

DEBRA ANN FADOOL, Ph.D.

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EDUCATION:

Albion College, Albion MI; B.A. 1985, Summa Cum Laude; Biology Major, English Concentration.

West Indies Laboratory, Fairleigh Dickenson University, U.S. Virgin Islands 1984; Off-campus Study, Marine Science.

University of Rhode Island, Kingston RI; M.S. 1987; Zoology and Chemistry Departments.

Michigan State University, East Lansing, MI; Additional Studies, 1987-89; Zoology Department.

Marine Biological Laboratory, Woods Hole, MA; Summer 1991; Neurobiology Course.

C.V. Whitney Laboratory, University of Florida, Gainesville FL; Ph.D. 1993; Zoology Department. Mentor: Dr. Barry W. Ache

Center for Complex Systems, Brandeis University, Waltham MA; Postdoctoral Studies, 1994-1996; Biochemistry Department. Mentor: Dr. Irwin B. Levitan

MAJOR RESEARCH INTERESTS:

The research in my laboratory is centered on the modulation and regulation of ion channel proteins, particularly those that govern olfactory perception. We are uncovering intracellular protein-protein interactions that place the predominant voltage-gated potassium channel of the olfactory bulb, Kv1.3, into the core of a scaffold or signaling complex. We wish to understand how Kv1.3 is modulated by receptor tyrosine kinases in both phosphorylation dependent and independent transduction events during disease. We are particularly interested in ion channel modulation during diabetes mellitus (insulin receptor kinase), cancer (src kinase), neural regeneration (Trk, neurotrophins), and obesity (melanocortin receptor). Part of the laboratory is also interested in a second messenger-gated ion channel (IP3-R) that forms a scaffolds with a calcium channel (TRPC2) to mediate the detection of species-specific odorant compounds called pheromones during mating and reproduction.

Please see separate document of long-term research statement for full details and scope.

AWARD/HONORS:

Beta Beta Beta National Biological Society (1985-present)
Phi Beta Kappa (1985 present)
Webster Merit Scholarship, Albion College (1981-1985)
Heublein Academic & Athletic Scholarship, KFC (1981-1983)
Putnam Biology Scholarship, Albion College (1984-1985)
DAR Scholarship, Michigan State University (1987-1989)
Caswell Grave Scholarship, Marine Biological Laboratory
Society of General Physiologists Scholarship, Marine Biological Laboratory (1991)
Center Neurobiological Sciences, University Florida (1991)
Don Tucker Memorial Award, AChemS Society (1992)
Graduate Student Travel Award, W.I.N. of the Society for Neuroscience (1992)
Young Scientist Award, I.S.O.T. Society (1993)
ECRO Fellowship, AChemS Society (2000)
Ann E. Kammer Memorial and Frederick B. Bang Fellowships, Marine Biological Laboratory (2000)
Merck/WIN Young Investigator Award, Society for Neuroscience (2003)
Loretta Elias Award for Excellence in Undergraduate Teaching, Florida State University (2004)

PROFESSIONAL AFFILIATIONS:

Society for Neuroscience
Coordinator for WIN Travel Scholarships (1998-2001)
Association for Chemoreception Sciences
Executive Treasurer (2001-2004)
Program Chair Elect (2004-2005)
Program Chair (2005-2006)
Cousteau Society
American Association for the Advancement of Science
Southeast Nerve Net
Meeting Organizer (2001)
Steering Committee (2001-present)
Beta Beta Beta Biological Society
Biophysical Society

FELLOWSHIPS AND GRANTS:

National Institutes of Mental Health (NIMH) Predoctoral Training Grant, 1-F31-MH10124, Excitatory Amino Acid Transduction, 1991-1994. Mentor, Dr. Barry W. Ache

Dan Charitable Fund for Biological Research, Nippon Bank, Japan, 1993.

National Institutes of Health (NIH) Postdoctoral Training Grant, 1-F32-NS-09952, Modulation of Ion Channels, 1995-1997. Mentor, Dr. Irwin B. Levitan

National Institutes of Health (NIH) Area Award, R15DC03319, Chemosensory Transduction in the Vomeronasal Organ, 1997-2000.

Auburn Competitive Grants-In-Aid, Localization and Measurement of Tyrosine Phosphorylation of a Voltage-dependent Potassium Channel in the Olfactory Bulb, 1997-1999.

Auburn Undergraduate Research Award to J.J. Phillips, 1997-1998.

Training Laboratory for Howard Hughes Life Scholar Program for Felicia Murphy, Auburn University, 1998.

Training Laboratory for Howard Hughes Precollege Program for Jennifer Simmen, Auburn University, Summer 1998.

Training Laboratory for Howard Hughes Science Experience for 9th Graders, Auburn University, Winter 1999.

Auburn Graduate Student Research Grant to Davonya Person, 1999-2000.

Auburn Graduate Student Research Grant to Karen Whaley, 1999-2000.

National Institutes of Health (NIH) First Award R29DC03387, Modulation of Olfactory Bulb Neuron Current Properties, 1998-2002.

First-Year Assistant Professor Award, Pheromone Transduction in the Vomeronasal Organ, Florida State University, Summer 2000.

Ann E. Kammer Memorial and Frederick B. Bang Fellow 59604, Sensory Transduction in the Vomeronasal Organ, Marine Biological Laboratory, Woods Hole, Summer 2000.

National Institutes of Health (NIH) First Award Supplement R29DC03387-04S1, Conversion of Presently Funded Research to Mouse Models as Part of the Genome Initiative, 2000-2001

National Science Foundation (NSF) WISC Award, International Exchange Program, Electrical Basis for Chemical Communication in the Tree-dwelling lizard, Liolaemus bellii, Santiago, Chile, 2003.

Florida State University Dissertation Grant to Jessica Brann, 2003-2004.

Florida State University Planning Grant, Pheromone Communication in the Chilean Lizard w/ L.L. Labra, 2004-2005.

Florida State University Dissertation Grant to Beverly Colley, 2004-2005.

Florida State University Planning Grant, Transgenic Tools to Fight Obesity and Terrorism, 2005-2006.

Florida State University Dissertation Grant to Beverly Colley, 2004-2005.

Florida State University Honor's Dissertation Grant to Nicole Stevens, 2005-2006.

National Institutes of Health (NIH) Award F31DC06153 to Graduate Student Jessica Brann, Vomeronasal Signal Transduction, 2003-2005.

National Institutes of Health (NIH) Award R01DC03387-09 (Renewal of R29), Modulation of Olfactory Bulb Neuron Current Properties, 2003-2007.

Howard Hughes Medical Institute (HHMI) Undergraduate Fellowship to Joshua Hoffman, Computational Biology and Mathematics Program, 2005-2007.

National Institutes of Health (NIH) Award T31-DC00044-10, Institutional Predoctoral Chemical Senses Training Grant to Florida State University, serving as co-investigator and training faculty member under Dr. Michael Meredith as P.I., 1995-2010.

National Institutes of Health (NIH) Award T31-NS07437-08, Institutional Predoctoral Neuroscience Training Grant to Florida State University, serving as co-investigator and training faculty member under Dr. Robert Contreras as P.I., 1997-2007.

National Institutes of Health (NIH) Award R13 NS043190-04, Southeast Nerve Net Meeting Grant, serving as co-organizer (D.A. Fadool; Florida State University) with P.A. Anderson (Whitney Laboratory) under P. Katz as P.I. (Georgia State University), 2002-2010.

CAREER RELATED EMPLOYMENT:

Laboratory Assistant, Biology Dept., Albion College (1982-1985); Courses: Botany, Zoology, Comparative Vertebrate Anatomy.

Instructor, Newfoundland Harbor Marine Institute, Big Pine Key, FL (1985); Courses: Marine Communities, Invertebrate Biology and S.C.U.B.A.

Teaching Assistant, University of Rhode Island (1985-1987); Courses: Human Physiology Lab., Mammalian Physiology Lab., Animal Physiology Lab.

Lecturer, University of Rhode Island Summer Session (1986 & 1987); Course: Human Physiology.

Teaching Assistant, Michigan State University (1987-1988); Courses: Human Genetics Lecture, Comparative Physiology Lecture, Developmental Biology Lab.

Laboratory Technician, Michigan State University (1988-1989); Invertebrate Biology, Turf Grass and Pesticide Research.

Research Assistant and NIH Predoctoral Fellow, C.V. Whitney Laboratory, University of Florida (1989-1993); Chemoreception, Electrophysiology, Cell Culture, Protein Chemistry.

Teaching Assistant, University of Florida (1992); Course: Advanced Crustacean Biology Lecture and Lab.

Lecturer, University of Florida (1992); Course: Cellular and Molecular Neurobiology.

Postdoctoral Research Associate, C.V. Whitney Laboratory, University of Florida (1994); Chemoreception, Cell Culture, Single Channel Recording and Analysis.

Postdoctoral Research Associate and NIH Postdoctoral Fellow, Center for Complex Systems, Brandeis University (1994-1996); Neuromodulation, Electrophysiology, Cell Culture, Molecular Biology.

Assistant Professor, Zoology & Wildlife Sciences, Auburn University (1997-1999); Research Focus: Chemical Senses, Neuromodulation, Electrophysiology, Cell Culture, Molecular Biology, Signal Transduction, Ion Channel Structure and Function. Courses: Clinical Physiology (School of Nursing), Mammalian Physiology Lecture and Lab (Graduate/Undergraduate), Special Topics for Undergraduate Research.

Assistant Professor, Program in Neuroscience, Molecular Biophysics, Biological Science Department, Florida State University (1999-2004); Research Focus: Chemical Senses (Vomeronasal and Olfactory Bulb Cell Signaling), Neuromodulation, Tyrosine Kinase Transduction, Electrophysiology, Ion Channel Structure and Function, Brain Insulin Receptor Signaling. Courses: Mammalian Physiology Lecture (Medical School), Vertebrate Physiology (Upper Undergraduate), General Biology for Majors (Beginning Undergraduate), Molecules to Behavior (Graduate), Sensory Systems (Graduate), Directed Individual Study for Undergraduate Research.

Associate Professor, Program in Neuroscience, Molecular Biophysics, Biological Science Department, Florida State University (2005-present); Same duties as above with addition of Molecular Biophysics (Graduate) and HHMI Computational Science Mentor (Undergraduate Research).

OTHER INTERESTS:

S.C.U.B.A., Running, Triathlete, Embroidery, Camping, Horse Back Riding, Gardening, Succulents.

PUBLICATIONS:

D.A. Frey (Fadool). 1987. A chemical analysis of *Homarus americanus* haemolymph with respect to ecdysis. **Thesis dissertation**. University of Rhode Island, Kingston, RI.

Fadool D.A., S.J. Cobb, G. Kass-Simon, and P.R. Brown. 1988. Liquid chromatographic procedures for the analysis of compounds in the serotonergic and octopamine pathways of lobster haemolymph. **J. Chromatogr.** 452: 491-501.

Fadool D.A., P.R. Brown, J.S. Cobb, and G. Kass-Simon. 1989. HPLC analysis of lobster haemolymph over the molt cycle. **Comp. Biochem. Physiol.** 93C(2): 225-230.

Fadool D.A., W.C. Michel, and B.W. Ache. 1991. Sustained primary culture of lobster (*Panulirus argus*) olfactory receptor neurons. **Tissue & Cell** 23(5): 719-732.

Fadool D.A. and B.W. Ache. 1992. Inositol 1,4,5-trisphosphate direct activation of channels in the plasma membrane of olfactory neurons. **Neuron** 9: 907-918.

Fadool D.A., W.C. Michel, and B.W. Ache. 1993. Lobster olfactory receptor neurons in culture express odor sensitivity independently of process formation. **J. Exp. Biol.** 174: 215-233.

Fadool D.A., W.C. Michel, and B.W. Ache. 1993. Cultured lobster olfactory neurons: Utility in signal transduction studies. IN: *Marine Invertebrate Cell Culture: Breaking the Barriers. Proceedings from the International Cell and Tissue Culture Meetings. NOAA Technical Report. NMFS-F/NEC-98.* pp. 16-17.

Fadool, D.A. 1993. Excitatory Signal Transduction Mediated by Inositol Phospholipid Metabolism in Lobster (*Panulirus argus*) Olfactory Receptor Neurons. **Thesis dissertation**. University of Florida and Whitney Laboratory, St. Augustine and Gainesville, FL.

Fadool, D.A. and B.W. Ache. 1994. cAMP and IP₃ mediate opposing transduction cascades in lobster olfactory receptor neurons. IN: K. Kurihara, N. Suzuki, H. Ogawa (eds.) **Proceedings of the 11th International Symposium on Olfaction and Taste**. Springer-Verlag, Tokyo, pp. 178-182.

- Fadool, D.A. and B.W. Ache. 1994. Inositol 1,3,4,5-tetrakisphosphate ($InsP_4$)-gated channels interact with inositol 1,4,5-trisphosphate ($InsP_3$)-gated channels in olfactory receptor neurons. *Proc. Natl. Acad. Sci. USA* 91: 9471-9475.
- Ache, B.W., D.A. Fadool, and A. Zhainazarov. 1995. Patch-clamping lobster olfactory receptor cells. IN: A.I. Spielman and J.G. Brand. (ed.) *Experimental Cell Biology of Taste and Olfaction: Current Techniques and Protocols*. CRC Press, pp. 341-345.
- Fadool, D.A., S.J. Estey, and B.W. Ache. 1995. Evidence that a Gq-protein mediates excitatory odor transduction in lobster olfactory receptor neurons. *Chem. Senses* 20: 489-498.
- Holmes, T.C., D.A. Fadool, and I.B. Levitan. 1996. Tyrosine phosphorylation of the Kv1.3 potassium channel. *J. Neurosci.* 16(5): 1581-1590.
- Holmes, T.C., D.A. Fadool, R. Ren, and I.B. Levitan. 1996. Direct association of src tyrosine kinase with the human Kv1.5 potassium channel mediated by src homology 3 domain. *Science* 274: 2089-2091.
- Fadool, D.A., T.C. Holmes, K. Berman, D. Dagan, and I.B. Levitan. 1997. Multiple effects of tyrosine phosphorylation on a cloned voltage-dependent potassium channel. *J. Neurophysiol.* 78: 1563-1573.
- Bowlby, M.R., D.A. Fadool, T.C. Holmes, and I.B. Levitan. 1997. Modulation of the voltage-dependent potassium channel Kv1.3 by receptor tyrosine kinases. *J. Gen. Physiol.* 110: 601-610.
- Fadool, D.A. and I.B. Levitan. 1998. Modulation of olfactory bulb neuron potassium current by tyrosine phosphorylation. *J. Neurosci.* 18(16) 6126-6137.
- Fadool, D.A. 1998. Tyrosine phosphorylation downregulates a potassium current in rat olfactory bulb neurons and a cloned Kv1.3 channel. *Ann. NY Acad. Sci.* 855:529-532.
- Fadool, D.A., K. Tucker, J.J. Phillips, and J.A. Simmen. 2000. Brain insulin receptor causes activity-dependent current suppression in the olfactory bulb through multiple phosphorylation of Kv1.3. *J. Neurophysiol.* 83: 2332-2348.
- Murphy, F.A., K Tucker, and D.A. Fadool. 2001. Sexual Dimorphism and Developmental Expression of Signal Transduction Machinery in the Vomeronasal Organ. *J. Comp. Neurol.* 432:61-74.
- Fadool, D.A., M. Wachowiak, and J.H. Brann. 2001. Patch-clamp analysis of voltage- and chemosignal-activated currents in the vomeronasal organ. *J. Exp. Biol.* 204: 4199-4212.
- Cook, K.K. and D.A. Fadool. 2002. Two adaptor proteins differentially modulate the phosphorylation and biophysics of Kv1.3 ion channel by Src kinase. *J. Biol. Chem.* 277: 13268-13280.
- Tucker, K. and D.A. Fadool. 2002. Neurotrophin modulation of voltage-gated potassium channels in rat through TrkB receptors is time and sensory-experience dependent. *J. Physiol.* 542.2: 413-429.
- Brann, J.H., J.C. Dennis, E.E. Morrison and D.A. Fadool. 2002. Type specific inositol 1,4,5-trisphosphate receptor localization in the vomeronasal organ and its interaction with a transient receptor potential channel, TRP2. *J. Neurochem.* 83: 1452-1460.

- Wilkinson, B.L., J.S. Elam, D.A. Fadool, and R.L. Hyson. 2003. Afferent regulation of cytochrome-c and active caspase-9 in the avian cochlear nucleus. *Neuroscience*. 120(4): 1071-1079.
- Fadool, D.A., K. Tucker, G. Fasciani, R. Perkins, J.M. Overton, A.M. Parsons, P.A. Koni, R.A. Flavell, and L.K. Kaczmarek. 2004. Kv1.3 channel gene-targeted deletion produces "Super-smeller mice" with altered glomeruli, interacting scaffolding proteins, and biophysical properties. *Neuron* 41(3): 389-404.
- Colley, B.C., K. Tucker, and D.A. Fadool. 2004. Comparison of modulation of Kv1.3 channel by two receptor tyrosine kinases in olfactory bulb neurons of rodents. *Receptors & Channels* 10: 25-36.
- Labra, A., J.H. Brann, and D.A. Fadool. 2005. Heterogeneity of voltage- and chemosignal-activated response profiles in vomeronasal sensory neurons. *J. Neurophysiol.* 94(4):2535-2548.
- Das, P., A.D. Parsons, J. Scarborough, J. Hoffman, J. Wilson, R.N. Thompson, J.M. Overton, and D.A. Fadool. 2005. Electrophysiological and behavioral phenotype of insulin receptor defective mice. *Physiol. & Behavior*. In Press.
- Fadool, D.A. Mammalian Pheromones. 2005. *Nature Life Sciences Electronic Encyclopedia*. Nature Press, In Press.
- Brann, J.H. and D.A. Fadool. Vomeronasal sensory neurons (VSNs) from *Sternotherus odoratus* (Stinkpot/Musk Turtle) respond to chemosignals via the phospholipase C (PLC) system. Submitted.

ANNOTATION OF RESEARCH MANUSCRIPTS COMPLETED FOR TENURE (Contribution from my laboratory, citation index ranking, impact of discovery):

- Fadool, D.A., K. Tucker, J.J. Phillips, and J.A. Simmen. 2000. Brain insulin receptor causes activity-dependent current suppression in the olfactory bulb through multiple phosphorylation of Kv1.3. *J. Neurophysiol.* 83: 2332-2348.
- Annotation: 100% from my laboratory; Tucker = Technician, Phillips = UG student, Simmen = HS student. Impact Factor: 3.743. The significance of this discovery was that little was known about a brain specific insulin receptor kinase and we showed that its expression was developmentally regulated and that a potassium channel was a direct substrate for phosphorylation. We mapped the sites for tyrosine phosphorylation by mutagenesis, used ELISA to quantify change in insulin hormone in the brain upon fasting, used confocal imaging to track the kinase/channel co-expression, and found that sensory deprivation through unilateral naris occlusion altered kinase expression and correlative channel modulation.
- Murphy, F.A., K Tucker, and D.A. Fadool. 2001. Sexual Dimorphism and Developmental Expression of Signal Transduction Machinery in the Vomeronasal Organ. *J. Comp. Neurol.* 432:61-74.
- Annotation: 100% from my laboratory; Tucker = Technician, Murphy = UG student. Impact Factor: 3.848. The significance of this discovery was that we used an alternative model (reptilian) that had a marked degree of sexual dimorphism in body size, to demonstrate that there was dimorphism that existed at the level of the signal transduction machinery for pheromone communication. We used ICC and protein biochemistry to show that there was gender specific and developmental (juvenile vs. reproductive adult) expression patterns in GTP-binding proteins and the transient receptor potential channel (TRPC2).

Fadool, D.A., M. Wachowiak, and J.H. Brann. 2001. Patch-clamp analysis of voltage- and chemosignal-activated currents in the vomeronasal organ. *J. Exp. Biol.* 204: 4199-4212.

Annotation: 95% from my laboratory; Wachowiak = Postdoc in Larry Cohen's laboratory and former colleague of mine during graduate school with Barry Ache, Brann = Graduate student. Impact Factor: 2.418. The significance of this discovery was that we developed a method to isolate vomeronasal sensory neurons to retain pheromone sensitivity in single cell whole-cell voltage-clamp recordings. We were the first to demonstrate whole-cell currents evoked by pheromones and the preparation was extremely favorable in the reptilian model that had a very high hit rate of approximately 30% compared with mammals (2-3%). We also found that the neurons had voltage-activated currents that were sexually dimorphic. The bulk of this research was performed by the principle investigator (electrophysiology) as a research fellowship at the MBL with Brann completing image analysis of the morphology of the neurons and Wachowiak tracking neural connections using rhodamine conjugated dextran.

Cook, K.K. and D.A. Fadool. 2002. Two adaptor proteins differentially modulate the phosphorylation and biophysics of Kv1.3 ion channel by Src kinase. *J. Biol. Chem.* 277: 13268-13280.

Annotation: 100% from my laboratory. Cook = Graduate student. Impact Factor: 6.696. Also received cover art for the issue. This was Ms. Cook's Master's thesis research. Significance of the discovery was we were among the first to demonstrate that adaptor proteins caused perturbation of channel modulation. The impact is that the electrical phenotype of a neuron is dependent not only upon what type of channels are present and how they are modulated, but also what types of adaptor proteins (serving as linker molecules to downstream signaling cascades but without catalytic activity) are expressed and under what developmental or disease conditions. Src is an oncogene that is upregulated during cancer. We used site-directed mutagenesis, electrophysiology, and protein biochemistry to define the protein-protein interactions between the potassium channel and the kinase that were affected by adaptor proteins.

Tucker, K. and D.A. Fadool. 2002. Neurotrophin modulation of voltage-gated potassium channels in rat through TrkB receptors is time and sensory-experience dependent. *J. Physiol.* 542.2: 413-429.

Annotation 100% from my laboratory. Tucker = technician. Impact Factor: 4.65. Significance of the discovery was that BDNF had both a time dependent and sensory experience dependent modulation of the potassium channel. This work was a solid presentation of classical electrophysiological characterization of BDNF modulation by whole-cell patch-clamp recording of olfactory bulb neurons. At the time of publication, the time dependence of BDNF modulation was extremely novel and was being discovered by other laboratories. We combined this with activity dependence to reveal that unilateral naris occlusion (sensory deprivation) altered the phosphorylation of the potassium channel and hence its starting point for potential modulation. This has major implications for the treatment of nerve injury and deprivation models - channel modulation is enhanced following deprivation.

Brann, J.H., J.C. Dennis, E.E. Morrison and D.A. Fadool. 2002. Type specific inositol 1,4,5-trisphosphate receptor localization in the vomeronasal organ and its interaction with a transient receptor potential channel, TRP2. *J. Neurochem.* 83: 1452-1460.

Annotation: 80% from my laboratory. Brann = Graduate student, Dennis = postdoctoral fellow of Morrison. Impact Factor: 4.969. We formed a collaboration with Dennis and Morrison whom are expert anatomists and performed the cryosectioning of the mammalian vomeronasal organ for the study. The significance of the discovery was that we were the first to demonstrate in the field of

chemical senses that the transient receptor potential channel (TRPC2) formed a protein-protein interaction with the inositol-1, 4, 5 trisphosphate receptor (IP3R) and proposed that this complex functioned to regulate calcium release as the final event in the transduction of a pheromone. We also were the first to demonstrate the isoform specific expression of IP3 receptors in the vomeronasal organ; using both ICC and protein biochemical techniques we quantified the expression levels of type i, ii, and iii IP3 receptors in male and female vomeronasal epithelium.

Wilkinson, B.L., J.S. Elam, D.A. Fadool, and R.L. Hyson. 2003. Afferent regulation of cytochrome-c and active caspase-9 in the avian cochlear nucleus. *Neuroscience*. 120(4): 1071-1079.

Annotation: 15% from my laboratory. Wilkinson = rotation graduate student in my laboratory, Hyson was Wilkinson's major professor and Elam prepared the cochlear membranes. Impact Factor: 3.457. The significance of this discovery was that it described a cytochrome C independent activation of caspase that can lead to cell death during deafferentation. Hyson's laboratory has a long standing interest in a different sensory modality (audition) than my laboratory and thus our scientific areas overlap. Like our laboratory, they are electrophysiologists, but do not have any training in protein biochemistry. I assisted this project by providing training and resources to Wilkinson in my laboratory (SDS-PAGE, quantitative densitometry, immunoprecipitation).

Fadool, D.A., K. Tucker, G. Fasciani, R. Perkins, J.M. Overton, A.M. Parsons, P.A. Koni, R.A. Flavell, and L.K. Kaczmarek. 2004. Kv1.3 channel gene-targeted deletion produces "Super-smeller mice" with altered glomeruli, interacting scaffolding proteins, and biophysical properties. *Neuron* 41(3): 389-404.

Annotation: 90% from my laboratory. Tucker, Fasciani = technicians, Perkins = UG honor's student, Parson = graduate student in Overton laboratory, Koni = Postdoctoral fellow in Flavell laboratory that generated the KO mice for another study, Kaczmarek = used the KO mice in another study. Our laboratory completed all the electrophysiology, creation of a double mutant mouse line, anatomy, behavioral testing, and protein biochemistry. Overton laboratory completed the metabolic and ingestive behavior phenotyping. Kaczmarek assisted in both grammatical wording of the manuscript and insightful discussions in the analysis. Impact Factor: 13.846. This study was initiated through the generous gift of KO mice generated at Yale University (last three investigators) to which we fully exploited here at FSU to understand the channel's contribution to olfaction. As we had studied the modulation of this channel for a number of years, we were excited to use a gene-targeted deletion to characterize its role through loss of function. We found that the potassium channel significantly contributed to an array of roles far beyond setting the resting potential - it plays a role in olfactory sensitivity, mitral cell firing frequency, olfactory coding, development of glomeruli in the olfactory bulb, balance of the molecular scaffold regulating the ion channel protein, and may play a major role in weight loss, general metabolism, and the regulation of glucose (diabetes mellitus). The media impact of our finding was far reaching (see web listings at end of cv) and the research will lead us into many new future directions such as weight loss, diabetes, and probing the possibility of using the super smeller phenotype in models of defense/security.

Colley, B.C., K. Tucker, and D.A. Fadool. 2004. Comparison of modulation of Kv1.3 channel by two receptor tyrosine kinases in olfactory bulb neurons of rodents. *Receptors & Channels* 10: 25-36.

Annotation: 100% from my laboratory. Colley = Graduate student, Tucker = technician. Impact Factor: 1.026. The significance of this discovery was to demonstrate our productivity as we converted our studies exploring potassium channel modulation in rat to that in mice. While the results of this study are not very dramatic, they do demonstrate systematically that two different receptor tyrosine kinases (insulin and BDNF receptor kinases) use the channel as a substrate, but at different sites of tyrosine phosphorylation. Although a minor point of the paper, but something we are currently

expanding broadly upon for a future publication, was the finding that the mere presence of the TrkB receptor (in the absence of BDNF stimulation) causes a change in channel expression that is related to altered channel protein trafficking.

Fadool, D.A. Mammalian Pheromones. Nature Life Sciences Electronic Encyclopedia. Nature Press, Submitted.

Annotation: 100% from my laboratory. Impact Factor: Unclassified. This was an invited review for an electronic encyclopedia that sought contributions from over 12,000 scientists worldwide in a vast array of Neuroscience topics. The academic level of the project has three tiers ranging from the beginning undergraduate to the faculty member. It is a project sponsored by Nature.

MEETING PRESENTATIONS:

Fadool D.A., P.R. Brown, G. Kass-Simon. 1990. A chemical analysis of lobster haemolymph with respect to ecdysis. South Eastern Nerve Net (SENN), Cedar Key, FL.

Fadool D.A., W.C. Michel, and B.W. Ache. 1990. Odor and voltage-dependent currents in cultured lobster olfactory neurons. Soc. for Neuroscience, St. Louis, MO.

Fadool D.A., W.C. Michel, and B.W. Ache. 1991. G-proteins and inositol-phospholipid metabolism implicated in odor response of cultured lobster olfactory neurons. Association for Chemoreception Sciences (AChemsS), Sarasota, FL.

Fadool D.A. and B.W. Ache. 1991. Involvement of G-proteins and the second messenger inositol 1,4,5-trisphosphate in signal transduction of cultured lobster olfactory neurons. South Eastern Nerve Net (SENN), St. Augustine, FL.

Fadool D.A. and B.W. Ache. 1992. Immunochemical and single channel support of inositol 1,4,5-trisphosphate as an excitatory transduction mechanism in lobster olfactory neurons. South Eastern Nerve Net (SENN), Tallahassee, FL.

Michel W.C., D.A. Fadool, and B.W. Ache. 1992. cAMP mediates the odor-evoked inhibitory conductance in lobster olfactory receptor cells. Association for Chemoreception Sciences (AChemsS), Sarasota, FL.

Fadool D.A. and B.W. Ache. 1992. Single channel and immunochemical evidence for inositol 1,4,5-trisphosphate as a second messenger in lobster olfactory neurons. Association for Chemoreception Sciences (AChemsS), Sarasota, FL.

Ache B.W., W.C. Michel, and D.A. Fadool. 1992. Functional basis for multiple transduction pathways in lobster olfactory receptor cells. Office of Naval Research, Olfactory Discrimination Program, St. Augustine, FL.

Ache B.W., W.C. Michel, and D.A. Fadool. 1992. Coding odor quality: A role for multiple transduction pathways in olfaction. European Chemoreception Research Organization (Ecro), München, Germany.

Fadool D.A. and B.W. Ache. 1992. IP_3 -activated ion channels in the plasma membrane of olfactory receptor neurons. Soc. for Neuroscience, Anaheim, CA.

Fadool D.A., K.M. Jenkins, B.W. Ache. 1993. Evidence for GTP-binding proteins in the

- transduction cascade of lobster olfactory receptor neurons. South Eastern Nerve Net (SENN), Cedar Key, FL.*
- Ache B., D. Fadool, S. Munger, R. Greenberg, and W. Michel. 1993. Lobster olfactory receptor cells express dual transduction pathways. Office of Naval Research, Olfactory Discrimination Program, St. Augustine, FL.*
- Fadool D.A. and B.W. Ache. 1993. Ionic selectivity and ligand specificity of IP₃-gated channels mediating excitatory transduction in lobster olfactory receptor neurons. Association for Chemoreception Sciences (AChemsS), Sarasota, FL.*
- Fadool D.A. and B.W. Ache. 1993. Ligand and ion specificity of IP₃-gated channels in olfactory receptor cells. International Smell & Taste (ISOT), Sapporo, Japan.*
- Fadool D.A. and B.W. Ache. 1994. Properties of two InsP₃-activated ion channels and their interaction with InsP₂-activated channels in the plasma membrane of olfactory receptor neurons. South Eastern Nerve Net (SENN), St. Augustine, FL.*
- Fadool D.A. and B.W. Ache. 1994. Dual IP₃-gated channels in lobster olfactory receptor neurons have different ionic selectivity and display kinetic modes. Association for Chemoreception Sciences (AChemsS), Sarasota, FL.*
- Estey, S.J., D.A. Fadool, and B.W. Ache. 1995. Two different G-proteins mediate odor-evoked currents in cultured lobster olfactory neurons. Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Fadool, D.A., K.S. Berman, T.C. Holmes, and I.B. Levitan. 1995. Tyrosine phosphorylation down-regulates a cloned voltage-gated K⁺ channel. Soc. for Neuroscience, San Diego, CA.*
- Fadool, D.A., T.C. Holmes, M.R. Bowlby, J.M. Fadool, and I.B. Levitan. 1996. Tyrosine phosphorylation down-regulates outward current in olfactory bulb neurons and a cloned voltage-activated K channel. Chemical Senses Gordon Conference, Newport, RI.*
- Holmes, T.C., D.A. Fadool, R. Ren, and I.B. Levitan. 1996. Direct association of src tyrosine kinase with human Kv1.5 potassium channel mediated by an SH3 domain interaction: Evidence for reciprocal regulation of potassium channel and protein tyrosine kinase activity. Second Messenger Conference, San Diego, CA*
- Fadool, D.A., T.C. Holmes, and I.B. Levitan. 1996. Src tyrosine kinase has multiple functional effects on the cloned voltage-gated K channel, Kv1.3. Soc. for Neuroscience, Washington, D.C.*
- Fadool, D.A. and I.B. Levitan. 1997. Tyrosine phosphorylation modulates current properties in rat olfactory bulb neurons. South Eastern Nerve Net (SENN), St. Augustine, FL.*
- Fadool, D.A. and I.B. Levitan. 1997. Tyrosine phosphorylation down-regulates a potassium current in rat olfactory bulb neurons and a cloned Kv1.3 channel. International Smell & Taste (ISOT), San Diego, CA.*
- Fadool, D.A. and K. Tucker. 1998. Enzymes in partnership with ion channels; phosphorylation in the olfactory bulb. Alabama Academy of Sciences, Mobile, AL.*
- Phillips, J.J., F.A. Murphy, K.T. Tucker, and D.A. Fadool. 1998. Localization of the insulin receptor in the olfactory bulb of the rat. Alabama Academy of Sciences (AAS), Mobile, AL.*

- Phillips, J.J., K. Tucker, and D.A. Fadool. 1998. *Insulin receptor kinase functionally modulates and co-localizes with Kv1.3 channels in defined neurons of the olfactory bulb.* Soc. for Neuroscience, Los Angeles, CA.
- Fadool, J.M, D.A. Fadool, J.C. Moore, and P.J. Linser. 1999. *Characterization of monoclonal antibodies against zebrafish retina.* Association for Research in Vision and Ophthalmology (ARVO), Ft. Lauderdale, FL.
- Murphy, F., K. Tucker, E.E. Morrison, J.C. Dennis, V. Voydanoy, D. Srikumar, J.H. Kehrl, and D.A. Fadool. 1999. *Electrophysiological properties and GTP-binding proteins putatively involved in vomeronasal signal transduction.* Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Tucker, K., J.A. Simmen, and D.A. Fadool. 1999. *Neuromodulation of Kv1.3 by insulin receptor kinase in the olfactory bulb during sensory deprivation.* Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Fadool, D.A., K. Tucker, K.K. Whaley, B. Rimel, S. Wazeerud-Din. 2000. *Multiple tyrosine phosphorylation and sensory-dependent neuromodulation of Kv1.3 by insulin receptor kinase.* Biophysical Society, New Orleans, LA.
- Tucker, K., D.J. Person, and D.A. Fadool. 2000. *Chronic and acute stimulation with neurotrophins differentially modulates olfactory bulb neuron current.* South Eastern Nerve Net (SENN), St. Augustine, FL.
- Fadool, D.A., D.J. Person, and F.A. Murphy. 2000. *Sexual dimorphism in current properties and transducing-related proteins of the vomeronasal organ.* South Eastern Nerve Net (SENN), St. Augustine, FL.
- Cook, K.K. and D.A. Fadool. 2000. *Adaptor proteins regulate phosphorylation and modulation of a potassium channel by v-Src kinase.* South Eastern Nerve Net (SENN), St. Augustine, FL.
- Cook, K.K., T. Nakamura, and D.A. Fadool. 2000. *Differential effects of adaptor proteins on the modulation of an olfactory bulb ion channel by v-Src kinase.* Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Fadool, D.A., F. Murphy, D.J. Person, and K. Tucker. 2000. *Sexual dimorphism and developmental expression of signal transduction machinery in the vomeronasal organ.* Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Tucker K., D.J. Person, and D.A. Fadool. 2000. *Time-dependent neuromodulation of olfactory bulb neurons by receptor-linked tyrosine kinases and related growth factors.* Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Fadool, D.A. and K. Tucker. 2000. *BDNF and insulin modulate ion channel activity in the olfactory bulb linked with development, sensory experience, and food intake.* International Smell and Taste (ISOT), Brighton, England.
- Cook, K.K., T. Nakamura, and D.A. Fadool. 2000. *Protein-protein interactions that regulate the modulation of a voltage-gated potassium channel by tyrosine phosphorylation.* Soc. for Neuroscience. New Orleans, LO.
- Fadool, D.A., K. Tucker, K.K. Whaley, B. Rimel, S. Wazeerud-Din. 2000. *Multiple tyrosine*

- phosphorylation and sensory-dependent neuromodulation of Kv1.3 by insulin receptor kinase. Summer Research Forum, Marine Biological Laboratory, Woods Hole MA.*
- Cook, K.K., T. Nakamura, and D.A. Fadool. 2001. *Involvement of neuronal adaptor proteins in the tyrosine phosphorylation and modulation of a voltage-gated potassium channel. Inagural Arthur M. Sackler Colloquium - Neural Signaling, Washington, DC.*
- Fadool, D.A., M. Wachowiak, and J.H. Brann 2001. *Chemosignal-activated whole-cell currents in the vomeronasal (vn) organ. Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Tucker, K. and D.A. Fadool. 2001. *Brain-derived neurotrophic factor (BDNF) modulates electrical properties of olfactory bulb neurons. Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Tucker, K., Person, D.J., and D.A. Fadool. 2001. *Acute and chronic Brain-Derived Neurotrophic Factor modulation of voltage-gated potassium current in the olfactory bulb. South Eastern Nerve Net (SENN), Wakulla Springs, FL.*
- Brann, J.H., Rogers, J., Wachowiak, M. and D.A. Fadool. 2001. *Sexual dimorphism in the vomeronasal organ (VN) of the common musk turtle, Sternotherus odoratus. Southeast Nerve Net (SENN), Wakulla Springs, FL.*
- Brann, J.H., Wachowiak, M., and D.A. Fadool. 2001. *Chemosignal-activated currents and expression of second messenger pathways in the vomeronasal organ. Society for Neuroscience (SFN), San Diego, CA.*
- Cook, K.K. and D.A. Fadool. 2001. *Involvement of Grb10 and n-Shc adaptor proteins in the modulation of a voltage-gated potassium channel by tyrosine phosphorylation. South Eastern Nerve Net (SENN), Wakulla Springs, FL.*
- Fadool, D.A., B.S. Colley, D. Otten, and L.K. Kaczmarek. 2002. *Glomerular, behavioral and biophysical changes in the olfactory bulb of Kv1.3 knock-out mice. Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Cook, K.K., K. Tucker, and D.A. Fadool. 2002. *Adaptor Proteins Modulate Protein-Protein Interactions and Biophysical Properties of an Olfactory Bulb K⁺ Channel. Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Brann, J.H., J.C. Dennis, E.E. Morrison, and D.A. Fadool. 2002. *Type specific inositol 1,4,5-trisphosphate receptor localization in the vomeronasal organ and its interaction with a transient receptor potential channel, TRP2. Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Brann, J.H. and D.A. Fadool. 2002. *Type-specific inositol 1,4,5-trisphosphate receptor expression in the vomeronasal organ. South Eastern Nerve Net (SENN), Atlanta, GA.*
- Fadool, D.A., B.S. Colley, D. Otten, L.K. Kaczmarek. 2002. *Mice with Kv1.3-targeted deletion show a behavioral, structural, and electrophysiological phenotype with respect to the olfactory system. South Eastern Nerve Net (SENN), Atlanta, GA.*
- Fadool, D.A., K. Tucker, B.S. Colley, L.K. Kaczmarek. 2002. *Kv1.3- null mice show a behavioral, electrophysiological, and glomerular phenotype with respect to the olfactory system. Society for Neuroscience (SFN), Orlando, FL.*

- Brann, J.H., K. Tucker, and D.A. Fadool. 2002. BDNF modulation of Kv1.3 channel function via tyrosine phosphorylation is sensory experience and time dependent. Society for Neuroscience (SFN), Orlando, FL.
- Cook, K.K., J.S. Elam, and D.A. Fadool. 2002. Adaptor proteins n-Shc and Grb10 differentially affect v-src-induced modulation of Kv1.3 through protein-protein interactions. Society for Neuroscience (SFN), Orlando, FL.
- Wilkinson, B.L., D.A. Fadool, J.S. Elam, and R.L. Hyson. 2002. Subcellular localization of cytochrome-C in *N. Magnocellularis* following deafferentation. Society for Neuroscience (SFN), Orlando, FL.
- Lockwood, D.R., D. A. Fadool, and T.A. Houpt. 2003. Increases in phosphorylation levels of the NR1 subunit of the NMDA receptor following conditioned taste version acquisition. Learning and Memory. Cold Spring Harbor, NY.
- Brann, J.H. and D.A. Fadool. 2003. Signal Transduction in the vomeronasal organ of the rat and turtle, *Sternotherus odoratus*. South Eastern Nerve Net (SENN), St. Augustine, FL.
- Perkins, R.M., K. Cole, M. Edsall, E. Elias, G. Fasciani, D. Haynes, G. Richards, and D.A. Fadool. 2003. "Super-smeller" mice and altered olfactory connections in Kv1.3-null mice. South Eastern Nerve Net (SENN), St. Augustine, FL.
- Perkins, R.M., K. Cole, M. Edsall, E. Elias, G. Fasciani, D. Haynes, G. Richards, and D.A. Fadool. 2003. "Super-smeller" mice and altered olfactory connections in Kv1.3-null mice. Beta Beta Beta Biological Honor Society Convention, Washington, DC.
- Brann, J.H. and D.A. Fadool. 2003. Inositol 1,4,5-trisphosphate receptor (IP3R) and Homer expression in the rodent vomeronasal organ. Society for Neuroscience (SFN), New Orleans, LA.
- Lockwood, D.R., D.A. Fadool, T.A. Houpt. 2003. Phosphorylation levels of the NR1 subunit of the NMDA receptor increase following conditioned taste aversion acquisition. Society for Neuroscience (SFN), New Orleans, LA.
- Brann, J.H. and D.A. Fadool. 2004. Protein interactions with the TRPC2 ion channel in the vomeronasal organ. Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Colley, B.S., A. Visegrady, and D.A. Fadool. 2004. Multiple roles of TrkB receptor in modulating Kv1.3 ion channel in the olfactory bulb. Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Perkins, R.M., K. Tucker, M. Meredith, and D.A. Fadool. 2004. Kv1.3-null mutation alters scaffolding proteins, olfactory bulb biophysics, and glomeruli size/abundance. Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Labra, A.L. and D.A. Fadool. 2004. Vomeronasal organ signal transduction in the Chilean lizard. Association for Chemoreception Sciences (AChemS), Sarasota, FL.
- Thompson, R.N., R.M. Perkins, A.D. Parsons, J.M. Overton. 2004. Kv1.3-targeted gene-deletion increases metabolic function and olfactory ability. Association for Chemoreception Sciences (AChemS), Sarasota, FL.

- Brann, J.B. and D.A. Fadool. 2004. Signalplex consisting of TRPC2, Homer, and IP3R3 identified in the VNO. *Society for Neuroscience (SFN), San Diego, CA.*
- Brann, J.B. and D.A. Fadool. 2004. Inositol 1,4,5-trisphosphate signaling in the vomeronasal organ. *International Smell and Taste (ISOT), Kyoto, Japan.*
- Fadool, D.A., K. Tucker, R.N. Thompson, J.M. Overton, and L.K. Kaczmarek. Gene-targeted deletion of a predominant K channel in the olfactory bulb produces "super-smeller" mice with altered glomeruli and electrophysiological properties. *International Smell and Taste (ISOT), Kyoto, Japan.*
- Das, P., A.D. Parsons, J. Scarborough, J. Hoffman, J. Wilson, R.N. Thompson, J. Kennett, J.M. Overton, and D.A. Fadool. 2005. Olfactory physiology and behavior of mice with alterations in metabolism or weight. *Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Marks, D., B.S. Colley, Das, P., and D.A. Fadool. 2005. Adaptor proteins perturb olfactory bulb K channel modulation by receptor tyrosine kinases. *Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Colley, B.S. and D.A. Fadool. 2005. Differential modulation of Kv1.3 and Kv1.5 channels by BDNF and insulin signaling in the olfactory bulb. *Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Brann, J.H. and D.A. Fadool. 2005. Homer, a family of adaptor proteins, is expressed in the vomeronasal organ and olfactory bulb. *Association for Chemoreception Sciences (AChemS), Sarasota, FL.*
- Marks, D., P. Das, B.S. Colley, and D.A. Fadool. 2005. PSD-95, nShc, and Grb10 disrupt Kv1.3 channel modulation by receptor tyrosine kinases. *Society for Neuroscience (SFN), Washington, D.C.*

INVITED SEMINARS:

- Fadool, D.A. 1997. Ion channels in partnership with enzymes: implications for electrical signaling in the olfactory bulb. Invited speaker in the Animal and Dairy Sciences Department, Auburn University, Auburn, AL.
- Fadool, D.A. 1997. Tyrosine phosphorylation down-regulates a potassium current in rat olfactory bulb neurons and a clone Kv1.3 channel. Invited paper selected for inclusion in the Proceedings of International Smell and Taste, New York Academy Sciences, San Diego, CA.
- Fadool, D.A. 1998. Ion channels in partnership with enzymes: implications for electrical signaling in the olfactory bulb. Invited speaker in the Zoology Department, Oklahoma University, Norman, OK
- Fadool, D.A. 1998. Tyrosine phosphorylation signaling cascades modulate ion channel activity in the mammalian brain. Invited speaker in the Botany and Microbiology Department, Auburn University, Auburn, AL.
- Fadool, D.A. 1998. Ion channels in partnership with enzymes: implications for electrical signaling in the olfactory bulb. Invited speaker in the Neurobiology and Anatomy Department, Wake

Forrest Medical School, Winston-Salem, NC.

- Fadool, D.A. 1998. *Ion channels in partnership with enzymes: implications for electrical signaling in the olfactory bulb. Invited speaker in the Pharmacology and Therapeutics Department, University of Florida School of Medicine, Gainesville, FL.*
- Fadool, D.A. 1999. *Ion channels in partnership with enzymes: implications for electrical signaling in the olfactory bulb. Invited speaker in the Physiology Department, University of Kentucky School of Medicine, Lexington, KY.*
- Fadool, D.A. 1999. *Ion channels in partnership with enzymes: implications for electrical signaling in the olfactory bulb. Invited speaker in the Anatomy and Neurobiology Department, Northeastern Ohio College of Medicine, Youngstown, OH.*
- Fadool, D.A. 1999. *Electrical signalling beyond Y2K. Invited Speaker in the Physiology Department, University of Kentucky School of Medicine - Chandler Medical Center, Lexington, KY.*
- Fadool, D.A. 1999. *Ion channels in partnership with enzymes: implication for electrical signaling in the olfactory bulb. Invited Speaker in the Physiology Department, Loyola University Chicago- Chicago Stritch School of Medicine, Chicago, IL.*
- Fadool, D.A. 1999. *Ion channels in partnership with enzymes: implication for electrical signaling in the olfactory bulb. Invited Speaker in the Anatomy and Neurobiology Department, University of Tennessee, Memphis, TN.*
- Fadool, D.A. 1999. *Ion channels in partnership with enzymes: implication for electrical signaling in the olfactory bulb. Invited Speaker in the Biological Sciences Department, Florida State University, Tallahassee, FL.*
- Fadool, D.A. 1999. *Neuromodulation by tyrosine phosphorylation: the role of a brain insulin receptor in the olfactory system. Invited Speaker in the Howard Baker Seminar Series, Biological Sciences Department, Florida State University, Tallahassee, FL.*
- Fadool, D.A. 2000. *A stinky pot: A new model for functional signal transduction in the vomeronasal organ. Marine Biological Laboratory Fellows Seminar Series, Marine Biological Laboratory, Woods Hole, MA.*
- Fadool, D.A. 2002. *A Stinky Pot - Signal Transduction and Electrophysiological Studies in the Vomeronasal Organ. Invited Speaker at the Monell Chemical Senses Center, Philadelphia, PA.*
- Fadool, D.A. 2003. *Chemical communication in the stink pot turtle, Sternotherus odoratus, A behavioral to electrophysiological approach. Invited Speaker in the Physiology & Biophysics Department of the Universidad de Chile, Santiago, Chile.*
- Fadool, D.A. 2003. *How the thinking brain thinks - Ion channel modulation. Invited Speaker in the Florida Agricultural and Mechanical University (FAMU) Engineering Program, Tallahassee, FL.*
- Fadool, D.A. 2003. *Potassium Channel Modulation in Partnership with Tyrosine Kinase Signaling Pathways. Schering-Plough Research Institute. Kenilworth, NJ.*
- Fadool, D.A. 2003. *1) Signal Transduction and Patch-clamp Electrophysiology, 2) Neurobiology: A*

Molecules to Behavior Approach, 3) Behavioral Phenotyping: From Chemical Communication to Neuromodulation. "Grad Made Good" Lecture Series for Biology Department, Albion College, MI

Fadool, D.A. 2003. Chemical Communication in Reptiles - Functional Signal Transduction Machinery in the Vomeronasal Organ. Invited Speaker in the University of Vermont Biological Science Department, Burlington, VT.

Fadool, D.A. 2004. Super smeller mice: From land mind detection to weight loss. Invited Speaker at the first Florida Technology Transfer Conference, St. Petersburg, FL.

Fadool, D.A. 2004. Potassium Ion Channel Function: Roles Beyond Influencing the Membrane Potential. Invited Speaker in the University of California at Irvine (UCI) Physiology and Biophysics Department, Irvine, CA.

Fadool, D.A. 2005. Potassium Ion Channel Function: Roles Beyond Influencing the Membrane Potential. Invited Speaker in the University of Alabama Birmingham (UAB) Department of Physiology, Birmingham, AL.

Fadool, D.A. 2005. Potassium Ion Channel Function: Roles Beyond Influencing the Membrane Potential. Invited Speaker in the University of Michigan Biological Science Department, Ann Arbor, MI.

INVITED ADDRESSES AT MAJOR NATIONAL/INTERNATIONAL EVENTS:

Fadool D.A. and B.W. Ache. 1991. Cultured lobster olfactory neurons: Utility in signal transduction studies. Invited speaker at the Marine Invertebrate Cell Culture Workshop: World Congress on Cell and Tissue Culture, Anaheim, CA.

Fadool D.A. and B.W. Ache. 1993. Opposing second messenger cascades mediate a dual transduction cascade in lobster olfactory receptor neurons. Invited speaker at the International Smell & Taste (ISOT), Sapporo, Japan.

Fadool D.A. and B.W. Ache. 1994. Excitatory olfactory transduction mediated by inositol phospholipid metabolism in lobster. Invited speaker at the Göttinger Neurobiologentagung (German Neurobiology), Göttinger, Germany.

Tucker, K., J.A. Simmen, and D.A. Fadool. 1999. Neuromodulation of Kv1.3 ion channel by insulin receptor kinase and SH2 containing adaptor proteins. Invited Speaker at the South Eastern Nerve Net (SENN) and combined opening of the University of Florida Brain Institute, Gainesville, FL.

Fadool, D.A. 2000. What the nose knows of a stinky pot. Marine Biological Laboratory Gift Shop Luncheon. Invited Speaker at the National Academy of Sciences, Woods Hole, MA.

Cook, K.K., T. Nakamura, and D.A. Fadool. 2001. Involvement of neuronal adaptor proteins in the tyrosine phosphorylation and modulation of a voltage-gated potassium channel. Invited Presentation at the Inaugural Arthur M. Sackler Colloquium - Neural Signaling, Washington, DC.

Fadool, D.A. 2003. Molecular Scaffolds and Interacting Proteins Affect Ion Channel Function in the

Olfactory System. Invited Symposium Speaker at the twenty-fifth anniversary of the Association for Chemoreception Sciences (AChemS) Annual Conference, Sarasota, FL.

Fadool, D.A. 2003. K Channel Regulation by Tyrosine Phosphorylation. Session Chair and Invited Speaker at the Summer FASEB Conference: Ion Channel Regulation. Tucson, AZ.

Fadool, D.A. 2003. Potassium Ion Channel Function: Roles Beyond Influencing the Membrane Potential. Keynote Address at the Toronto Western Research Institute Neuroscience Conference. Toronto, Canada.

Fadool, D.A. 2004. Super smeller mice: From Defense to Weight Loss. Radio Guest on the British Broadcasting Service (BBC), Tallahassee, FL., USA to Oxford, England connection.

Fadool, D.A. 2004. Super smeller mice: From Defense to Weight Loss. Invited Speaker at the Britain Ministry of Defense, Sevenoaks, England.

Fadool, D.A. 2005. Modulation by phosphorylation and protein-protein interactions in the olfactory bulb: A study combining human cell lines and transgenic mice. Invited Speaker at the Modulation of Chemical Senses Conference. Jackson Hole, WY.

Fadool, D.A. 2005. Neuromodulation in the olfactory bulb, K channel roles beyond the resting potential. Invited Symposia Speaker at the Signalling in Sensory Systems. Twenty-fifth Blankenese Conference, Hamburg-Blankenese, Germany.

SERVICE-ORIENTED ACTIVITIES:

1) I am a reviewer for Journal of Neuroscience, Biological Bulletin, Journal Biological Chemistry, Journal of Neurochemistry, Neuroscience, Chemical Senses, Neuropharmacology & Exp. Therapeutics, Journal of Herpetology, Molecular Pharmacology, and the Journal of Comparative Physiology.

2) I served as an outside grant reviewer for a special topics graduate course at the University of Florida. Graduate students select qualified reviewers from their field to evaluate their NIH and NSF grant proposals prior to actual submission to the federal institutes.

3) Regional high school science fair judge in Biology and Physics (1992 - present).

4) Taught computer class to preschool and elementary aged children (drawing, alphabet, international emails to learn about other countries, telling time, math, geography) using outdated hardware from the laboratory and outfitting it with internet shareware programs as a trial basis.

5) Special exercises/presentations to elementary aged children on the "Brain - Learning and Memory" as part of the Decade of the Brain awareness

6) I served as a reviewer / coordinator for the Society of Neuroscience Women in Neuroscience Travel Award Applications sponsored by WIN of the SFN and Eli Lilly Corporation (1998-2001).

7) University Committees - Library Committee, Faculty Welfare Committee, NSF-EPSCoR and Howard Hughes Proposal Writing as Interdepartmental Project Proposals, Scientific Advisor for Zoology Majors, Faculty Search Committees for Physiology Instructor and for Director of General Biological Sciences, Member of the Board of Admissions FSU College of Medicine, Faculty Evaluation

Committee, Neuroscience Area Representative for Graduate Studies, Neuroscience Training Committee, Neuroscience Graduate Recruitment Chair, and Membrane Biophysics Seminar Committee.

8) AChemS Society - Career/Scientific Mentor (1996-2000), Program Committee (2000), Executive Treasurer(2001-2004), Management Interviewing Committee (2003-2004). Southeast Nerve Net Society - Meeting Organizer (2001)

9) Science Olympiad Organizer for State Wide Junior High and High School Biological Sciences Competition

10) Scientific Consultant for Saturday High School Biology Experiences - Sponsored by Howard Hughes Medical Institute

11) I served as an adhoc outside grant reviewer for the National Institutes of Health Minority Biomedical Research Support Program (NIH- MBRS) (Spring 1999), for the Israel Science Foundation (Spring 2000), for the National Science Foundation (Fall 2001), and for the National Institutes of Health F03B NRSA Study Section (Fall 2001). I served on the National Science Foundation Course, Curriculum, and Laboratory Improvement (CCLI) Study Section (Spring 2004).

12) I am a permanent member of the F03B (Cell and Molecular Neuroscience) National Institutes of Health NRSA Study Section (Spring 2002-present).

13) I served as the Neuroscience Area Representative for the Program in Neuroscience Graduate Admissions, Training, and Recruitment (2001-2002).

14) I am on the board of admissions for the Florida State University College of Medicine (1999-present). I served on the executive board for the Program in Neuroscience (2003-2004) and the Department of Biological Sciences (2002-2003) for Florida State University. I serve on the new Life Science Building Committee for the Department of Biological Sciences (2004-2007).

15) I served as an adhoc grant reviewer for the National Institutes of Health Nephrology/Urology Special Emphasis Panel (R01 and R21 Grants) (ZRG1 SSS-M 05), Spring 2003.

16) I serve as an adhoc grant reviewer for the National Institutes of Health for the NINDS Study Section NSD-C (Program Project and R21 Grants), Spring 2003.

17) I am a permanent member of the NIDCD (Sensory Systems) National Institutes of Health NRSA Study Section (2005-2008).

18) I established the Sigma Tau Chapter for the Biological Honor Society, Beta Beta Beta, at Florida State University with Dr. David Gowan. Dr. Hank Bass and I currently serve as co-faculty advisors for this organization (2002- present).

19) Middle and high school science fair judge in mathematics, medicine, and ecology at North Florida Christian, Tallahassee, FL and Maclay School, Tallahassee, FL (2001-present).

20) Provided "Biology of Reptiles" day visit to first grade school children as part of their unit on animals in the rainforest. I made arrangements to bring live animals and reptile skeletons for a hands-on discussion. Hawksrise Elementary, Tallahassee, FL (2000).

21) Provided "Biology of Reptiles" day to visit six elementary school classrooms (first and third graders) as part of their unit on animals in the rainforest. I made arrangements to bring live animals.

I made arrangements to bring live animals and reptile skeletons for a hands-on discussion. Maclay School, Tallahassee, FL (2003).

22) I taught an advanced eight grade science student, Ms. Sarah Steiss, light microscopy and associated software for digital photography so that she could have access to technical equipment needed for her science fair project on the wear and degradation of contact lenses. She competed with her science fair project at the local, regional, and state science fair in Florida. Maclay School, Tallahassee, FL (Spring 2004).

23) Provided "SeaStar Dissection" laboratory to three elementary school classrooms (fifth graders) as part of their oceanography unit. Coordinated assistance for this activity by utilizing Tri Beta Honor student volunteers. Maclay School, Tallahassee, FL (2004-present).

TEACHING PHILOSOPHY:

I feel strongly from personal experience that both research and teaching are needed to meet the quality education for students today and the larger goals of intellectual development of an academic institution. I believe research stimulates fresh cognitive processes, imagination, and perseverance, and teaching drives creativity, organizational skills, and energy.

My teaching philosophy is based upon the precept that any student at an institution of higher education is capable of learning the most difficult concept if that student understands the basic principles on which the tenet is based. It is my responsibility as the instructor, not merely to present the student with volumes of information, but rather to use the information available to foster critical thinking, thus leading the student to a greater understanding of the material. The best manner of practicing this philosophy is by providing highly specialized training in the biological sciences in the context of lecture and laboratory. There is no learning replacement for participation in lectures to reinforce major classical concepts and to present the discovery of new ones. I interchangeably use a variety of visual styles; chalk board, overhead, demonstrations, computer, VCR, slide, and film, depending upon the concept, level of student, and discipline. I believe in reading as a tool for learning, from heavy dependence on textbook material at the introductory level, to comprehensive reviews for advanced students, to primary references (journals) for speciality readings. Foremost I believe one learns most deeply and with the greatest retention by hands-on experience. I believe that this experience should be diverse but progressive. One should begin with the participation in carefully designed laboratory exercises, and move to well-defined experiments utilizing living systems, intensive short-term investigations with a trained research scientist, and eventually, long-term, original research with supervision by an advisor and with formal presentation of the project. Once supplied with the classic foundations of biology and chemistry, a student can comprehend complex systems, make comparisons across fields, and make quantitative judgements. The biggest satisfaction as an instructor comes when a student can analytically question a principle by drawing information from different disciplines combining course work, literature, and laboratory experience.

I feel that it is very important as a professor to keep focused on the career goals of each student and how he or she can attain these objectives. These may be very different dependent upon the course one is instructing or the research project one is directing, the sophistication of the student, and may change with time. It is a professor's responsibility to continually challenge each student intellectually while preparing them for their goals, and provide enthusiasm and drive for the student until he or she is self-motivated. Examination is the most classical way of providing this motivation but continual commitment to their development is equally valuable.

MAJOR LECTURE AND LABORATORY COURSES (Teaching Evaluations Available Upon Request):

<i>Semester</i>	<i>Course #</i>	<i>Course Name</i>	<i>Enrollment</i>	<i>Academic Level</i>
Spring 2000	BMS5500	Mammalian	37	Graduate and
Spring 2001		Physiology II	37	Medical School
Spring 2002	PCB3743	Vertebrate	104	Upper Undergraduate
Spring 2003		Physiology	92	
Fall 2005			117	
Fall 2002	BSC2010	Biological	55	Beginning Undergraduate
Fall 2004		Science I	110	
Continuous	BSC5936 BSC4900	DIS (UB, MS)	1-5	Undergraduate & Graduate Directed Study
Continuous	BSC5936	Sensory Biology Chemical Senses & Vision Seminar	10-15	Graduate & PostDoc
Spring 2005	BSC5936	Membrane Biophysics	5	Advanced Graduate
Fall Continuous	PSD6070	Molecules to Behavior	7-12	Neuroscience Graduate

DESCRIPTION OF SCHOLARLY PROGRAM:

The focus of my laboratory research is split across two projects, both of which are designed to determine the sensory signal transduction mechanisms operating in the olfactory system at an electrophysiological and molecular/cellular level.

Project 1: The broad, long-term objective of this project is to augment our understanding of the brain's ability to encode external information and to heighten our knowledge of the degree of sensory processing that takes place in the peripheral nervous system prior to its receipt at higher brain centers. Second messenger and related transduction cascades are a fundamental feature of electrical signalling, cell communication, and gene expression/regulation not only for cells that process sensory information but virtually for all cells across an array of systems. The specific aim of this research is to discern the functional mechanism by which chemosignals will trigger an electrical response in the vertebrate vomeronasal receptor cell (VRN) membrane; the physiological basis for sensory transduction in the vomeronasal organ (VNO). Few studies have described the electrophysiological properties of vertebrate VRNs that must transduce chemical signals involved in the universal life processes of food finding, social interaction, and reproduction, and which are ultimately involved in the execution of species-typical behaviors and the initiation of neuroendocrine changes. This research will expand upon the body of biophysical properties known for these neurons, and apply single channel recording, whole-cell perfusion of G protein antibodies, and patch-clamp recording techniques with

biochemical and immunocytochemical verification of the VNO transduction components as a means for delineating the FUNCTIONAL odorant to electrical transduction in the vertebrate vomeronasal olfactory system. A combined biophysical/biochemical/immunochemical approach for dissecting the molecular details of VNO transduction should provide new data concerning VNO function, which is currently unknown in humans.

Project 2: The designed research is a multidisciplinary analysis of the modulation of potassium currents in granule and mitral cells of the olfactory bulb. The broad, long-term objective of this research is to elucidate how neurotrophins and growth factors can utilize ion channels as substrates for phosphorylation to give rise to short-term and long-term plastic changes in synaptic efficacy or to aid in the establishment of neural circuits in the olfactory bulb. Understanding the general principles governing these transduction cascades and the involvement of ion channels will provide information of how protein kinases and protein phosphatases contribute to the onset or severity of specific neuronal diseases, such as Alzheimer's, or how uncontrolled signaling of these enzymes leads to deregulated cell proliferation and diseases such as cancer and diabetes. Because of the unique trophic and regenerative capacity of neurons in the olfactory system, continual expression of neuromodulators could alter patterns of electrical excitability in addition to their well studied roles in growth and differentiation. The specific aims of this proposal are to characterize using patch-clamp electrophysiology how receptor-linked tyrosine phosphorylation signaling in the olfactory bulb is altered by sensory experience, patterned electrical stimulation, and trophic factor infusion. By utilizing the cloned, olfactory bulb potassium channel Kv1.3 as a parallel model, combined biochemical measurement of kinase-induced tyrosine phosphorylation, co-immunoprecipitation, and molecular mutagenesis will elucidate the mechanistic details of how ion channels form molecular scaffolds with kinases and adaptor proteins through discrete protein-protein interactions at SH2, SH3, PDZ, and PTB domains. Gene-targeted deletions in Kv1.3 channel, insulin receptor kinase, and TrkB kinase will provide mechanistic details for the role for tyrosine phosphorylation signaling in olfaction and for neuromodulation in the CNS in general, as defined by loss of function experiments (behavioral, biochemical, electrophysiological) using knock-out mice strains. The proposal will provide new important information regarding the integration of signaling molecules by construction of protein-protein interactions with ion channels. Modulation of ion channel function would thus be dependent upon the repertoire of signaling proteins expressed in a given neuron, a background that could change with sensory experience or electrical patterning.

Two New Proposals That are Currently Under Review -

Project 3 (Submitted to the National Science Foundation): The specific work in this project focuses upon the functional regulation of chemo-discrimination in the vomeronasal organ (VNO). We propose that the properties of the VNO or the composition of the chemosignals that it detects, are not static, but may change as a consequence of internal or external factors such as ontogeny and seasonality. Secondly, the identified transduction channel, the **transient receptor potential channel 2 (TRPC2)**, likely does not operate in isolation, but is regulated by protein-protein interactions with scaffolding receptors and proteins. Such regulation may provide flexibility in transducing chemical information from different body sources or that may change seasonally in concordance with the biology of the animal. This project will take a multidisciplinary approach from behavior to electrical signaling to understand how chemical communication is regulated at the level of the ion channel to accommodate whole animal life changes during reproductive seasons. 1) We will determine whether seasonality or different body sources affects the chemical discrimination of pheromones. Discrimination will be ascertained using an integrative approach with overlapping data acquired from pheromone-evoked behavioral displays, spatial patterns of neuronal activation, and single channel recording using electrophysiology. 2) Molecular mutagenesis, gene-targeted deletion, and co-immunoprecipitation will be used to define a functional role for the ion channel complex surrounding the transduction channel. The objective of our proposal is to elucidate the cellular mechanism underlying innate, species-specific behaviors governed through transduction of pheromones in the

VNO.

Project 4 (Submitted to Planning Enhancement Award, Florida State University): *The thinking brain passes around electrical signals that are generated by a single class of proteins in the membranes of nerve cells (neurons). These specialized proteins are called ion channels. The passage of charge through an ion channel creates the basis, therefore, for electrical signals that relay information to and within the brain. When ion channels are modified by biochemical events in the neuron, then the configuration or shape of the ion channel is altered and it conducts a different electrical signal. We are exploring how the disease Diabetes mellitus affects the electrical signals created by ion channel proteins in the brain. Because of the recent increase in obesity in the American people, the incidence of this metabolic disorder is on the rise. We have evidence that insulin suppresses ion channel activity of channels that normally conduct potassium ions, and the process is mediated by biochemically altering the channel (and hence its shape) at discreet locations, which we have tested by creating mutant ion channels that lack the effect. We have access to a number of transgenic mouse lines in which the mice are lacking either the insulin receptor (similar to a diabetic patient) or the potassium ion channel protein (have altered brain structures and unique behaviors that correlate well with a brain that can better resolve information), and also mice that have a defect in a gene which results in the animal acquiring obesity. We know that the mice that are missing the potassium channel, eat more frequently and do not gain weight. Thus through genetic crossing, we would like to understand the relationship between Diabetes, weight gain, and electrical activity of the potassium channel. We will propose metabolic testing of these animals, behavioral screens, recording on brain slices of these animals to access their electrical profiles, analyzing the ion channel and related signaling proteins (kinases, adaptor proteins) in these animals, and finally to chronically dialyze these animals with insulin to specific brain regions to understand how this hormone treatment might alter metabolism, behavior, and electrical signaling of the brain.*

GRADUATE STUDENTS AND POSTDOCTORAL ASSOCIATES:

Graduate students whose work has been completed -

Served as Major Professor:

	Degree	Year	Department	Current Status
Jacklyn Moore	M.S.	2000	Science Education (Auburn)	High School Teacher St. Louis, MO.
Davonya Person	M.S.	2000	Zoology/Wildlife (Auburn)	Laboratory Director Auburn Physiology Dept., Auburn, AL.
Karen Whaley (Cook)	M.Sc.	2001	Biological Science Program in Neuroscience (FSU)	Staff Electrophysiologist Pfizer, Inc. Groton, CT.
Jessica Brann	Ph.D.	2005	Biological Science Program In Neuroscience	Postdoctoral Fellow Columbia University

**Chemical Senses Institutional Training Grant to FSU, NIH NIDCD
Individual NRSA Recipient, NIH NIDCD**

Received Best Graduate Student Award, Biological Science Department
Received Best Manuscript Award, Biological Science Department
Received Robinson Grant, Tallahassee Memorial Hospital & Robinson Family
Don Tucker Memorial Award, Best Graduate Presentation, AChemS Society
President of FSU COGS
Society for Neuroscience Selected Presentation to Display in Public Press Book

Served as Postdoctoral Fellowship Mentor:

Andras Visegrady, Ph.D. Staff Electrophysiologist, Computational Modeling, In Vitro Systems; Reiner, Inc. Budapest Hungary.

Paromita Das, Ph.D. Staff Electrophysiologist, Research Associate, Medical University of Ohio, Toledo, OH.

On the Committee:

	Degree	Department	Current Status
<i>Husam Jumaa</i>	<i>Ph.D.</i>	<i>Chemistry Dept.</i>	<i>Interviewing in Pharmaceutical Chemistry</i>
<i>Alexander Nicholas</i>	<i>Ph.D.</i>	<i>Psychology Dept. Program In Neuroscience</i>	<i>Postdoctoral Fellow at Harvard University</i>
<i>Mike Selix</i>	<i>Ph.D.</i>	<i>Biological Science Program In Neuroscience</i>	<i>Postdoctoral Fellow at University of Pennsylvania</i>
<i>Deepa Srikumar</i>	<i>M.S.</i>	<i>Physiology/ Pharmacology At AU Vet School</i>	<i>Doctoral Program at NIH, Bethesda, MD.</i>
<i>Vidya Mamdipudi Ph.D.</i>		<i>Zoology/Wildlife</i>	<i>Postdoctoral Fellow In India</i>

Current graduate students -

Serving as Major Professor:

	Degree	Department	Current Status
<i>Beverly Colley Year 4</i>	<i>Ph.D.</i>	<i>Biological Science Program In Neuroscience</i>	<i>Gathering data/writing Entered Candidacy</i>
<i>Received Robinson Grant, Tallahassee Memorial Hospital & Robinson Family</i> <i>Received Florida State University Dissertation Grant</i>			
<i>David Marks Year 3</i>	<i>Ph.D.</i>	<i>Biological Science Program In Neuroscience</i>	<i>Courses/Lab Training Preparing Qualifiers</i>
<i>Received Robinson Grant, Tallahassee Memorial Hospital & Robinson Family</i>			
<i>Kristal Tucker Year 1</i>	<i>Ph.D.</i>	<i>Biological Science Program in Neuroscience</i>	<i>Gathering data/Courses</i>

Chemical Senses Institutional Training Grant to FSU, NIH NIDCD**Serving as co-major professor:**

None

On the committee:

Jessica Kennett	Ph.D.	Biological Science Program in Neuroscience	Gathering data/Courses
Kersten Schroeder	Ph.D.	Chemistry Dept.	Gathering data Entered Candidacy
Fayi Wu	Ph.D.	Biological Science	Gathering data Entered Candidacy

Current Postdoctoral Fellows:

Biju KC Chandu, Ph.D. - Using genetically-modified mice to seek changes in neural projections, circuitry, and olfactory receptor expression patterns in Kv1.3-null background as related to increased olfactory behavior, obesity, and aging.

Honors and Undergraduate Research Students:

Name	Current Status	Tenure
Virginia Bevard	FSU Undergraduate	1 semester
Kendra Cole	South Florida Medical School	2 semesters
Mathew Edsall	FSU Undergraduate	2 semesters
Elliot Elias	FSU Undergraduate	2 semesters
Deitra Haynes	FSU Undergraduate	5 semesters
Joshua Hoffman	FSU Undergraduate	4 semesters
Received Howard Hughes Computational Award		
Omar Monteavaro	FSU Undergraduate	2 semesters
Jeffery Ott	FSU Undergraduate	1 semester
Dan Otten	Animal Care Director Charles River Company	4 semesters
Randa Perkins	FSU College of Medicine	5 semester
Received National Research Award at the TriBeta Honor Society Convention		
Received Best Presentation Award at the Southeast Nerve Net Meeting		
Frank Price	FSU Graduate School Costal Environmental Studies	2 semesters
Grant Richards	Cornell Veterinary School	3 semesters
John Rogers	FSU Undergraduate	3 semesters
Chad Thorson	Medical School	8 semesters
Mihn Vih	FSU Undergraduate	1 semester
Clint Allen	Auburn Undergraduate	1 quarter
Cary Gannon	Physician's Assistant Program at USA	1 quarter
Ryan Hanson	Technician at University of Cincinnati	2 quarters
Sam Herring	Medical School UAB	1 quarter

Margaret L Janer	Medical School UNC	2 quarters
Jackie Moore	High School Science Teacher St. Louis, MO. Fifth Year Program for High School Teachers	5 quarters
Felicia Murphy	ER/ICU Nurse Warners Robins, Georgia	6 quarters
Received Howard Hughes Life Scholarship		
Cary Phillips	Medical School UAB	1 quarter
Joseph Jason Phillips	Residency Program, Wake Forest University	3 quarters
Received Auburn Undergraduate Research Award (twice)		
Brian Rimel	Peace Core, Africa Technician at Florida State University Infectious Disease Graduate Program, Tulane University	2 quarters
Jeremy Scarpace	Dental School Univ. FL	1 quarter
Frank Springfield	Auburn Undergraduate	1 quarter
Andrew Swartzler	Commissioned Officer US Armed Forces	2 quarters
Deanne Tabb	AU Pharmacy PhD Program	1 quarter
Trey Tabb	Pharmacist	1 quarter
Brian Valentine	Auburn Undergraduate	1 quarter
Suliaman Wazeerud-Din	ER Technician Atlanta, Georgia	3 quarters
Ginger Donae Webster	Medical School, Howard University Auburn Undergraduate	1 quarter

Served On Undergraduate Honor Thesis Committee:

Kathryn Smily	Chemistry Honors
Ken Winnard	Biological Science Honors
Christy Baker	Nutrition Honors

Fadool Laboratory Theses Completed:

Education M.S.: Jacklyn Moore, "Capturing student interest in internet-based teaching instruction - web site design." M.S. May 2000. Ms. Moore is a high school biology teacher in St. Louis, MO.

M.S.: Karen Kaylyn Cook, "Two adaptor proteins differentially modulate the phosphorylation and biophysics of Kv1.3 ion channel by src kinase." M.S. May 2001. Ms. Cook was the recipient of a Florida Neuroscience Fellowship. Ms. Cook and I co-authored a manuscript together and her work was featured on the journal cover. Ms. Cook is a staff electrophysiologist at the third leading pharmaceutical company in the United States, Pfizer, Inc. She is a scientist in their basic science and discovery division, Groton, CT.

B.S. Honors in the Major: Randa Perkins, "Axonal targeting of the olfactory bulb in Kv1.3 knockout mice." B.S. April 2004. Ms. Perkins was the recipient of the Anderson Award at the Tri Beta Honor Society Regional Convention in Washington DC for the third best poster presentation in the southeast district. She was also recognized as the best graduate presentation award at the Southeast Nerve Net Meeting, even though she was still an undergraduate. Ms. Perkins and I co-authored a manuscript together containing part of her thesis research. She is currently a medical student at the FSU College

of Medicine.

Ph.D.: Jessica Brann, "Sensory transduction in the vomeronasal organ: The role of protein interactions." Ph.D. July 2005. Dr. Brann was the recipient of both an institutional NIH training grant in the Chemical Senses to Florida State University as well as an individual NRSA recipient from the NIDCD at NIH. She received the best graduate student award from the Department of Biological Science and the best Manuscript award also from the department. She has twice received a Robinson Grant from our local hospital on behalf of an endowment in the neurosciences left by the Robinson Family, whom first employed the use of MRI in a clinical setting in the U.S. Dr. Brann was recognized nationally by the AChemS Society for the best graduate presentation award, the Don Tucker Memorial Award. Here at Florida State, she was very involved campus wide in graduate student research and operations by serving as the President of COGS, the university wide organization for graduate education. Dr. Brann joined the laboratory of Dr. Stuart Firestein at Columbia University for Postdoctoral Training.

ADDITIONAL USEFUL INFORMATION:

Teaching, Research, and Laboratory pages (as well as links to all manuscript pdfs) can be found at - <http://www.neuro.fsu.edu/faculty/fadool>

Recognition of Research can be found at -

<http://www.spiegel.de/wissenschaft/mensch/0,1518,285106,00.html> (Spiegel Magazine)

<http://www.nature.com/nsu/040202/040202-9.html> (Nature)

http://www.sciencentral.com/articles/view.php3?language=english&type=article&article_id=218392184 (Science Central - ABC News Clip Movie)

http://www.albion.edu/ac_news/AlbionExplorations2003/fadool.asp (Albion College)

<http://www.womeninneuroscience.org/custom/youngaward.html> (WIN, Society for Neuroscience)

REFERENCES (Recommendations can be made available upon request):

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