

JESSICA L. BOLTON, Ph.D.

University of California-Irvine
B180 Med Sci I
Irvine, CA 92697-4475
972-816-6626
jessica.bolton@uci.edu
www.jessicalynbolton.com

EDUCATION

Ph.D. in Psychology and Neuroscience

Duke University
Systems & Integrative Neuroscience Program
Certificate in College Teaching
Dissertation: *Developmental programming of brain and behavior: A role for the innate immune system of the placenta and brain*
Faculty Mentor: Dr. Staci D. Bilbo

May 2015
Durham, NC

B.S. in Animal Behavior; Minor in Chemistry

Southwestern University
Summa cum laude
Capstone Research: *Female mate choice and differential reproductive success in rats*
Faculty Mentor: Dr. Fay A. Guarraci

May 2010
Georgetown, TX

PROFESSIONAL APPOINTMENTS

Postdoctoral Fellowship in Neuroscience

University of California-Irvine
Departments of Pediatrics and Anatomy/Neurobiology
Faculty Mentor: Dr. Tallie Z. Baram

June 2015 – Present
Irvine, CA

FUNDING AND HONORS

University of California-Irvine Postdoctoral Research Symposium, TED-style Talk Competition- 2nd place, October 2017
Keystone Symposia Scholarship, funded by the Elkes Foundation, 2016, \$1,200 travel award
George E. Hewitt Foundation for Medical Research Postdoctoral Fellowship, October 2015- September 2018, \$50,000/year stipend + \$5,000/year for benefits and travel funds
Organization for the Study of Sex Differences Elizabeth Young New Investigator Award, 2015, \$1,000 travel award
Duke University Dean's Award for Excellence in Mentoring, 2015, \$2,000 award
New York Academy of Sciences Early Career Investigator Travel Fellowship, 2014, \$820 travel award
Duke Consortium of Neuroscience Graduate Programs Brainaroo "Most Interdisciplinary" Poster award, 2013, 2014; "Best in Show" Poster award, 2015
Society for Behavioral Neuroendocrinology Travel Award, 2013, \$500 travel award
Duke Women in Science & Engineering Research Symposium Best Poster Presentation, 2012, \$100 travel award
Society for Women's Health Research Donald G. and Darel Stein Fellowship, 2012, \$1,000 travel award
National Science Foundation Graduate Research Fellowship, Duke University, June 2011-May 2014, \$30,000/year stipend
James B. Duke Fellowship, Duke University, September 2010- May 2014, \$5,000/year stipend
National Science Foundation Research Experience for Undergraduates, Duke University, May-Aug. 2008, \$4,000 stipend

PUBLICATIONS

Bolton, J. L.*, Ruiz, C.*, Rismanchi, N., Sanchez, G., Castillo, E., Huang, J., Baram, T. Z., & Mahler, S. V. (*Under Review*). Early-life adversity induces persistent cocaine anhedonia.

*Co-first authorship.

Bolton, J. L., Molet, J., Regev, L., Chen, Y., Rismanchi, N., Haddad, E., Yang, D. Z., Obenaus, A., & Baram, T. Z. (In Press). Anhedonia following early-life adversity involves aberrant interaction of reward and anxiety circuits and is reversed by partial silencing of amygdala corticotropin-releasing hormone gene. *Biological Psychiatry*. doi: 10.1016/j.biopsych.2017.08.023.

*Featured on the cover of the issue

Bolton J. L., Wiley, M., Ryan, B., Truong, S., Swamy, G., Newgard, C., O'Connell, T., Sanchez, C. L., Kuhn, C., Bilbo, S. D., & Simmons, L. A. (2017). Perinatal Western-type diet and associated gestational weight gain alter postpartum maternal mood. *Brain and Behavior*. doi: 10.1002/brb3.828.

Bilbo, S. D., Block, C. L., **Bolton, J. L.**, Hanamsagar, R., & Tran, P. K. (2017). Beyond infection- Maternal immune activation by environmental factors, microglial development, and relevance for autism spectrum disorders. *Experimental Neurology*, doi: 10.1016/j.expneurol.2017.07.002.

Hanamsagar, R., Alter, M. D., Block, C. S., Sullivan, H., **Bolton, J. L.**, & Bilbo S. D. (2017). Generation of a microglial developmental index in mice and in humans reveals a sex difference in maturation and immune reactivity. *GLIA*, doi: 10.1002/glia.23176.

Bolton, J. L.*, Marinero, S.*, Hassanzadeh, T., Natesan, D., Le, D., Belliveau, C., Mason, S. N., Auten, R. L., & Bilbo, S. D. (2017). Gestational exposure to air pollution alters cortical volume, microglial morphology, and microglia-neuron interactions in a sex-specific manner. *Frontiers in Synaptic Neuroscience*, doi: 10.3389/fnsyn.2017.00010.

*Co-first authorship

Bolton, J. L., Molet, J., Ivy, A., & Baram, T. Z. (2017). New insights into early-life stress and behavioral outcomes. *Current Opinion in Behavioral Sciences*, 14C, 133-139.

Singh-Taylor, A., Molet, J., Jiang, S., Korosi, A., **Bolton, J. L.**, Noam, Y., Simeone, K., Cope, J., Chen, Y., Mortazavi, A., & Baram, T. Z. (2017). NRSF-dependent epigenetic mechanisms contribute to programming of stress-sensitive neurons by neonatal experience, promoting resilience. *Molecular Psychiatry*, doi: 10.1038/mp.2016.240.

Chen, Y., Molet, J., Lauterborn, J. C., Trieu, B. H., **Bolton, J. L.**, Patterson, K. P., Gall, C. M., Lynch, G., & Baram, T. Z. (2016). Converging, synergistic actions of multiple stress hormones mediate enduring memory impairments after acute simultaneous stresses. *The Journal of Neuroscience*, 36, 11295-11307.

*Featured on the cover of the issue

Bolton, J. L., & Bilbo, S. D. (2014). Developmental programming of brain and behavior by perinatal diet: Focus on inflammatory mechanisms. *Dialogues in Clinical Neuroscience*, 16, 307-320.

Guarraci, F. A., & **Bolton, J. L.** (2014). "Sexy stimulants": The interaction between psychomotor stimulants and sexual behavior in the female brain. *Pharmacology, Biochemistry and Behavior*, 121, 53-61.

Bolton, J. L., Auten, R. L., Bilbo, S. D. (2014). Prenatal air pollution exposure induces sexually dimorphic fetal programming of metabolic and neuroinflammatory outcomes in adult offspring. *Brain, Behavior, and Immunity*, 37, 30-44.

Bolton, J. L., Huff, N. C., Smith, S. H., Mason, S. N., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2013). Maternal stress and effects of prenatal air pollution on offspring mental health outcomes in mice. *Environmental Health Perspectives*, 121, 1075-1082.

Bolton, J. L., Smith, S. H., Huff, N. C., Gilmour, M. I., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2012). Prenatal air pollution exposure induces neuroinflammation and predisposes offspring to weight gain in adulthood in a sex-specific manner. *The FASEB Journal*, 26, 1-12.

*Recommended by the Faculty of 1000 (F1000)

Bolton, J. L., Winland, C., Ford, B., Zewail-Foote, M., & Guarraci, F. A. (2012). "Who's Your Daddy?": Kin discrimination in prepubescent and adult Long-Evans rats. *Behavioural Processes*, 90, 415-419.

Winland, C., **Bolton, J. L.**, Ford, B., Jampana, S., Tinker, J., Frohardt, R. J., Guarraci, F. A., & Zewail-Foote, M. (2011). "Nice Guys Finish Last": Influence of mate choice on reproductive success in Long-Evans rats. *Physiology & Behavior*, 105, 868-876.

Winland, C., Haycox, C., **Bolton, J. L.**, Jampana, S., Oakley, B. J., Ford, B., Ornelas, L., Burbey, A., Marquette, A., Frohardt, R. J., & Guarraci, F. A. (2011). Methamphetamine enhances sexual behavior in female rats. *Pharmacology, Biochemistry and Behavior*, 98, 575-582.

MANUSCRIPTS IN PREPARATION *(copies available upon request)*

Bolton, J. L., Simmons, L. A., Rivera, P. D., Hanamsagar, R., Wiley, M., Ryan, B., Sanchez, C. L., Kan, M., Gunn, M.D., Kuhn, C. & Bilbo, S. D. (*In Preparation*). The role of placental inflammation and serotonin in maternal high-fat diet-induced brain and behavior changes in male mice. *To be submitted by 10/25/17*.

Schulmann, A.*, **Bolton, J. L.***, Curran, M. M., Regev, L., Kamei, N., Singh-Taylor, A., Molet, J., Mortazavi, A., & Baram, T. Z. (*In Preparation*). Novel transcriptional programs underlie enduring memory deficits after early-life adversity. *To be submitted by 10/30/17*.

*Co-first authorship.

INVITED PROFESSIONAL TALKS

Bolton, J. L. (2017). The role of microglia in synaptic rewiring by early-life stress. *Biology Departmental Seminar Series*, Department of Biology, California State University, Long Beach, CA.

Bolton, J. L. (2017). The role of microglia in synaptic rewiring by early-life adversity. *Postdoctoral Research Symposium: "Postdocs at the Forefront"*, University of California- Irvine. ***Selected as one of nine "TED-style Talks" from all abstract submissions, awarded 2nd place in talk competition.**

Bolton, J. L. (2017). Modulation of brain synapses by early-life experiences governs adult phenotype: The role of microglia. *Hewitt Foundation Annual Symposium*, San Diego, CA.

Bolton, J. L. (2016). The role of microglia in synaptic rewiring by early-life stress. *Progress in Neuroscience (PiN) Departmental Seminar Series*, Department of Anatomy & Neurobiology, University of California-Irvine.

Bolton, J. L. (2015). Western diets during gestation and lactation: A novel model for postpartum depression and sex-specific developmental programming? *Organization for the Study of Sex Differences Annual Meeting*, Palo Alto, CA. ***Selected as an "Elizabeth Young New Investigator Award" oral presentation.**

Bolton, J. L. (2015). Neuro-immune interactions in development and beyond: Role of the early-life environment and implications for adult health disparities. *Systems & Integrative Neuroscience Brown Bag Series*, Duke University.

Bolton, J. L. (2015). Neuro-immune interactions in development and beyond: Role of the early-life environment and implications for adult health disparities. *University of Massachusetts Medical School Neurobiology Department Seminar*, Worcester, MA.

Bolton, J. L., Huff, N. C., Smith, S. H., Mason, N., Foster, M., Auten, R. L., & Bilbo, S. D. (2014). Maternal stress exacerbates the effects of prenatal air pollution exposure on offspring anxiety, cognition, and neuroimmune function in a sex-specific manner. *44th Annual Society for Neuroscience Meeting*, Washington, D.C.

Bolton, J. L., Simmons, L. A., Wiley, M., Ryan, B., Truong, S., Bilbo, S. D. (2014). Western diets during gestation and lactation: A novel model for postpartum depression and developmental programming? *Shaping the Developing Brain: Prenatal through Early Childhood, 5th Annual Aspen Brain Forum*, New York, NY. ***Selected as a "Hot Topic Talk".**

- Bolton, J. L.,** Auten, R. L., & Bilbo, S. D. (2014). Prenatal air pollution exposure induces sexually dimorphic fetal programming of metabolic outcomes in adult offspring. *4th Annual Prenatal Programming and Toxicity Meeting*, Boston, MA.
- Bolton, J. L.,** Auten, R. L., & Bilbo, S. D. (2014). Neuro-immune interactions in development and beyond: Role of the early-life environment and implications for adult health disparities. *Duke Neurobiology Departmental Retreat*. Wilmington, NC.
- Bolton, J. L.,** Auten, R. L., & Bilbo, S. D. (2013). Sexually dimorphic fetal programming by prenatal air pollution exposure: a role for microglia and infiltrating macrophages? *Neuroimmunology and Glia Group Seminar Series*, Duke University.
- Bolton, J. L.,** Smith, S. H., Huff, N. C., Gilmour, M. I., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2012). Early-life programming of body weight regulation and neuroinflammation: Is there a connection? *Systems & Integrative Neuroscience Brown Bag Series*, Duke University.
- Bolton, J. L.,** Ford, B. J., Winland, C., & Guarraci, F. (2010). "Who's Your Daddy": Kin recognition in prepubescent and adult rats. *Annual Meeting Southwestern Comparative Psychology Association*, Dallas, Texas.
- Bolton, J. L.,** Ford, B. J., Winland, C., & Guarraci, F. (2010). "Who's Your Daddy": Kin recognition in prepubescent and adult rats. *Southwestern University Student Works Symposium*, Georgetown, Texas.
- Bolton, J. L.,** & Bilbo, S. D. (2008). Maternal obesity and effects of neuroinflammation in offspring. *Mechanisms of Behavior Research Experience for Undergraduates Seminar*, Duke University.

PROFESSIONAL POSTER PRESENTATIONS

- Bolton, J. L.,** Molet, J., Regev, L., Haddad, E., Obenaus, A., Stern, H., Baker, D., Risbrough, V., & Baram, T. Z. (2017). Adolescent anhedonia following early-life adversity involves aberrant interaction of reward and anxiety circuits and is reversed by knockdown of amygdala corticotropin-releasing hormone. *56th Annual American College of Neuropsychopharmacology Meeting*, Palm Springs, CA.
- Bolton, J. L.,** Molet, J., Regev, L., Chen, Y., Rismanchi, N., Haddad, E., Yang, D. Z., Obenaus, A., & Baram, T. Z. (2017). Anhedonia following early-life stress involves aberrant interaction of pleasure/reward circuits and anxiety/fear circuits and is reversed by partial silencing of amygdala corticotropin-releasing hormone. *47th Annual Society for Neuroscience Meeting*, Washington, D.C.
- Bolton, J. L.,** Othy, S., Shao, M., Majorkiewicz, E., Chen, Y., Cahalan, M. D., Parker, I., & Baram, T. Z. (2017). The role of microglia in synaptic rewiring by early-life stress. *Gordon Research Conference: Neuroimmune Communication in Health & Disease*, Ventura, CA.
- Bolton, J. L.,** Molet, J., Regev, L., Chen, Y., Yang, D. Z., & Baram, T. Z. (2016). Adolescent anhedonia provoked by adverse neonatal experience is abrogated by knockdown of amygdala corticotropin-releasing hormone. *46th Annual Society for Neuroscience Meeting*, San Diego, CA.
- Singh-Taylor, A., Molet, J., Jiang, S., Korosi, A., **Bolton, J. L.,** Noam, Y., Simeone, K., Cope, J., Chen, Y., Mortazavi, A., & Baram, T.Z. (2016). Programming of stress-sensitive neurons via NRSF-dependent epigenetic mechanisms by neonatal experience promotes emotional resilience. *46th Annual Society for Neuroscience Meeting*, San Diego, CA.
- Schulmann, A., Regev, L., **Bolton, J. L.,** Singh-Taylor, A., Curran, M. M., Molet, J., & Baram, T. Z. (2016). Enduring changes in hippocampal gene expression after early-life stress- potential role of the transcription factor NRSF. *46th Annual Society for Neuroscience Meeting*, San Diego, CA.
- Chen, Y., Molet, J., Lauterborn, J. C., Trieu, B. H., **Bolton, J. L.,** Patterson, K. P., Gall, C. M., Lynch, G., & Baram, T. Z. (2016). Simultaneous acute stresses impair memory enduringly via novel convergent actions of multiple stress hormones. *46th Annual Society for Neuroscience Meeting*, San Diego, CA.

- Bolton, J. L.**, Chen, Y., & Baram, T. Z. (2016). Increased numbers of excitatory synapses onto stress-sensitive hypothalamic neurons after early-life experience promote stress vulnerability: the role of microglia. *Keystone Symposia: Microglia in the Brain*, Keystone, CO.
- Hanamsagar, R., Alter, M. D., Block, C. S., Sullivan, H., **Bolton, J. L.**, & Bilbo S. D. (2016). Transcriptome analysis of developing microglia reveals striking sex differences in maturation and immune reactivity. *Keystone Symposia: Microglia in the Brain*, Keystone, CO.
- Bolton, J. L.**, Molet, J., Regev, L., Chen, Y., & Baram, T. Z. (2016). Fragmentation of neonatal experience predicts adolescent emotional outcomes: rescue in adulthood by CRH-siRNA viral transfection in central amygdala. *Neurobiology of Stress Workshop*, Newport Beach, CA.
- Gunn, B., Chen, Y., Cox, C., Maras, P., **Bolton, J. L.**, Lynch, G., & Baram, T. Z. (2016). CRH- a multifaceted stress peptide. *Neurobiology of Stress Workshop*, Newport Beach, CA.
- Schulmann, A., Regev, L., Singh-Taylor, A., Curran, M. M., **Bolton, J. L.**, Molet, J., & Baram, T. Z. (2016). Changes in hippocampal gene expression resulting from early-life stress revealed by high-throughput mRNA sequencing. *Neurobiology of Stress Workshop*, Newport Beach, CA.
- Chen, Y., Molet, J., Lauterborn, J., Trieu, B., **Bolton, J. L.**, Gall, C. M., Lynch, G., & Baram, T. Z. (2016). Multiple simultaneous acute stresses impair memory via novel, convergent actions of distinct stress hormones. *Neurobiology of Stress Workshop*, Newport Beach, CA.
- Singh-Taylor, A., Molet, J., Jiang, S., Korosi, A., **Bolton, J. L.**, Noam, Y., Simeone, K., Cope, J., Chen, Y., Mortazavi, A., & Baram, T.Z. (2016). Programming of stress-sensitive neurons via NRSF-dependent epigenetic mechanisms by neonatal experience promotes emotional resilience. *Neurobiology of Stress Workshop*, Newport Beach, CA.
- Maurer, S. V., **Bolton, J. L.**, Tybout, C. E., Bilbo, S. D., & Williams, C. L. (2015). Choline supplementation to pregnant mice mitigates the neuroinflammatory effects of prenatal diesel exposure to fetal brain. *45th Annual Society for Neuroscience Meeting*, Chicago, IL.
- Hanamsagar, R., **Bolton, J.**, Alter, M., & Bilbo, S. (2015). Microglia show sex-differences in gene expression patterns over development and following immune challenge: Relevance for sex-differences in neurodevelopmental disorders. *22nd Annual Psychoneuroimmunology Research Society Meeting*, Seattle, WA.
- Bolton, J. L.**, Wiley, M., Ryan, B., Truong, S., Pipher, D., Bilbo, S. D., & Simmons, L. A. (2015). The influence of Western dietary intake on postpartum depression: a novel model. *36th Annual Society of Behavioral Medicine Meeting*, San Antonio, TX.
- Wiley, M., **Bolton, J. L.**, Simmons, L. A., Ryan, B., Truong, S., & Bilbo, S. D. (2014). Developmental programming of body weight, neuroinflammation, and behavior by Western diets. *44th Annual Society for Neuroscience Meeting*, Washington, D.C.
- Hanamsagar, R., **Bolton, J.**, Alter, M., & Bilbo, S. (2014). Sex differences in developmental gene expression patterns in hippocampal microglia of mice: relevance for neurodevelopmental disorders. *44th Annual Society for Neuroscience Meeting*, Washington, D.C.
- Hassanzadeh, T., **Bolton, J. L.**, & Bilbo, S. D. (2014). Prenatal diesel exhaust exposure alters microglial maturation in both the hippocampus and parietal cortex, but structural development only in the parietal cortex, in a sex-specific manner. *American College of Surgeons Clinical Congress*, San Francisco, CA.
- Bolton, J. L.**, Simmons, L. A., Wiley, M., Ryan, B., Truong, S., Bilbo, S. D. (2014). Developmental programming of body weight, microglial development, and behavior by high-fat and BCAA-supplemented diets. *21st Annual Psychoneuroimmunology Research Society Meeting*, Philadelphia, PA.

- Bolton, J. L.,** Johnson, K., Joseph, R., Potts-Kant, E. N., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2013). Sexually dimorphic fetal programming of body weight regulation and neuroinflammation in adult offspring. *17th Annual Society for Behavioral Neuroendocrinology Meeting*, Atlanta, GA.
- Bolton, J. L.,** Huff, N. C., Smith, S. H., Mistry, R. S., Potts-Kant, E. N., Auten, R. L., & Bilbo, S. D. (2012). Maternal stress exacerbates the effects of prenatal air pollution exposure on offspring cytokine expression and behavior in a sex-specific manner. *42nd Annual Society for Neuroscience Meeting*, New Orleans, LA.
- Bolton, J. L.,** Mason, S. N., Potts, E. N., Gilmour, M. I., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2012). Sexually dimorphic placental responses to maternal air pollutant exposure: the root of sex differences in behavioral and metabolic outcomes of adult offspring? *Organization for the Study of Sex Differences Annual Meeting*, Baltimore, MD.
- Auten, R. L., Potts, E. N., Mason, N., Hollingsworth, J. W., **Bolton, J.,** Bilbo, S., & Foster, W. M. (2012). Maternal diesel inhalation augments fetal pulmonary inflammation and chronic postnatal O₃-induced airway hyperreactivity via toll-like receptor 4 (TLR4). *American Thoracic Society Annual Meeting*, San Francisco, CA.
- Bolton, J. L.,** Huff, N. C., Smith, S. H., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2011). Early-life programming of body weight regulation and neuroinflammation: Is there a connection? *41st Annual Society for Neuroscience Meeting*, Washington, D.C.
- Huff, N. C., **Bolton, J. L.,** Mistry, R. S., Smith, S. H., Auten, R. L., & Bilbo, S. D. (2011). Effects of early-life social and environmental stressors on affect, cognition, and brain cytokine expression. *41st Annual Society for Neuroscience Meeting*, Washington, D.C.
- Bolton, J. L.,** Huff, N. C., Smith, S. H., Foster, W. M., Auten, R. L., & Bilbo, S. D. (2011). Early-life programming of body weight regulation and neuroinflammation: Is there a connection? *18th Annual Psychoneuroimmunology Research Society Meeting*, Chicago, IL.
- Smith, S. H., Huff, N. C., **Bolton, J. L.,** Auten, R. L., & Bilbo, S. D. (2011). Peripheral lymphocytes are altered in adult offspring following prenatal exposure to air pollution combined with maternal stress. *18th Annual Psychoneuroimmunology Research Society Meeting*, Chicago, IL.
- Bolton, J. L.,** Ford, B. J., Winland, C., Tinker, J., Zewail-Foote, M. & Guarraci, F. A. (2010). "Who's Your Daddy?": Kin recognition in prepubescent and adult rats. *40th Annual Society for Neuroscience Meeting*, San Diego, CA.
- Winland, C., **Bolton, J.,** Ford, B., Jampana, S., Tinker, J., Frohardt, R. J., Zewail-Foote, M., & Guarraci, F. A. (2010). "Nice Guys Finish Last": Mate choice, reproductive success, and testosterone in Long-Evans rats. *40th Annual Society for Neuroscience Meeting*, San Diego, CA.
- Haycox, C., Maynard, M. E., Clements, D. M., Wise, C., Winland, C., Ford, B. J., **Bolton, J. L.,** Frohardt, R., & Guarraci, F. (2010). MePD intracranial infusions of methamphetamine have no effect on female sexual behavior. *Southwestern Comparative Psychology Association Annual Meeting*, Dallas, TX.
- Mingle, M. E., Hall, A. S., **Bolton, J. L.,** & Guarraci, F. (2010). The paradoxical effects of morphine on sexual motivation in female rats. *Southwestern Comparative Psychology Association Annual Meeting*, Dallas, TX.
- Winland, C., Ford, B. J., **Bolton, J. L.,** Haycox, C., Maynard, M. E., Clements, D. M., Wise, C., Frohardt, R. & Guarraci, F. (2010). Chronic exposure to methamphetamine affects sexual behavior in female rats. *Southwestern Comparative Psychology Association Annual Meeting*, Dallas, TX.
- Bilbo, S. D., Tsang, V., **Bolton, J.,** & Tjoe, B. (2009). Maternal high fat diets alter brain microglial activation, cytokine production, and behavior in offspring. *39th Annual Society for Neuroscience Meeting*, Chicago, IL.
- Ford, B., **Bolton, J.,** Winland, C., Oakley, B. J., Jampana, S., Spencer, T., Frohardt, R. J., & Guarraci, F. A. (2009). Methamphetamine enhances sexual motivation in female rats. *39th Annual Society for Neuroscience Meeting*, Chicago, IL.

Guarraci, F. A., Ford, B. J., **Bolton, J. L.**, Christian, L., & Winland, C. (2009). "Unsafe Sex": Female sexual behavior in the presence of predator stimuli. *13th Annual Society for Behavioral Neuroendocrinology Meeting*, East Lansing, MI.

RESEARCH EXPERIENCE

Conte Center, "Brain Programming in Adolescent Vulnerabilities": Mentor Dr. Tallie Z. Baram University of California-Irvine, NIH P50 MH096889	July 2015 – Present Irvine, CA
Bass Connections Brain and Society Interdisciplinary Research Project, "Maternal Nutrition and the Developing Brain": Mentors Dr. Staci Bilbo and Dr. Leigh Ann Simmons Duke University Bass Connections Interdisciplinary Initiative	May 2013 – May 2015 Durham, NC
Practicum Rotation Project, "Prenatal Air Pollution and the Role of the Placenta": Mentor Dr. Richard Auten Duke University Systems & Integrative Neuroscience Program	January 2011 – April 2013 Durham, NC
First Year Project, "Prenatal Air Pollution & Fetal Programming": Mentor Dr. Staci Bilbo Duke University Systems & Integrative Neuroscience Program	July 2010 – July 2012 Durham, NC
Behavioral Neuroscience Capstone, "Female Mate Choice and Differential Reproductive Success in Long-Evans Rats": Mentor Dr. Fay Guarraci Southwestern University Animal Behavior Program	January 2009 – May 2010 Georgetown, TX
Mechanisms of Behavior Research Experience for Undergraduates Program, "Maternal Obesity and Fetal Programming": Mentor Dr. Staci Bilbo National Science Foundation Fellowship / Duke University	May – August 2008 Durham, NC
Animal Behavior/ Neuroscience Lab Assistant and Supervisor Southwestern University Psychology Department	August 2007 – May 2010 Georgetown, TX

EXPERIMENTAL APPROACHES/TECHNIQUES

2-photon time-lapse imaging of 3D microglia-neuron interaction in acute brain slices from transgenic mice
Calcium imaging of microglia in acute brain slices from transgenic mice
3D light-sheet imaging of optically cleared whole brains (e.g., CLARITY, iDISCO+)
Flow cytometry and FACS sorting of microglia vs. neurons
Confocal imaging of triple-labeled cryostat sections from transgenic mice
In vivo region-specific neuronal manipulation with stereotaxic injection of viral vectors containing shRNA
In vivo cell-specific manipulation (i.e., microglia vs. neurons) with DREADDs
In vivo epigenetic manipulation with i.c.v. infusion of NRSE oligonucleotides to inhibit NRSF regulation of downstream genetic targets
Molecular analyses for DNA, RNA, and protein (i.e., qRT-PCR, RNA-Seq, ChIP, ChIP-Seq, ELISA, HPLC for neurotransmitters)
Cell culture and organotypic slice culture
Metabolic analyses in vivo (e.g., glucose measurement, insulin sensitivity testing, multiplex analysis of leptin, insulin, etc.)
Cognitive and emotional behavioral testing in mice and rats (e.g., novel object location memory, fear conditioning, elevated-plus maze, forced-swim test, open field test, conditioned place preference test for natural and drug rewards)
Interrogation of sex differences in rodents (e.g., estrous cycle tracking, gonadectomy and hormonal replacement)
Animal model development for manipulation of early-life experience/environment (e.g., chronic early-life stress, augmented maternal care, prenatal air pollution exposure, maternal high-fat diet)
Translational experiments via collaborations (e.g., MRI and diffusion tensor imaging of rodent brains for comparison with human brains, microbiome analyses of the rodent gut for comparison with human microbiome)

TEACHING AND MENTORING EXPERIENCE

Mentor for Biological Sciences Undergraduate Research Program University of California-Irvine	September 2015 – Present Irvine, CA
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*Received training in “How to Effectively Mentor Undergraduate Students in the Research Lab” Workshop (Fall 2015)

Manlin Shao, September 2015- Present

*Mentored for Undergraduate Research Opportunities Program (internal funding source) and Excellence in Research honors program

***Awarded Robert Ernst Prize for Excellence in Research in the Biological Sciences**

Derek Zhiye Yang, January 2016- June 2017

Emily Majorkiewicz, March 2016- Present

*Mentored for Undergraduate Research Opportunities Program (internal funding source) and Excellence in Research honors program

Quan Minh Dong, January 2017- Present

Xinglong Bai, January 2017- October 2017

Keshav Suresh, September 2017- Present

Jaclyn Beck, September 2017- Present (rotating graduate student)

Preparing Future Faculty Fellow

Duke University

June 2014 – May 2015

Durham, NC

Mentor for Bass Connections Brain and Society Interdisciplinary Research Project

Duke University Bass Connections Interdisciplinary Initiative

Steven Marinero, June 2013 – May 2015 (graduate student)

Katie West, June – August 2013 (undergraduate student)

Dominic Le, June 2013 – May 2015 (undergraduate student)

Bailey Ryan, June 2013 – May 2015 (undergraduate student)

Tania Hassanzadeh, May 2013 – May 2015 (undergraduate student)

Samantha Truong, August 2013 – December 2014 (undergraduate student)

June 2013 – May 2015

Durham, NC

Mentor for Undergraduate Honors Thesis Projects

Duke University, *Dean's Award for Excellence in Mentoring

May 2012 – May 2015

Durham, NC

Bailey Ryan, “Maternal diets enriched in saturated fat and BCAA produce lasting alterations in offspring body weight, behavior, and microglial density”, Duke University Neuroscience Graduation with Distinction, June 2013- May 2015

Tania Hassanzadeh, “Prenatal diesel exhaust exposure alters microglial maturation in both the hippocampus and parietal cortex, but structural development only in the parietal cortex, in a sex-specific manner,” Duke University Neuroscience Graduation with Distinction, January 2013- May 2014

Divya Natesan, “Prenatal diesel exposure impacts microglial and structural development within the amygdala,” Duke University Biology Graduation with Distinction, May 2012- May 2013

Fundamentals of Neuroscience Teaching Assistant

Duke University Psychology & Neuroscience Department

August – December 2013, January – May 2012

Durham, NC

Biological Bases of Behavior Teaching Assistant

Duke University Psychology & Neuroscience Department

August 2012 – May 2013

Durham, NC

Mentor for “Mechanisms of Behavior” NSF REU Program

National Science Foundation Fellowship / Duke University

Karima Johnson, May – August 2012

Rahul Joseph, May – August 2012

May – August 2012

Durham, NC

Research Methods I and II Teaching Assistant

Southwestern University Psychology Department

January 2009 – May 2010

Georgetown, TX

Biology Lab Assistant

Southwestern University Biology Department

August 2007 – May 2008

Georgetown, TX

INVITED GUEST LECTURES

- “The Digestive System”, March 30, April 1, and April 6, 2015, Anatomy & Physiology course headed by Dr. Jodie Fleming, North Carolina Central University, Durham, NC.
- “Maternal and Early-Life Environmental Influences on Neuroimmune Development”, March 18, 2015, Mechanisms in Toxicology seminar headed by Dr. Laura Kubik and Dr. Joel Meyer, Duke University, Durham, NC.
- “The Innate Immune System”, September 2, 2014, Behavioral Neuroimmunology course headed by Dr. Staci Bilbo, Duke University, Durham, NC.
- “Sex, Sexuality, and the Brain”, December 6, 2013, Fundamentals of Neuroscience course headed by Dr. Warren Meck, Duke University, Durham, NC.
- “Neuroimmune Interactions in Developmental Programming”, April 3, 2012, Fundamentals of Neuroscience course headed by Dr. Staci Bilbo, Duke University, Durham, NC.

OTHER PROFESSIONAL DEVELOPMENT ACTIVITIES

- Big Data Image Processing & Analysis short course (1-week intensive program), Center for Complex Biological Systems, September 2017, University of California-Irvine
- Effective Communication Certificate Program, Public Speaking Workshop Series (7-week program), Summer 2017, University of California-Irvine
- UC Irvine Graduate Professional Success for PhD Students and Postdocs in the Biomedical Sciences (funded by NIH BEST), Certificate of Completion (awarded for achieving 20 credits of Professional Development activities), Fall 2015-2016, University of California-Irvine
- “How to Effectively Mentor Undergraduate Students in the Research Lab,” Mentoring Workshop Series (6-week program), Fall 2015, University of California-Irvine
- BD LSRII Flow Cytometer Independent Operator Training Course, Duke Human Vaccine Institute Research Flow Cytometry and Cell Sorting Facility, July 2014, Durham, NC
- The BD Horizon Tour: New Insights for Multicolor Panel Design, Flow Cytometry Workshop, June 12, 2014, Raleigh, NC
- “Teaching Behavioral Neuroendocrinology” Workshop, June 25, 2013, Atlanta, GA
- Leica SP5 Inverted Confocal Microscope Independent User Training, Duke University Light Microscopy Core Facility, May 2013, Durham, NC
- BC FACSCanto II Flow Cytometer User Training, Duke Cancer Institute Flow Cytometry Shared Resource, July 2010

COMMUNITY OUTREACH & UNIVERSITY SERVICE

- Ambassador for the Center for the Neurobiology of Learning and Memory, University of California-Irvine: design, execute, and evaluate neuroscience outreach and education activities in local K-12 schools, October 2017- Present
- “Balancing Work-Life-Academics-Career Prep” Seminar, Panelist, Graduate Professional Success in Biomedical Sciences program, University of California-Irvine, August 2017
- National Science Foundation Graduate Research Fellowship Symposium, Judge for Poster Presentations, University of California-Irvine, May 2017
- Neuroscience Day at an underprivileged, low-income charter school, Samueli Academy, Santa Ana, CA, May 2017
- Brews and Brains Meetup (community organization in Irvine, CA), lay-friendly TED-style talk, “Mom matters: Early-life maternal care shapes the developing brain”, April 2016, December 2016 (Holiday Symposium)
- 1st Annual Postdoctoral Research Symposium, University of California- Irvine, Chair of Planning Committee and Master of Ceremonies, October 2015- September 2016
- Progress in Neuroscience (PiN) Departmental Seminar Series, Organizer/Convener, Department of Anatomy & Neurobiology, University of California-Irvine, September 2015- Present
- Postdoctoral Association Board, University of California-Irvine, Co-President, September 2016- Present; Vice-Chair of Academic Affairs, September 2015- August 2016
- Graduate Resource Center Advisory Council, University of California- Irvine, Postdoctoral Representative, September 2015- June 2016
- Bass Connections Interdisciplinary Initiative Advisory Council, Duke University, Graduate Student Representative, September 2014-May 2015
- Females Excelling More in Math, Engineering, & Science (FEMMES) Capstone Event, Duke University, Senior Counselor, February 2014
- Museum of Life and Science BRAINS! Event, Durham, NC, Volunteer & Booth Coordinator, October 2013

Brain Awareness Week, Duke University, Open House Demonstration & Lab Tour Guide, March 2013; Planning Committee & Open House Coordinator, January-March 2012; Local Schools & Juvenile Detention Center Visits & Open House Demonstration, March 2011
Museum of Life & Science, Durham, NC, Volunteer in The Lab, October 2010- May 2015
Murchison Elementary School, Georgetown, TX, Science & Math Night, Biology Booth Coordinator and Presenter, January 2010
"From Every Voice" Student Symposium Program Chair, Southwestern University, January-April 2008
Science Workshop for 5th Graders, Southwestern University, DNA Activity Coordinator, April 2007, 2008, 2009
Science & Math Achiever Teams, Southwestern University & Williamson Elementary, 4th grade Mentor, January-December 2007

AD HOC GRANT PROPOSAL REVIEWER

Southern California Environmental Health Sciences Center, January 2016, November 2016
National Science Foundation, November 2015- January 2016

AD HOC JOURNAL REVIEWER

Biological Psychiatry
The Journal of Neuroscience
Brain, Behavior, and Immunity
Journal of Neurochemistry
Physiology & Behavior
Brain Research
Behavioral Ecology and Sociobiology
Psychoneuroendocrinology
JAMA Pediatrics
Behavioural Brain Research
Developmental Origins of Health and Disease
Environment International
Environmental Research
Medicine & Science in Sports & Exercise
Neuropsychiatric Disease & Treatment
Pediatric Obesity
Toxicology Letters
Toxicological Sciences

PROFESSIONAL SOCIETIES

The New York Academy of Sciences, 2014-2015
Society for Behavioral Neuroendocrinology, 2013-Present
Organization for the Study of Sex Differences, 2012-Present
Psychoneuroimmunology Research Society, 2011-Present
Society for Duke Fellows, 2010-2015
Women in Science and Engineering (WiSE), 2010-2015
Phi Beta Kappa Honor Society, 2010-Present
Society for Neuroscience, 2009-Present

REFERENCES

Tallie Z. Baram, MD, PhD
Professor of Pediatrics; Anatomy & Neurobiology, University of California-Irvine
Tel: 949-824-3747
Email: baramlab@uci.edu

Staci D. Bilbo, PhD
Associate Professor of Pediatrics, Harvard Medical School
Director of Research, Lurie Center for Autism, Massachusetts General Hospital
Tel: 617-726-7991
Email: sbilbo@mgh.harvard.edu

Fay A. Guarraci, PhD
Professor of Psychology, Southwestern University
Visiting Research Professor, University of Texas at Austin
Tel: (512) 863-1747
Email: guarracf@southwestern.edu

Christina Williams, PhD
Professor of Psychology and Neuroscience, Duke University
Tel: (919) 660-5638
Email: williams@psych.duke.edu

Leigh Ann Simmons, PhD, MFT
Associate Professor, Duke University School of Nursing
Tel: (919) 684-9555
Email: leighann.simmons@duke.edu