

ELIZABETH B. RILEY

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Degrees

Boston University School of Medicine

9/2009 - 9/2015

Ph.D., Neuroscience and Pharmacology (Advisor: Irina Zhdanova)

Dissertation: Effects of cocaine on visual processing in zebrafish

Massachusetts Institute of Technology

9/2004 - 6/2008

B.S., Biological Engineering, minor in Music (Advisor: Drew Endy)

Research Overview

My primary interest is in developing and refining the understanding of modulatory neurotransmitter systems in the brain, especially the locus coeruleus norepinephrine system, including its relationships with neurodegenerative disease, somatic health, psychosocial health, and the evolutionary past. I combine the mechanistic orientation and technical skills I learned as an undergraduate and graduate student with the cognitive and affective neuroscience world I have joined as a postdoctoral researcher. In all my work, I strive to generate and extend a sense of community to my colleagues, students, research participants, and the greater world through genuine love of knowledge, ethical leadership, cultural competence, and dedication to diversity.

Research Experience

Cornell University

Affect and Cognition Laboratory

Advisors: Adam Anderson and Eve De Rosa

9/2018 – present

Postdoctoral Fellow at Attention, Memory and Perception Laboratory

Advisor: Khená Swallow

2017-2018, ongoing collaboration

VA Boston Healthcare System and Harvard Medical School

Special Geriatric Fellowship at Boston Attention and Learning Laboratory

Advisors: Joseph DeGutis and Michael Esterman

9/2015 – 9/2017

Boston University School of Medicine

Graduate Researcher at Laboratory of Sleep and Circadian Physiology

Advisor: Irina Zhdanova

9/2011 – 9/2015

Graduate Researcher

Advisor: Alan Herbert

6/2010 – 12/2011

Massachusetts Institute of Technology

Undergraduate Researcher at Irvine Lab

Advisor: Darrell Irvine

6/2007 – 9/2009

Undergraduate Researcher at Endy Lab

Advisor: Drew Endy

6/2006 – 1/2007

Grants

- Awarded
 - Ruth L. Kirschstein Postdoctoral Individual National Research Service Award (F32AG058479) 2018-2022
 - Awarded VA Advanced Fellowship in Advanced Geriatrics 2015-2017
 - Japan National Institute of Genetics Collaborative Research A 2012 (*declined*)
 - Undergraduate Research Opportunities Program funding 2006-2007
- Applied
 - National Institute on Aging R01 AG069468 (2021, not awarded, scored)
 - Nature Inclusive Health Research Awards 2022 (not awarded)
 - Davis Phinney Foundation: Cognition and exercise (submitted 2023, under review)
 - Michael J. Fox Foundation: Freezing of Gait in Parkinson's Disease Research Program (submitted 2023, under review)

Awards

- Cornell Postdoc Achievement Award in Community Engagement 9/2022
- Appointed to NIGMS T32 Biomolecular Pharmacology Training Grant 2010-2012
- Myriam Marcelle Znaty Award for Distinguished Achievement in Biolog. Engineering 2008

Teaching and Mentoring Experience

Cornell University

Postdoctoral Mentor 2018-present

- Oversight of undergraduate students enrolled in HD 4010, BIOG 2990, BIOG 4990, and COGST 4700
- Mentorship of Masters' and PhD students in the Affect and Cognition Laboratory

Guest Lecturer 2022-2023

- HD 3660
- HD 1125-101
- HD 1125-103

MRI analysis Instructor 2021-2023

Boston University School of Medicine

Pharmacology and Physiology Tutor 2012-2013

Undergraduate Research Opportunity Program Mentor 2012-2015

Massachusetts Institute of Technology

Terrascope Program Teaching Fellow

2005-2006

Professional Experience and Service

- Ad-hoc reviewer for Journal of the Neurological Sciences, Experimental Psychology, PLOS One, BMC Psychology, Neurobiology of Aging, Frontiers in Neuroscience, Brain Sciences
- Member of the College of Human Ecology Promoting Justice & Equity Committee
- Recent (2022-2023) professional talks and presentations:
 - Community Neuroscience Initiative, December 2023, on the development of neurodegenerative disease across the lifespan
 - Professional Development Committee, October 2023, on postdoctoral life
 - Cornell MRI Facility User Meeting, May 2023, on recent MRI results
 - Boston University Graduate Program for Neuroscience, March 2023, on postdoctoral life
 - Cornell NeuroSalon, December 2022, summarizing research on far transfer in cognitive training
 - Community Research Recruitment Accelerator, January 2022, on inclusive research methods

Trainees (2018-present)

Undergraduates

Lia Chen (2018-2019)
 Stephanie Steinberg
 (2018-2019)
 Nicholas Cicero (2019-ongoing
 collaboration)
 Elizabeth Sharp (2019-2020)
 Jul Salas (2019-2020)
 Love Nemecek (2019-2020)

Marley Vogel (2020-2022)
 Dana Oshiro (2020-2021)
 Genevieve Wager
 (2023-ongoing)
 Daniella Granin (2023-ongoing)
 Jade Oshodi (2023-ongoing)
 Dylan DeFelipe (2023-ongoing)

Graduate students

Mary MacMillan
 (2021-ongoing)
 Saeedeh Sadeghi (2020-2023)
 Hetvi Doshi (2021-ongoing)
 Senegal Mabry (2021-ongoing)
 Aurora Zhao (2022-2023)
 Sihan He (2022)
 Xinyi Deng (2021-2022)

Publications

(* indicates a trainee, ^ indicates co-first author)

Riley, E, Cicero, N, Swallow, KM, De Rosa, E, Anderson, AK (Under peer review at Neurobiology of Aging, impact factor 4.7). Locus coeruleus neuromelanin accumulation and dissipation across the lifespan. bioRxiv 2023.10.17.562814; doi: <https://doi.org/10.1101/2023.10.17.562814>

*Cicero, N[^], **Riley, E[^]**, Swallow, KM, De Rosa, E, Anderson, AK (Under revision at The Journal of Neuroscience, impact factor 5.3). Attention-dependent coupling with forebrain and brainstem neuromodulatory nuclei changes across the lifespan. Available on bioRxiv. <https://www.biorxiv.org/content/10.1101/2023.09.29.560190v1.full.pdf>

- Riley, E**, *Cicero, NG, Swallow, KM, Anderson, AK, De Rosa, E (Under peer review at Neurobiology of Aging, impact factor 4.7). Locus Coeruleus BOLD Activity is Reduced in Older Adults and Associated with Changes in Attention and Memory. Available on SSRN.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4577991
- Brangman, SA, Royal, K, Dillenbeck, C, McNamara, S, Smith, N, De Rosa, E, Anderson, A and **Riley, E**. (2023), Community research liaison role in increasing participation of African Americans in cognitive research: A case study. Alzheimer's and Dementia (impact factor 14.0), 19: e062941. <https://doi.org/10.1002/alz.062941>
- Riley, E**, Turker, H, Wang, D, Swallow, K, Anderson, A, De Rosa, E (2023). Nonlinear changes in pupillary orienting responses across the lifespan. GeroScience (impact factor 5.7).
<https://doi.org/10.1007/s11357-023-00834-1>
- Swallow, K, Broitman, A, **Riley, E**, Turker, H (2022). Grounding the attentional boost effect in events and the efficient brain. Frontiers in Psychology (impact factor 3.8) 12:892416.
<https://doi.org/10.3389/fpsyg.2022.892416>
- Turker, H, **Riley, E**, Luh, W, Colcombe, S, Swallow, K (2021). Estimates of locus coeruleus function with functional magnetic resonance imaging are influenced by localization approaches and the use of multi-echo data. Neuroimage (impact factor 7.4) 236:118047.
- Swallow, K, Jiang, Y, **Riley, E**. (2019). Target detection increases pupil diameter and enhances memory for background scenes during multi-tasking. Scientific Reports (impact factor 4.6) 9:5255.
<https://doi.org/10.1038/s41598-019-41658-4>
- Riley, E.**, Mitko, A., Stumps, A., Robinson, M., Milberg, W., McGlinchey, R., Esterman, M., & DeGutis, J. (2019). Clinically Significant Cognitive Dysfunction in OEF/OIF/OND Veterans: Prevalence and Clinical Associations. Neuropsychology (impact factor 2.4). Advance online publication.
<http://dx.doi.org/10.1037/neu0000529>
- Riley, E**, *Maymi, V, *Pawlyszyn, S, Yu, L and Zhdanova, I (2017). Prenatal cocaine exposure leads to multifaceted disruption of the dopaminergic system and its responses to cocaine. Genes, Brain and Behavior (impact factor 2.5) 1601 – 183X. doi: 10.1111/gbb.12436
- Riley, E**, Esterman, M, Fortenbaugh, F and DeGutis, J (2017). Time-of-day variation in sustained attentional control. Chronobiology International (impact factor 2.8) 1-9. doi: 10.1080/07420528.2017.1308951
- *Kacsprzak, V, *Patel, N, **Riley, E**, Kopotiyenko, K and Zhdanova, I (2017). Dopaminergic control of anxiety in young and aged zebrafish. Pharmacology, Biochemistry and Behavior (impact factor 3.6) 2017 Jun;157:1-8. doi: 10.1016/j.pbb.2017.01.005

Riley, E, Okabe, H, Germine, L, Wilmer, J, Esterman, M and DeGutis, J (2016). Gender differences in sustained attentional control relate to gender equality across countries. PLOS ONE (impact factor 3.7) 12(1): e0170876. doi: 10.1371/journal.pone.0170876

Riley E, Kopotiyenko K and Zhdanova I (2015) Prenatal and acute cocaine exposure affects neural responses and habituation to visual stimuli. Front. Neural Circuits (impact factor 3.5) 9:41. doi: 10.3389/fncir.2015.00041

Conference Presentations

(* indicates trainee)

*Mabry S, **Riley E**, Gonzalez M, DeRosa E, Anderson A. (2023) Differences in VTA-SN Anticipatory Brain Responses and Positive Emotions in Parkinson's Disease. Society for Neuroscience.

*Mabry S, **Riley E**, Gonzalez M, DeRosa E, Anderson A. (2023) Heart-based interoceptive awareness is impaired for people living with Parkinson's disease during stress and exercise. Flash Talk, 2nd annual NIH Annual Investigator Meeting on Interoception Research.

Ahmed T, *Mabry, S, **Riley, E**, Gonzalez, M, Anderson, A, De Rosa, E. (2023) The Impacts of Bee Venom on Parkinson's Disease in MPTP Induced Mice, Bronfenbrenner Center for Translational Research Undergraduate Translational Research Symposium

Chen G, *Mabry, S, **Riley, E**, Gonzalez, M, Anderson, A, De Rosa, E. (2023) Inherent Racial Biases May Lead to Lower Rates of Deep Brain Stimulation Treatment Among Minority Groups with Parkinson's Disease, Bronfenbrenner Center for Translational Research Undergraduate Translational Research Symposium

Faye L, *Mabry, S, **Riley, E**, Gonzalez, M, Anderson, A, De Rosa, E. (2023) The Role of Exercise in Alleviating Motor Symptoms of Parkinson's Disease, Bronfenbrenner Center for Translational Research Undergraduate Translational Research Symposium

Uwaifo E, *Mabry, S, **Riley, E**, Gonzalez, M, Anderson, A, De Rosa, E. (2023) Examining the Prevalence of Behavioral Changes and Impulse Control Disorder in Parkinson's Disease Patients and its Correlation to Dopaminergic System Activation, Bronfenbrenner Center for Translational Research Undergraduate Translational Research Symposium

Morton L, *Mabry, S, **Riley, E**, Gonzalez, M, Anderson, A, De Rosa, E. (2023) Global Trends in Ecological and Social Determinants of Health and the Disproportionate Rise in Prevalence of Parkinson's Disease, Bronfenbrenner Center for Translational Research Undergraduate Translational Research Symposium

Sanchez M, *Mabry, S, **Riley, E**, Gonzalez, M, Anderson, A, De Rosa, E. (2023) ReActing to Parkinson's Disease, Bronfenbrenner Center for Translational Research Undergraduate Translational Research Symposium

Zhang, Z, **Riley, E**, Anderson, A K, De Rosa, E, and Dai, W (2023). Image normalization effects on the age-related arterial transit time and perfusion changes. The International Society for Magnetic Resonance in Medicine.

- *Mabry, S, **Riley E**, Gonzalez M, DeRosa E, Anderson A. (July 2023) The effect of the social evaluative threat on substantia nigra functional connections to stress processing system regions of interest. World Parkinson's Congress Barcelona
- Riley, E**, Cammarata, C, Anderson, A K and De Rosa, E (2023). Heart rate variability and basal forebrain activity during proactive interference across the lifespan. Society for Neuroscience.
- Riley, E**, Swallow, K M, Anderson, A K, and De Rosa, E (2023). Locus coeruleus hyperactivity in middle age may be associated with better cognitive performance. Alzheimer's Association International Conference.
<https://alz.confex.com/alz/2023/meetingapp.cgi/Paper/82666>
- Zhang, Z, **Riley, E**, Anderson, A K, De Rosa, E, and Dai, W (2022). Potential regulation of cerebral blood flow by the basal forebrain. The International Society for Magnetic Resonance in Medicine.
- Riley, E**, *Cicero, N, Swallow, K, Anderson, A, De Rosa, E (2022). The relationship between locus coeruleus activity and pupillary responses changes with age. *Open Human Brain Mapping.*
- Riley, E**, *Cicero, N, Turker, H, Swallow, K, De Rosa, E, Anderson, A (2021). Multimodal evidence that pupillary responses are useful for examining aging in the locus coeruleus. *Open Human Brain Mapping*
- *Cicero, N., **Riley, E.**, Anderson, A., & De Rosa, E. (2021). Attention and memory encoding in healthy aging and implications for cognitive impairment. *The BRAIN Conference*
- *Cicero, N., **Riley, E.**, Anderson, A., & De Rosa, E. (2021). Attention and memory encoding in healthy aging and implications for cognitive impairment. *Human Brain Project Student Conference 2021: 5th HBP Student Conference on Interdisciplinary Brain Research*
- Turker, H, **Riley, E**, Luh, W, Colcombe, S, Swallow, S (2020). Multi-echo fMRI and Localization Method Affect Functional Estimates of the Locus Coeruleus. *Open Human Brain Mapping*
- *Cicero, N., **Riley, E.**, Anderson, A., & De Rosa, E. (2020). Attention and memory encoding in healthy aging and implications for cognitive impairment. *Cornell Undergraduate Research Board, Fall Forum 2020*
- *Steinberg, S, **Riley, E**, De Rosa, E (2020). Cerebellar contributions to working memory in young and older adults. *International Neuropsychological Society*
- Riley, E**, *Steinberg, S, *Chen, L, Swallow, K, De Rosa, E, Anderson, A (2019). Measuring age-related changes in locus coeruleus intensity and its relationship to cognitive aging. *Society for Neuroscience*
- Riley, E**, Okabe, H, Germine, L, Wilmer, J, Esterman, M, and DeGutis, J (2016). Gender differences in sustained attentional control relate to gender equality across countries. *Psychonomic Society*

Okabe, H, **Riley, E**, Germine, L, Wilmer, J, Esterman, M, and DeGutis, J (2016). Gender differences in sustained attentional control are related to indices of gender inequality across countries. *International Neuropsychological Society*

Riley, E, Kopotiyenko, K and Zhdanova, I (2015). Early cocaine exposure and visual perception. *European Zebrafish Meeting*

Kopotiyenko, K, **Riley, E**, Herbert, A and Zhdanova, I (2012). Early cocaine exposure and responses to visual stimuli. *International Conference on Zebrafish Development*