

JESSICA L. BOLTON, PH.D.

University of California-Irvine

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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

July 2015 – Present

Irvine, CA

RESEARCH FUNDING

Current

Title: *Defining the Role of Microglia in the Synaptic Rewiring of the Hypothalamus by Early-Life Adversity*

Funding Source: NIH (NIMH) K99/R00 Pathway to Independence Grant; 1K99MH120327

Grant Period: August 2019- July 2024

Amount: \$109,000/year in K99 phase; \$249,000/year in R00 phase

Title: *Developmental Programming of Microglia-specific Functional and Transcriptomic Changes by Early-Life Adversity*

Funding Source: NARSAD Young Investigator Grant, Brain & Behavior Research Foundation

Grant Period: January 2019- January 2021

Amount: \$35,000/year

Completed

Title: *Modulation of Brain Synapses by Early-life Experiences Governs Adult Phenotype: The Role of Microglia*

Funding Source: Postdoctoral Fellowship, George E. Hewitt Foundation for Biomedical Research

Grant Period: October 2015- September 2018

Amount: \$55,000/year stipend + \$5,000/year for benefits and travel funds

Title: *The Influence of Prenatal Air Pollution on Adult-onset Obesity: A Role for Neuroinflammation*

Funding Source: Graduate Research Fellowship (GRFP), National Science Foundation

Grant Period: January 2011- May 2014

Amount: \$30,000/year stipend

PEER-REVIEWED PUBLICATIONS

- Birnie, M. T., Kooiker, C. L., Short, A. K., **Bolton, J. L.**, Chen, Y., & Baram, T. Z. (2020). Plasticity of the reward circuitry after early life adversity: mechanisms and significance. *Biological Psychiatry* 87, 875–884.
- Levis, S., Bentzley, B., **Bolton, J. L.**, Molet, J., Baram, T. Z., & Mahler, S. V. (2019). Selective vulnerability to opioid addiction resulting from early-life adversity. *Molecular Psychiatry*. DOI: 10.1038/s41380-019-0628-5.
- Jiang, S.*, Kamei, N.*, **Bolton, J. L.**, Ma, X., Stern, H., Baram, T. Z., Mortazavi, A. (2019). Intra-individual methylomics detects the impact of early-life adversity. *Life Science Alliance*, 2(2). DOI: 10.26508/lsa.201800204. *Co-first authorship
- Bolton, J. L.**, Short, A. K., Simeone, K., Daghlian, J., & Baram, T. Z. (2019). Programming of stress-sensitive neurons and circuits by early-life experiences. *Frontiers in Behavioral Neuroscience*, 13(30). DOI: 10.3389/fnbeh.2019.00030.
- Baram, T. Z., **Bolton J. L.** (2018). Parental smartphone use and children's mental outcomes: a neuroscience perspective. *Neuropsychopharmacology*, 44, 239-240.
*Featured on the cover of the issue
- Bolton, J. L.**, Molet, J., Regev, L., Chen, Y., Rismanchi, N., Haddad, E., Yang, D. Z., Obenaus, A., & Baram, T. Z. (2018). 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*, 83(2), 137-147.
*Featured on the cover of the issue
- Bolton, J. L.***, Ruiz, C.*, Rismanchi, N., Sanchez, G., Castillo, E., Huang, J., Baram, T. Z., & Mahler, S. V. (2018). Early-life adversity facilitates acquisition of cocaine self-administration and induces persistent anhedonia. *Neurobiology of Stress*, 8, 57-67. *Co-first authorship
- 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*, 23(3), 648-657.
- Bilbo, S. D., Block, C. L., **Bolton, J. L.**, Hanamsagar, R., & Tran, P. K. (2018). Beyond infection- Maternal immune activation by environmental factors, microglial development, and relevance for autism spectrum disorders. *Experimental Neurology*, 299(Pt. A), 241-251.
- 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*, 7(10), e00828.
- 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*, 65(9), 1504-1520.
- 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.
- 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; selected for JNeurosci Journal Club

- 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.

WORKS IN PROGRESS *(copies available upon request)*

- Bolton, J. L.*,** Schulmann, A.*, Curran, M. M., Regev, L., Kamei, N., Singh-Taylor, A., Molet, J., Mortazavi, A., & Baram, T. Z. (*Under Revision*). Blocking NRSF function rescues spatial memory impaired by early-life adversity and reveals unexpected underlying transcriptional programs. *Cell Press Sneak Peek*. DOI: 10.2139/ssrn.3284454. *Co-first authorship
- Davis, L. K., **Bolton, J. L.,** Hanson, H., & Guarraci F. A. (*Under Revision*). Limited bedding and nesting is a model of early-life stress that affects reproductive physiology and behavior in female and male Long-Evans rats.
- Okhuarobo, A., **Bolton, J. L.,** Zorilla, E., Igbe, I., Contet, C. (*In Preparation*). A novel mouse model for vulnerability to alcohol dependence induced by early- life adversity.
- 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. *Frontiers in Neuroscience* (Invited for Special Issue on "Impact of Fetal & Early Postnatal Nutrition on the Developing Brain: Implication for Adult Disease").

BOOK CHAPTERS

- Short, A. K., **Bolton, J. L.,** & Baram, T. Z. (2020). Mechanisms by which early-life experiences promote enduring stress resilience or vulnerability. In: Chen A, (ed). *Stress Resilience: Molecular and Behavioral Aspects*. San Diego: Elsevier Inc./Academic Press: 165-181.

INVITED PROFESSIONAL TALKS

- Bolton, J. L.** (2021). Defining the role of microglia in the synaptic rewiring of the hypothalamus by early-life adversity. *Workshop on Steroid Hormone and Brain Function*, Breckenridge, CO. ***Invited as Young Investigator speaker.**
- Bolton, J. L.** (2020). The role of microglia in the sculpting of developing stress circuits by early-life adversity. *Alcoholism and Stress: A Framework for Future Treatment Strategies Meeting*, Volterra, Italy. ***Moved to 2021 due to COVID-19.**
- Bolton, J. L.** (2019). How early-life experiences sculpt brain circuits to promote resilience or vulnerability: Role of microglia. *Centre de Recherche du CHU de Québec Seminar Series*, Laval University, Quebec, Canada.
- Bolton, J. L.** (2019). The role of microglia in synaptic rewiring by early-life adversity. *PsychoNeuroimmunology Research Society Annual Meeting*, Berlin, Germany. ***Selected as oral presentation from all submitted abstracts.**
- Bolton, J. L.** (2019). Sex-specific perinatal programming of neuro-immune function by the early-life environment. *Experimental Biology Annual Meeting*, Orlando, FL. ***Invited as Featured Speaker of APS Session.**
- Bolton, J. L.** (2019). How early-life experiences sculpt brain circuits to promote resilience or vulnerability: Role of microglia. *Department of Psychology and Neuroscience Seminar Series*, University of Colorado, Boulder, CO.
- Bolton, J. L.** (2018). Developmental programming of brain & behavior by early-life environment: A role for microglia. *Virginia Tech School of Neuroscience Seminar Series*, Virginia Polytechnic Institute & State University, Blacksburg, VA.
- Bolton, J. L.** (2018). Mechanisms of synaptic rewiring by early-life adversity. *Neurobiology of Stress Meeting*, Banff, Canada. ***Selected as one of six Postdoctoral Fellow Speakers from all submitted abstracts.**
- Bolton, J. L.** (2018). The role of microglia in synaptic rewiring by early-life adversity. *Hewitt Foundation Annual Symposium*, The Salk Institute, La Jolla, CA.
- Bolton, J. L.** (2017). The role of microglia in synaptic rewiring by early-life adversity. *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*, The Salk Institute, La Jolla, 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. ***Selected for a nanosymposium oral presentation and press conference.**

- 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.,** Shao, M., Othy, S., Beck, J., Bai, X., Kooiker, C., Parker, I., Cahalan, M. D., & Baram, T. Z. (2019). The role of microglia in the sculpting of developing stress circuits by early-life adversity. *58th Annual American College of Neuropsychopharmacology Meeting*, Orlando, FL. ***Selected for ACNP Travel Award**.
- Bolton, J. L.,** Shao, M., Othy, S., Beck, J., Bai, X., Kooiker, C., Parker, I., Cahalan, M. D., & Baram, T. Z. (2019). The role of microglia in the sculpting of developing stress circuits by early-life adversity. *49th Annual Society for Neuroscience Meeting*, Chicago, IL.
- Bolton, J. L.,** Othy, S., Beck, J., Shao, M., Majorkiewicz, E., Li, X., Wu, Y., Dong, Q., Bai, X., Kooiker, C., Parker, I., Cahalan, M. D., & Baram, T. Z. (2018). The role of microglia in synaptic rewiring by early-life adversity. *57th Annual American College of Neuropsychopharmacology Meeting*, Hollywood, FL.
- Baram, T. Z., Short, A. K., **Bolton, J. L.** (2018). How are maternal-derived signals converted into enduring epigenetic processes in the developing brain? *27th Annual International Behavioral Neuroscience Society Meeting*, Boca Raton, FL.
- Short, A., Molet, J., **Bolton, J. L.,** Chen, Y., Birnie, M., & Baram, T. Z. (2018). How unpredictable, fragmented early-life experiences sculpt the developing brain. *49th Annual International Society of PsychoNeuroEndocrinology Meeting*, Irvine, CA.
- Baram, T. Z., Short, A. K., **Bolton, J. L.,** Chen, Y. (2018). CRH and development of the pleasure/reward circuitry. *22nd Annual International Symposium on Regulatory Peptides*, Acapulco, MX.
- Bolton, J. L.,** Schulmann, A., Curran, M. M., Regev, L., Kamei, N., Singh-Taylor, A., Jiang, S., Molet, J., Mortazavi, A., & Baram, T. Z. (2018). Unexpected transcriptional programs underlie enduring memory deficits after early-life adversity. *48th Annual Society for Neuroscience Meeting*, San Diego, CA.

- Chen, Y., Itoga, C., Short, A., **Bolton, J. L.**, Xu, X., & Baram, T. Z. (2018). Aberrant CRH expression in the nucleus accumbens of adolescent mice after early-life adversity: a mechanism of anhedonia? *48th Annual Society for Neuroscience Meeting*, San Diego, CA.
- Baram, T. Z., Short, A. K., & **Bolton, J. L.** (2018). How are maternal-derived signals converted into enduring epigenetic processes in the developing brain? *27th Annual International Behavioral Neuroscience Society Meeting*, Boca Raton, Florida.
- 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.

HONORS AND AWARDS

ACNP Travel Awardee, American College of Neuropsychopharmacology, 2019, Full reimbursement for conference/travel
 PNIRS Trainee Scholar Award, Psychoneuroimmunology Research Society, 2019, \$500 travel award
 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
 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
 Claire Hamilton Graduate Student Conference Travel Award, Duke University, 2010, \$200 travel award
 Society for Women's Health Research Donald G. and Darel Stein Fellowship, 2012, \$1,000 travel award
 James B. Duke Fellowship, Duke University, September 2010- May 2014, \$5,000/year stipend

H. Wayne Ludvigson Memorial Student Prize for best student paper presentations at Southwestern Comparative Psychology Association Annual Meeting, 2010, \$100 prize
National Science Foundation Research Experience for Undergraduates, Duke University, May-Aug. 2008, \$4,000 stipend

RESEARCH EXPERIENCE

Conte Center, “Brain Programming in Adolescent Vulnerabilities”: Mentor Dr. Tallie Z. Baram University of California-Irvine, NIH P50 MH096889 *2018 Team Science Award Winner, Institute for Clinical and Translational Science, UC Irvine	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
Capstone Project, “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
Scanning electron microscopy (SEM) with immuno-EM of microglia and their interactions with synapses in neonatal 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 and 3D reconstruction of triple-labeled cryostat sections from transgenic mice
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 Interdisciplinary Neuroscience Program for Ph.D. Students September 2017 – Present
University of California-Irvine Irvine, CA
Jaclyn Beck, September 2017- December 2017 (rotation)
Cassandra Kooiker, June 2018- August 2018 (rotation), May 2019-Present (MD/PhD student)

Mentor for Biological Sciences Undergraduate Research Program September 2015 – Present
University of California-Irvine Irvine, CA
*Received training in “How to Effectively Mentor Undergraduate Students in the Research Lab” Workshop (Fall 2015)
Manlin Shao, September 2015- June 2018
*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 in 2017**
Derek Zhiye Yang, January 2016- June 2017
Emily Majorkiewicz, March 2016- June 2018
*Mentored for Undergraduate Research Opportunities Program and Excellence in Research honors program
Quan Minh Dong, January 2017- June 2018
Xinglong Bai, January 2017- October 2017
Keshav Suresh, September 2017- Present
***Awarded Carol and James McGaugh Award for outstanding undergraduate researchers in 2018**
*Mentored for Excellence in Research honors program
Xinwen Li, January 2018- Present
Yanan Wu, January 2018- December 2018
Catherine Chiou, June 2018- December 2018
Guangying Zhou, June 2018- Present
*Mentored for Undergraduate Research Opportunities Program
Stephanie Min Law, January 2019- Present
*Mentored for Summer Undergraduate Research Program and Excellence in Research honors program
Johnathan Ho, January 2019- Present
Pouria Vadipour, April 2019- Present
*Mentored for Undergraduate Research Opportunities Program
Erin Card, April 2019- Present
*Mentored for Excellence in Research honors program
***Awarded Robert Ernst Prize for Excellence in Research in the Biological Sciences in 2020**
Graciella Angeles, January 2020- Present

Preparing Future Faculty Fellow June 2014 – May 2015
Duke University Durham, NC

Mentor for Bass Connections Brain and Society Interdisciplinary Research Project June 2013 – May 2015
Duke University Bass Connections Interdisciplinary Initiative Durham, NC
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)

Mentor for Undergraduate Honors Thesis Projects May 2012 – May 2015
Duke University, *Dean's Award for Excellence in Mentoring 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

- “Early-Life Experiences Impact Brain Development and Predict Later Mental Health”, October 8, 2018 & October 7, 2019, Lifespan Development course headed by Dr. Michelle Fortier, University of California-Irvine, Irvine, CA.
- “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

- “BSL-3 Laboratory Research Certification” (3-day intensive training), UCI National BSL-3 Training Program (A UC Center of Excellence; A NIH National Biosafety & Biocontainment Training Program), June 2020, University of California-Irvine
- “Image Understanding” graduate-level course, Spring 2020, University of California-Irvine
- “Bioinformatics and Systems Biology” graduate-level course, Winter 2020, University of California-Irvine
- “Epigenetics in Health and Disease” graduate-level course, Fall 2019, University of California-Irvine
- “Preparing for a Faculty Career” Certificate Program, 6-week workshop series, Summer 2018, University of California-Irvine
- R Programming, Computer Science Course X425.20, July-September 2018, University of California-Irvine Extension
- Introduction to Python for Data Analysis, Computer Science Course X426.62, April-June 2018, University of California-Irvine Extension
- Leading from Within, Management Course X497.61, January-March 2018, University of California-Irvine Extension
- “Introduction to Data Analysis with R” short course (1-day intensive program), Data Science Initiative, December 2017, University of California-Irvine

“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, 7-week public speaking workshop series, 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

UNIVERSITY SERVICE & COMMUNITY OUTREACH

Panelist for K99/R00 Informational Workshop, Graduate Division, University of California- Irvine, March 2020

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; Organizing Committee of Orange County Brain Bee, February 2019- Present

Organizer of Trainee Professional Development for UCI Conte Center, University of California-Irvine, May 2018- June 2019

Moderator for Oral Presentations, UCI Undergraduate Research Symposium, University of California- Irvine, May 2018

Panelist for “Balancing Work-Life-Academics-Career Prep” Seminar, Graduate Professional Success in Biomedical Sciences program, University of California-Irvine, August 2017

Judge for Poster Presentations at National Science Foundation Graduate Research Fellowship Symposium, University of California-Irvine, May 2017

Teacher for Neuroscience Day at Samuelli Academy (low-income charter school), Santa Ana, CA, May 2017

Speaker for 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)

Chair of Planning Committee and Master of Ceremonies for 1st Annual Postdoctoral Research Symposium, University of California- Irvine, October 2015- September 2016

Organizer/Convener for Progress in Neuroscience (PiN) Departmental Seminar Series, Department of Anatomy & Neurobiology, University of California- Irvine, September 2015- May 2019

Chair of Postdoctoral Association Board, University of California- Irvine, September 2016- July 2019; Vice-Chair of Academic Affairs, September 2015- August 2016

Postdoctoral Representative on Graduate Resource Center Advisory Council, University of California- Irvine, September 2015- June 2016

Graduate Student Representative on Bass Connections Interdisciplinary Initiative Advisory Council, Duke University, September 2014-May 2015

Senior Counselor for Females Excelling More in Math, Engineering, & Science (FEMMES) Capstone Event, Duke University, February 2014

Volunteer & Booth Coordinator for Museum of Life and Science BRAINS! Event, Durham, NC, October 2013

Facilitator for Local Schools & Juvenile Detention Center Visits and Open House Demonstration for Brain Awareness Week, Duke University, March 2011; Planning Committee & Open House Coordinator, January-March 2012; Open House Demonstration & Lab Tour Guide, March 2013

Volunteer in “The Lab” at the Museum of Life & Science, Durham, NC, October 2010- May 2015

Biology Booth Coordinator and Presenter, Murchison Elementary School, Georgetown, TX, Science & Math Night, January 2010

Program Chair for “From Every Voice” Student Symposium, Southwestern University, January-April 2008

DNA Activity Coordinator for Science Workshop for 5th Graders, Southwestern University, April 2007, 2008, 2009

Mentor for 4th grade Science & Math Achiever Teams, Southwestern University & Williamson Elementary, January-December 2007

PROFESSIONAL SOCIETIES

American Physiological Society, 2019-Present
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
*Trainee Representative for Nominating Committee, 2018-2020
Society for Duke Fellows, 2010-2015
Phi Beta Kappa Honor Society, 2010-Present
Society for Neuroscience, 2009-Present

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
eNeuro
eLife
Scientific Reports
Neurobiology of Stress
Brain, Behavior, and Immunity
Hormones & Behavior
Journal of Neurochemistry
Physiology & Behavior
Frontiers in Behavioral Neuroscience
Frontiers in Neuroendocrinology
Brain Research
Behavioral Ecology and Sociobiology
Psychoneuroendocrinology
JAMA Pediatrics
Behavioural Brain Research
Developmental Origins of Health and Disease
Environment International
Environmental Research
Neuropsychiatric Disease & Treatment
Pediatric Obesity
Toxicology Letters
Toxicological Sciences
Translational Psychiatry

REFERENCES

Tallie Z. Baram, MD, PhD
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