

Melissa A Harrington
Delaware State University
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Education:

1986 - 1993	PhD Neuroscience	Stanford University	Stanford, CA
1982 - 1986	BS Molecular Biology (Honors)	Purdue University	West Lafayette, IN

Post Doctoral Training

1996 - 1998	Biology Department, Stanford University, Area: Ion channel electrophysiology
1995	Hopkins Marine Station, Stanford University, Area: Calcium imaging in neurons
1992 - 1994	Pharmacology Dep't. UT Southwestern Med Center, Area: Ion channel electrophysiology

Other Professional Training

2010 - 2011	Fellow, American Council on Education: Placement at University of Delaware, Office of Research. Mentors: Mark Barteau, Karl Steiner
2010	ACE/OWHE National Leadership Forum, Washington, DC
2007	ACE/OWHE Regional Leadership Forum, St. Simon's Island, Georgia

Academic Positions

Delaware State University	Professor	(2010 - present)
	Associate Professor	(2005 - 2010)
	Assistant Professor	(2001 - 2005)
Morehouse College	Assistant Professor of Biology	(1998 - 2001)
UC, Santa Cruz	Lecturer, Department of Biology,	(1995 - 1998)

Administrative positions

2012 - present	Director, Delaware Center for Neuroscience Research
2005 - present	Director of Biomedical Research, Delaware State University
2000 - 2001	Co-Director, Undergraduate Initiatives, Center for Behavioral Neuroscience, Atlanta, GA
1999 - 2001	Director, Morehouse College Neuroscience Program

Summary of Funded Grants

Research Center Grants

2012 - 2017	"COBRE: The Delaware Center for Neuroscience Research" National Institutes of Health \$10.5 million, Principal Investigator/Project Director
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Infrastructure/outreach grants

2010 - 2014	"A Linear Leadership Development Model for STEM Success" National Institutes of Health, \$2.1 million - co-Principal Investigator
2009 - 2014	"DSU-SMILE: A Science and Mathematics Initiative for Learning Enrichment" National Science Foundation \$2.5 million - Co-Principal Investigator
2009 - 2014	"A Graduate Partnership to Expand Educational Opportunities at an HBCU" National Institute of General Medical Sciences \$1.6 million - Principal Investigator
2009 - 2013	"An Inter-institutional Neuroscience PhD Program to Expand Graduate Education Opportunities for Minority Students" National Science Foundation, \$1 million - Co-Principal Investigator
2009, 2010	"Delaware Residence Enrichment Academy of Mathematics and Science (DREAMS)" Bernard Harris Exxon-Mobile Foundation, - \$160,000, co-Principal Investigator
2005-2008	"A Dual-Degree Graduate Program to Build Infrastructure and Expand Opportunities for Graduate Education at an HBCU", National Science Foundation, \$1 million - co-Principal

Investigator

- 2003-2008 “Seeds of success: a comprehensive program for the retention, quality training and advancement of STEM students”, National Science Foundation, \$2.5 million – co-Principal Investigator
- 1999 - 2001 “Promoting Excellence in Teaching and Research in the Neurosciences: A Collaborative Project of Atlanta University Center Colleges” National Science Foundation, \$2 million, Principal Investigator
- 1999 - 2000 “Promoting Excellence in Teaching and Research in the Neurosciences”, David & Lucile Packard Foundation, \$100,000, Principal Investigator

Research Grants

- 2013 – 2016 “A tale of 2 synapses: the development of neurotransmitter phenotype in motor neurons” Principal Investigator, National Institutes of Health, \$436,000
- 2011 - 2013 “MRI: Acquisition of a Bench-top Olympus Confocal Microscope to Advance Biological Research at an HBCU” Co-Principal Investigator, National Science Foundation \$217,000
- 2007 - 2011 “Recording Snail Brain Activity with a Multi-electrode Array” Principal Investigator National Institutes of Health, \$450,000
- 2003 - 2006 “Neurobiology of slime trail tracking in a predatory snail” Principal Investigator, National Science Foundation, \$265,000.
- 2003 – 2006 “MRI: Multielectrode physiology and fluorescence microscopy instrumentation to support research and training at an historically-black, undergraduate institution” Principal Investigator, National Science Foundation, \$132,000
- 2000 - 2003 “Molecular Biophysical Studies of Cysteine Residues in the CFTR Cl- Channel” Principal Investigator, National Science Foundation, \$178,000

Publications

1. Patel, K., Shaheen, N., Witherspoon, J., Robinson, N. and Harrington, M.A. (2013) Slime Trail Tracking in a Predatory Snail: Olfactory Processing Retooled to Serve a Novel Sensory Modality. *Brain and Behavior Accepted, under revision.*
2. Zhang, H-M, Wu, C-Y, Wang, W. and Harrington, M.A (2011) Interneuronal synapses formed by motor neurons appear to be glutamatergic. *NeuroReport*, **22**: 809-13.
3. Zhang H-M, Robinson N., Wu, C-Y, Wang, W. and Harrington, M.A. (2010) Electrophysiological properties of motor neurons in a mouse model of severe spinal muscular atrophy: *In vitro* versus *in vivo* development. *PLoSOne* **5(7)**; e11696
4. Zhang, H.-M. Robinson, N., Gomez, I., Wang W. and Harrington, M.A. (2009) Neuronal and Network Activity in Cultured Spinal Motor Neurons. *NeuroReport* 20: 854-859.
5. Robinson, N, Pokrajac, D, Patel, K and MA Harrington (2006) Analysis of Oscillatory Neural Activity in Olfactory Areas of Mollusk Brains Recorded by Multi-Electrode Array. *Proceedings, IEEE ETRAN Conference*, **50**: 347 – 351.
6. Dzakpasu, R, Patel, K, Robinson, N, Harrington MA, and Zochowski, M (2006) Measuring asymmetric temporal interdependencies in simulated and biological network. *Chaos* **16(4)**, 043121.4.
7. Shaheen, N., Patel, K., Patel, P., Moore, M., and Harrington MA (2005) A Predatory Snail Distinguishes Between Conspecific and Heterospecific Snails and Trails Based on Chemical Cues in Slime. *Animal Behavior*. **70**: 1067-1077.
8. Clifford, KT, Gross, L, Johnson, K, Martin, KJ, Shaheen, N, and Harrington MA (2003) Slime trail tracking in the predatory snail, *Euglandina rosea*. *Behavioral Neuroscience* **117**:1086 – 1095.

9. Harrington, MA, Kopito, RR (2002) Cysteine residues in the nucleotide binding domains regulate conductance state of the cystic fibrosis transmembrane conductance regulator. *Biophys. J.* **82**:1278-1292.
10. Kembi, F and Harrington MA. (2001) Interdomain, but not intermolecular interactions observed in CFTR channels *Biochem, Biophys. Res. Com.* **288**:819-826.
11. Harrington, MA, Gunderson, KG, and Kopito RR (1999) Divalent cations and redox reagents alter gating of the CFTR channel. *J. Biol.Chem.* **274**:27536-27544
12. Harrington, MA and Thompson, SH. (1996) Activation of the nitric oxide pathway is necessary for refilling intracellular Ca²⁺ stores during muscarinic signaling in neuroblastoma cells. *Cell Calcium*, **19**: 399-407.
13. Harrington MA, Shaw K, Ciaranello RD. (1994) Agonist-mediated desensitization and loss of high-affinity binding sites of stably expressed human 5-HT_{1A} receptors. *J. Pharmacol. Exp. Ther.* **268**: 1098-1106.
14. Harrington MA, Zhong P, Garlow SJ, Ciaranello RD. (1992) Molecular biology of serotonin receptors. *J. Clin. Psychiatry.* **53** [10 suppl]: 8-27.
15. Harrington MA, Sleight, AJ, Pitha J, Peroutka SJ. (1991) Structural determinants of 5-HT_{1A} versus 5-HT_{1D} receptor binding site selectivity. *Eur. J. Pharmacol.* **194**: 83-90.
16. Peroutka SJ, Schmidt AW, Sleight AJ, Harrington MA. (1990) Serotonin receptor "families" in the central nervous system: an overview. *Annals of the New York Academy of Sciences*, **600**:104-112.
17. Slaughter JL, Harrington MA, Peroutka SJ. (1990) 6-substituted tricyclic partial ergoline compounds are selective and potent 5-hydroxytryptamine_{1A} receptor agents. *Life Sciences* **47**: 1331-1337.
18. Harrington MA, Peroutka SJ. (1990) Modulation of 5-hydroxytryptamine_{1A} receptor density by nonhydrolyzable GTP analogues. *J. Neurochem.* **54**: 294-299.
19. Harrington MA, Peroutka SJ. (1990) Differential modulation of 5-hydroxytryptamine_{1D} binding sites by GTP and GTPγS. *Brain Res.* **506**: 172-174.
20. Harrington MA, Oksenberg D, Peroutka SJ. (1988) 5-Hydroxytryptamine_{1A} receptors are linked to a Gi-adenylate cyclase complex in rat hippocampus. *Eur. J. Pharmacol.* **154**: 95-98.
21. Peroutka SJ, Hamik A, Harrington MA, Hoffman AJ, Mathis CA, Pierce PA, Wang SS (1988) (R)-(-)-[⁷⁷Br]4-bromo-2,5-dimethoxyamphetamine labels a novel 5-hydroxytryptamine binding site in brain membranes. *Mol. Pharmacol.* **34**: 537-542.
22. Sehnke PC, Harrington MA, Hosur MV, Li Y, Usha R, Tucker RC, Bomu W, Stauffacher CV, Johnson JE (1988) Crystallization of viruses and virus proteins. *J. Crystal Growth.* **90**: 222-230.
23. Stauffacher CV, Usha R, Harrington MA, Schmidt T, Hosur MV, Johnson JE. (1987) The structure of cowpea mosaic virus at 3.5 Å resolution. IN: *Crystallography in Molecular Biology*. (Eds. Moras D, Drenth J, Strandberg B, Suck D, Wilson K) Plenum Publishing Corp. pp 293-308.
24. Johnson JE, Harrington MA (1985) Antibody binding to cowpea mosaic virus in the crystalline state. IN: *Current Communications in Molecular Biology: Immune recognition of protein antigens*. (Eds. Laver WG, Air GM) Cold Spring Harbor Press, pp 169-173.
25. Virudachalum R, Harrington MA, Johnson JE, Markley JL (1985) ¹H, ¹³C, and ³¹P nuclear magnetic resonance studies of cowpea mosaic virus: detection and exchange of polyamines and dynamics of the RNA. *Virology* **141**: 43-50.
26. Virudachalum R, Harrington MA, Johnson JE, Markley JL (1985) Thermal stability of cowpea mosaic virus components: differential scanning calorimetry studies. *Virology* **146**: 138-140.

Abstracts (last 5 years)

1. M.A. Harrington, H. Zhang, N. Robinson, C. Phillips, A.W. Harris, M.E. Butchbach (2013) Altered function of spinal motor neurons in severe SMA mice. Society for Neuroscience Annual meeting. 39

2. M.A. Harrington, H. Zhang, N. Robinson, P. Kandukuru, C.-Y. Wu, and W. Wang, (2011) Altered activation properties of spinal motor neurons in SMA model mice. Society for Neuroscience Annual Meeting 37
3. H. Zhang, N. Robinson, C.-Y. Wu, W. Wang, and M. A. Harrington (2010) Electrophysiological properties of motor neurons in the model of severe SMA: Development *in vitro* is different from development *in vivo*. Families of SMA conference.
4. H. Zhang, N. Robinson, C.-Y. Wu, W. Wang, and M. A. Harrington (2010) Electrophysiological properties of motor neurons in the model of severe SMA: Development *in vitro* is different from development *in vivo*. Society for Neuroscience Annual Meeting 36
5. H. Zhang, N. Robinson, I. Gomez-Curet, W. Wang, and M. A. Harrington (2009) The neuronal excitatory/inhibitory inputs and plasticity of cultured spinal motor neurons. Neuroscience Annual Meeting 35.
6. G. Soire, D. Higgin, M. A. Harrington (2008) Cloning and expression of an arginine-vasopressin receptor in the central ganglia of an invertebrate model system. Society for Neuroscience **34**
7. H. Zhang, N. Robinson, I. Gomez, W. Wang, and M. A. Harrington (2008) Firing Behavior of Cultured Motoneurons Recorded by 64-Channel Extracellular Recording System. Society for Neuroscience **34**.
8. Watson, C., Harrington MA, Hartline, F. (2007) The Impact of the Summer Bridge Program on the Success of STEM majors. AAAS National HBCU-UP Conference.
9. D. L. Higgin, S. Amiri, M. A. Harrington (2007) Cloning of calcium calmodulin protein kinase II from snail model systems Society for Neuroscience **33**: 208.15.
10. M. A. Harrington, N. Y. Robinson, I. Gomez, W. Wang (2007) Multielectrode array recordings of motor neuron cultures in a model of the neurodegenerative disease SMA. Society for Neuroscience **33**: 490.12
11. K. Patel and M. A. Harrington (2007) Multielectrode array recordings from primary cultures of snail neurons. Society for Neuroscience 33: 317.27
12. M.A. Harrington (2007) Slime Trail Tracking in a Predatory Snail: Olfactory Processing Retooled to Serve a Novel Sensory Modality. 2nd Northeast Regional IDEa Meeting

Grant Review Panels

- 2012 - 2017 National Institute of General Medical Sciences, National Institutes of Health, Minority Programs Review Subcommittee Study Section B.
- 2012 Delaware Bioscience Center for Advanced Technology - a grant program to address the technology innovation gap and promote economic development in Delaware.
- 2000 - 2013 National Science Foundation - Service on 24 separate review panels for ten different grant programs including the Graduate Research Fellowship Program (GRFP)
- 2009, 2012 Louisiana Board of Regents Support Fund – served as Panel Chair for a program awarding grants to colleges and universities in Louisiana to develop programs in biology education and research

Leadership Roles

- 2007 - Organizer/Director Delaware Neuroscience Consortium
Worked with faculty from Delaware State University, University of Delaware, the A.I.duPont Children's Hospital and ChristianaCare Medical Center in a consortium to support the development of neuroscience research and education.
- 2006 - 2010 Member, External Advisory Board, Morehouse College HBCU-UP Project
- 2003 - 2009 Directed HBCU-UP Undergraduate Research Program at DSU
- 2003 - 2012 Recording Secretary and grant specialist, Board of Directors, Kent County Society for Prevention of Cruelty to Animals

1998 - 2001 Directed Undergraduate Summer Research Program at Morehouse College

Honors

2013 SMART Woman of the Year, Strengthening the Mid-Atlantic Region for Tomorrow Inc.
2012 Delaware Neuroscientist of the Year, from the Delaware Chapter of the Society for Neuroscience
2012 Summit award, Delaware IDeA Networks of Biomedical Research Excellence
2008 Mentoring Excellence Award, Delaware State University
2005 Research Excellence Award, Delaware State University
1997 - 1998 NRSA, Post-Doctoral grant from the National Institutes of Health
1996 - 1997 Cystic Fibrosis Foundation Post-Doctoral Grant
1987 - 1991 Pre-Doctoral Training Grant from the National Institutes of Health

Outreach Activities

2012 - Director, Delaware Brain Bee, sponsored by the Society for Neuroscience
2008 - 2010 Co-director for Bernard Harris Foundation/Exxon-Mobile Summer Science Camp for middle school students
2008 – 2013 Society for Neuroscience Teacher-Partner Program
2002 - 2009 Instructor and research mentor for “Girls Explorations of Math and Science” a summer enrichment program for high school girls.

Graduate students supervised

2002 - 2005 MS 2005 - Nagma Shaheen, Department of Biology, DSU
2005 - 2009 MA 2011- Dwight Higgin, Department of Biology, DSU
2006 - 2008 MS 2008- Kinjal Patel, Department of Biology, DSU
2011 - present MS program - M. Kameron Brown, Department of Biology, DSU
2011 - present PhD program - Tharaneetharan Amurugarajah, Department of Biology, DSU
2012 - present MS program - Charlotte Phillips, Department of Biology, DSU

Graduate Student Committees

Doctoral

Yufei Shan, PhD Neuroscience, Delaware State University, current
Jaime White, PhD Neuroscience, Delaware State University, current

Masters

Rosaria Formisano, MS Biology, Delaware State University 2010
Mahlet Mersha, MS Biology, Delaware State University, 2011
Adam Junior, MS Neuroscience, Delaware State University 2012
Tori Owens, MS Biology, Delaware State University, 2012
Monica Rhodes, MS Biology, Delaware State University, 2012
Jaime White, MS Biology, Delaware State University 2012
Bianca DeBroux, MS Biology, Delaware State University, 2013
Andrew Matamoros, MS Biology, Delaware State University, 2013
Tiffany Summers, MS Neuroscience, Delaware State University, 2013
Talaria Young, MS Biology, Delaware State University, current
Brittany Marine, MS Biology, Delaware State University, current