

Degrees

Boston University School of Medicine	9/2009 - 9/2015
Ph.D., Neuroscience and Pharmacology	
Massachusetts Institute of Technology	9/2004 - 6/2008
B.S., Biological Engineering, minor in Music	

Research Overview

My primary interest is in refining and communicating an understanding of modulatory neurotransmitter systems in the brain, especially the locus coeruleus norepinephrine system, including its relationships with cognitive aging, neurodegenerative disease, metabolic health, and environmental health. I work to identify treatments that may improve outcomes in cognitive aging. In all my work, I strive to generate and extend a sense of community to my colleagues, students, and research participants.

Positions and Employment

Cornell University

Research Associate (2024-present) and Postdoctoral Fellow (2018-2024) at Affect and Cognition Laboratory

Supervisors: Adam Anderson and Eve De Rosa 2018 – present

Postdoctoral Fellow at Attention, Memory and Perception Laboratory (part time)

Supervisor: Khenia Swallow 2017-2018

VA Boston Healthcare System and Harvard Medical School

Postdoctoral Fellow at Boston Attention and Learning Laboratory

Mentors: Joseph DeGutis and Michael Esterman 2015 – 2017

Boston University School of Medicine

Graduate Researcher, Advisor: Irina Zhdanova

2011 – 2015

Graduate Researcher, Advisor: Alan Herbert

2010 – 2011

Massachusetts Institute of Technology

Undergraduate Researcher (full time during summer), Advisor: Darrell Irvine

2007 – 2009

Undergraduate Researcher (full time during summer), Advisor: Drew Endy

2006 – 2007

Grants

- Awarded
 - USDA NIFA Federal Capacity Funds 2025
 - Ruth L. Kirschstein Postdoctoral Individual National Research Service Award (F32AG058479) 2018-2022
 - Veterans Administration Fellowship in Advanced Geriatrics 2015-2017
 - Japan National Institute of Genetics Collaborative Research A 2012 (declined)
- Applied
 - National Institute on Aging R01 (under review) 2025
 - National Institute on Aging R01 R01AG092957 (19th percentile first submission, 20th percentile second submission) 2024-2025
 - Cornell Center for Health Equity pilot grant (not awarded) 2024
 - Davis Phinney Foundation: Cognition and exercise (not awarded) 2023
 - Michael J. Fox Foundation: Freezing of Gait in Parkinson's Disease Research Program (program halted) 2023
 - Nature Inclusive Health Research Awards (not awarded) 2022
 - National Institute on Aging R01 AG069468 (reviewed, not awarded) 2021

Awards

- National Institute on Aging Butler Williams Scholars Program 2024
- Community Neuroscience Emerging Scholar Luminary Award 2024
- Cornell Postdoc Achievement Award in Community Engagement 2022
- Awarded T32 NIGMS Biomolecular Pharmacology Training Grant 2010 – 2012
- Myriam Marcelle Znaty Award for Distinguished Achievement in Biological Engineering 2008

Memberships in Professional Societies

Cornell Community Neuroscience Initiative

Neuro Climate Working Group

Society for Neuroscience

Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment
(Professional Interest Area: Neuromodulatory Subcortical Systems)

Teaching and Mentoring Experience

Cornell University

Research Mentor

9/2018 – present

- Oversight of undergraduate students enrolled in HD 4010, BIOG 2990, BIOG 4990, and COGST 4700, including development of full-year research methods curriculum
- Mentorship of Masters and PhD students in the Affect and Cognition Laboratory

Guest Lecturer

2022-present

- HD 4650: Neuroimaging for Behavioral Syndromes
- HD 3660: Affective and Social Neuroscience
- HD 2310/PSYCH 2300: How the Brain Makes the Mind
- HD 1125-101: Finding Science in Fiction, HD 1125-103: Science as the Greatest Good

Boston University School of Medicine

Pharmacology Tutor (SDM MD 530)

9/2012 – 12/2013

Undergraduate Research Opportunity Program Mentor

6/2012 – 6/2015

Massachusetts Institute of Technology

Terrascope Program Teaching Fellow (Course 12.000, Solving Complex Problems) 9/2005 – 6/2006

Professional Experience and Service

- Developed and currently running clinical trial NCT06880510 to examine the effects of vagus nerve stimulation on locus coeruleus health across the lifespan
- Ad-hoc reviewer for Journal of the Neurological Sciences, Experimental Psychology, PLOS One, BMC Psychology, Neurobiology of Aging, Frontiers in Neuroscience, Brain Sciences, SLEEP
- Member of the College of Human Ecology Promoting Justice & Equity Committee
- Selected professional talks and presentations:
 - Trustee-Council Annual Meeting Kickoff, 10/2025
 - Climate- and Community-Engaged Science in Psychology, 4/2025
 - Broffenbrenner Center for Translational Research Talks at Twelve, 2/2025
 - Community Neuroscience Celebration Luminary lecture, 5/2024
 - Community Neuroscience Initiative Accessible Neuroscience lecture, 12/2023
 - Cornell Professional Development Committee panel, 10/2023
 - Boston University Graduate Program for Neuroscience panel, 3/2023
 - Community Research Recruitment Accelerator lecture, 1/2022
- Outreach events
 - Girl Scouts Troop 40226 STEM Exploration Badge event, 10/2024
 - Upward Bound x Community Neuroscience Institute event, 3/2024, 3/2025

Trainees

Undergraduates

Lia Chen (2018-2019)
 Stephanie Steinberg (2018-2019)
 Nicholas Cicero (2019-ongoing collaboration)
 Elizabeth Sharp (2019-2020)
 Julio Salas (2019-2020)
 Love Nemecek (2019-2020)
 Marley Vogel (2020-2022)
 Dana Oshiro (2020-2021)

Genevieve Wager (2023-)
 Daniella Granin (2023-2024)
 Jade Oshodi (2023-2024)
 Dylan DeFelipe (2023-2024)
 Zachary Steinbrun (2024-)
 Katherine Wu (2024-)
 Azaria Hysmith (2024-)
 Samantha Rahman (2025-)
 Yubin Lee (2025-)
 Ruizeng Wang (2025-)
 Anabella Munoz (2025-)

Graduate students

Mary MacMillan (2021-2024)
 Saeedeh Sadeghi (2021-2023)
 Lia Chen (2021-)
 Hetvi Doshi (2021-)
 Senegal Mabry (2021-)
 Aurora Zhao (2022-2023)
 Sihan He (2022)
 Xinyi Deng (2021-2022)
 Jordan Johnson (2023-)

Publications

(* indicates trainee)

Riley E B, Wager G, Rahman S N, De Rosa E, Anderson A K (2025) Vagal nerve stimulation alters task-evoked pupillary responses in older adults but not younger adults in a single-blind sham-controlled crossover trial. Biorxiv 2025.10.10.681160.

Riley E B, *Cicero N G, Swallow K M, Anderson A K, De Rosa E (2025) Blood oxygenation level-dependent responses in neuromodulatory nuclei and their associations with attention and memory across age groups. Neurobiology of Aging 155:24–34

Gonzalez M, Laser R, Carrillo S C, Deng X, **Riley E B** et al. (2025) Science democratization for rigor, relevance, and resilience. Developmental Psychobiology 67(5): e70075

Riley E B, *Cicero N G, Swallow K M, De Rosa E, Anderson A K (2025) Age-related differences in locus coeruleus intensity across a demographically diverse sample. Neurobiology of Aging 150:122–131

Zhang Z, **Riley E B**, Chen S, Zhao L, Anderson A K, De Rosa E, Dai W (2025) Age and gender-related patterns of arterial transit time and cerebral blood flow in healthy adults. NeuroImage 309:121098

^*Cicero N G*, ^**Riley E B**, Swallow K M, De Rosa E, Anderson A K (2025) Attention-dependent coupling with forebrain and brainstem neuromodulatory nuclei changes across the lifespan. GeroScience ^co-first author

*Mabry S A and **Riley E B** (2024) Your black and blue brain regions and the story they tell about brain disease. Frontiers for Young Minds 12:1371251

Brangman S A, Royal K, Dillenbeck C, McNamara S, Smith N, De Rosa E, Anderson A K, **Riley E B** (2023) Community research liaison role in increasing participation of African Americans in cognitive research: a case study. Alzheimer's & Dementia 19:e062941

Riley E B, Turker H, Wang D, Swallow K M, Anderson A K, De Rosa E (2023) Nonlinear changes in pupillary orienting responses across the lifespan. *GeroScience* 46:1017–1033

Swallow K M, Broitman A, **Riley E B**, Turker H (2022) Grounding the attentional boost effect in events and the efficient brain. *Frontiers in Psychology* 12:892416

Turker H, **Riley E B**, Luh W, Colcombe S, Swallow K M (2021) Estimates of locus coeruleus function with fMRI are influenced by localization approaches and use of multi-echo data. *NeuroImage* 236:118047

Swallow K M, Jiang Y V, **Riley E B** (2019) Target detection increases pupil diameter and enhances memory for background scenes during multitasking. *Scientific Reports* 9:5255

Riley E B, 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* 33(4):534–546

Riley E B, Maymi V, Pawlyszyn S, Yu L, Zhdanova I V (2017) Prenatal cocaine exposure leads to multifaceted disruption of the dopaminergic system and its responses to cocaine. *Genes Brain and Behavior* 16(1):183X

Riley E B, Esterman M, Fortenbaugh F, DeGutis J (2017) Time-of-day variation in sustained attentional control. *Chronobiology International* 34(1):1–9

*Kacsprzak V, *Patel N, **Riley E B**, Kopotiyenko K, Zhdanova I V (2017) Dopaminergic control of anxiety in young and aged zebrafish. *Pharmacology Biochemistry and Behavior* 157:1–8

Riley E B, Okabe H, Germine L, Wilmer J, Esterman M, DeGutis J (2016) Gender differences in sustained attentional control relate to gender equality across countries. *PLOS ONE* 12(1):e0170876

Riley E B, Kopotiyenko K, Zhdanova I V (2015) Prenatal and acute cocaine exposure affects neural responses and habituation to visual stimuli. *Frontiers in Neural Circuits* 9:4

Conference Presentations (selected)

(* indicates trainee)

Riley E B, Anderson A K, De Rosa E (2025) Effects of transcutaneous auricular vagus nerve stimulation (taVNS) on pupillary responses in younger and older adults. *Alzheimer's Association International Conference 2025*

Riley E B, Anderson A K, De Rosa E (2025) Pupil-brain coupling across the adult lifespan. *Integrative Neuromodulatory Subcortical Systems Meeting 2025*

*Chen L, **Riley E B**, Anderson A K, De Rosa E (2025) Convergence of cognitive and cardiovascular risk factors for dementia. *Alzheimer's Disease Gordon Research Conference 2025*

*Wager G, De Rosa E, Anderson A K, **Riley E B** (2025) An electroceutical approach for attention regulation. *Cornell Undergraduate Psychology Conference 2025*

*Rahman S, De Rosa E, Anderson A K, **Riley E B** (2025) Preventing dementia: community differences in modifiable risk factors and their effect on cognition. Cornell Undergraduate Psychology Conference 2025

*Steinbrun Z, De Rosa E, Anderson A K, **Riley E B** (2025) Demographic variation in movement and cost functions during fMRI scanning. Cornell Undergraduate Psychology Conference 2025

*Hysmith A, De Rosa E, Anderson A K, **Riley E B** (2025) A tale of two cities: how location correlates with cognitive function. Cornell Undergraduate Psychology Conference 2025

*Wu K, De Rosa E, Anderson A K, **Riley E B** (2025) Neuromelanin as a biomarker for substantia nigra degeneration in Parkinson's disease (flash talk). Cornell Undergraduate Psychology Conference 2025

Riley E B, De Rosa E, Anderson A K (2024) Measuring changes in locus coeruleus health across the lifespan. Pavlovian Society Conference 2024

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

Faye L, *Mabry S A, **Riley E B**, Gonzalez M, Anderson A K, De Rosa E (2023) The role of exercise in alleviating motor symptoms of Parkinson's disease. Bronfenbrenner Center for Translational Research Undergraduate Symposium 2023

Morton L, *Mabry S A, **Riley E B**, Gonzalez M, Anderson A K, De Rosa E (2023) Global trends in ecological and social determinants of health and the disproportionate rise in Parkinson's disease. Bronfenbrenner Center for Translational Research Undergraduate Symposium 2023

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

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

*Mabry S A, **Riley E B**, Gonzalez M, De Rosa E, Anderson A K (July 2023) The effect of social evaluative threat on substantia nigra functional connections to stress-processing regions of interest. World Parkinson's Congress Barcelona 2023

Riley E B, Cammarata C, Anderson A K, De Rosa E (2023) Heart rate variability and basal forebrain activity during proactive interference across the lifespan. Society for Neuroscience 2023

Riley E B, Swallow K M, Anderson A K, De Rosa E (2023) Locus coeruleus hyperactivity in middle age may be associated with better cognitive performance. Alzheimer's Association International Conference 2023

Zhang Z, **Riley E B**, Anderson A K, De Rosa E, Dai W (2022) Potential regulation of cerebral blood flow by the basal forebrain. International Society for Magnetic Resonance in Medicine 2022

Riley E B, *Cicero N G, Swallow K M, Anderson A K, De Rosa E (2022) The relationship between locus coeruleus activity and pupillary responses changes with age. Open Human Brain Mapping 2022

Riley E B, *Cicero N G, Turker H, Swallow K M, De Rosa E, Anderson A K (2021) Multimodal evidence that pupillary responses are useful for examining aging in the locus coeruleus. Open Human Brain Mapping 2021

*Cicero N G, **Riley E B**, Anderson A K, De Rosa E (2021) Attention and memory encoding in healthy aging and implications for cognitive impairment. The BRAIN Conference 2021

*Cicero N G, **Riley E B**, Anderson A K, De Rosa E (2021) Attention and memory encoding in healthy aging and implications for cognitive impairment. Human Brain Project Student Conference 2021 (5th HBP Conference on Interdisciplinary Brain Research)

Turker H, **Riley E B**, Luh W, Colcombe S, Swallow S (2020) Multi-echo fMRI and localization method affect functional estimates of the locus coeruleus. Open Human Brain Mapping 2020

*Cicero N G, **Riley E B**, Anderson A K, 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 B**, De Rosa E (2020) Cerebellar contributions to working memory in young and older adults. International Neuropsychological Society 2020

Riley E B, *Steinberg S, *Chen L, Swallow K M, De Rosa E, Anderson A K (2019) Measuring age-related changes in locus coeruleus intensity and its relationship to cognitive aging. Society for Neuroscience 2019

Riley E B, Okabe H, Germine L, Wilmer J, Esterman M, DeGutis J (2016) Gender differences in sustained attentional control relate to gender equality across countries. Psychonomic Society 2016

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

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

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