 Neural Oscillators, SFN Short Course, Chicago, October 2009.
 Sloan-Swartz Computational Neuroscience, Yale University, June 2010.
 MIT 150: Brains, Minds & Machines, May, 2011, Cambridge MA.
 International Conference of Neuroinformatics, Boston, MA, Sept. 2011.
 Neuronal Circuits Meeting, CSHL, Cold Spring Harbor, NY, March 2012.
 Gordon Research Conference on Neuroethology, West Dover VT, August, 2013.
 Cognitive Neuroscience Society, Boston, MA, April 5-8, 2014.
 TiECON-East 2014 Breaking Boundaries, Cambridge MA, May 29th and 30th, 2014.
 Boston Ed-Tech Meetup, EdTech paradigm shift? Real stories. At Scholastic Press, Watertown MA, 6/5/14.

National Academies Northeast Regional Summer Institute, Harvard University, June 15-20, 2014.
Digital Health, NERD Center, Cambridge, 8/28/14
Digital Marketing, Boston Public Library, 9/15/14
Education Technology Software for K12, w/ Eric Hilfer, Learn Launch Center, 10/14/14
Massachusetts STEM Summit, Worcester MA, 10/22/14

Service Part IV. Other

Development of Educational Technologies: Digital Maze Games

1. Invented, 2007.
2. Patent Issued, 2012.
3. Licensed to MazeFire LLC, June 2013.
4. Development of Digital Maze Games for NU Courses: w/ Nareh Sahakian and Kim Cataldo
5. Presentations at TieCON East (June 2014), Scholastic (June 2014), Entrepreneurs & VCs, (June, 2014)
6. Forming strategic alliances with HSTRY.com, Boundless and Centurion Technologies LLC.