

Meghan E. Gallo

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RESEARCH INTERESTS

Early life stress; Reinforcement learning; Striatal dopamine; Acetylcholine; Uncertainty; Development; Pavlovian-instrumental conflict

EDUCATION

- 2016 B. A. in Psychology; *cum laude*, Providence College, Providence, RI
2016-Current PhD Candidate (Thesis Advisors: Kevin Bath, Christopher Moore and Michael Frank), Cognitive, Linguistic and Psychological Sciences, Brown University, Providence, RI
2021-Current Visiting student at Columbia University and New York State Psychiatric Institute, New York, NY

AWARDS/HONORS

- 2022 Travel Award for International Society for Developmental Psychobiology
2022 Brown University Graduate Student Travel Award
2021 Travel Award for International Society for Developmental Psychobiology
2017 Travel Award for International Society for Developmental Psychobiology
2016 Lifespan Poster, Honorable Mention
2012-2016 Providence College Albertus Magnus Science Scholarship
2014-2016 Research Honor Society (Sigma Xi)
2015-2016 Psychology Honor Society (Psi Chi)
2016 Premedical Honor Society (Alpha Epsilon Delta)
2015-2016 Providence College Dean's List

GRANTS

- 2021-2023 NIH- 1F31DA053088-01A1. "Early life adversity amplifies behavioral opportunism by altering striatal dopamine signaling". (PI: **Gallo**)
2015 Rhode Island IDeA Networks of Biomedical Research Excellence (RI-INBRE) Summer Undergraduate Research. "Genetic association of GABRG2 and body dysmorphic disorder in a mouse model".
2014 Providence College Undergraduate Research Grant. "The circadian role of light and food presentation on behavioral and physiological outcomes in Fischer rats". (PI: **Gallo**)

PUBLICATIONS

- Gallo, M.**, A.A. Hamid, A. Jaskir, J. Bretton, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (*in prep.*). "Early life adversity alters dopamine signaling underlying diminished reward sensitivity and slowed reinforcement learning in mice".
Demaestri, C., **M. Gallo**, E. Mazenod, AT Hong, H Arora, AK Short, HS Stern, T.Z. Baram, K.G. Bath. (2022). "Resource Scarcity But Not Maternal Separation Provokes Unpredictable Maternal Care Sequences in Mice and Both Upregulate Crh-Associated Gene Expression in the Amygdala". *Neurobiology of Stress* 20, 100484.
Demaestri, C., T. Pan, M. Critz, D. Ofray, **M. Gallo**, K.G. Bath. (2020). "Type of early life adversity confers differential, sex-dependent effects on early maturational milestones in mice". *Hormones and behavior* 124, 104763.
Gallo, M., D. Shifler, L. Godoy, D. Ofray, A. Olaniyan, T. Campbell, K. G. Bath. (2019). "Limited bedding and nesting induces maternal behavior resembling both hypervigilance and abuse". *Frontiers in behavioral neuroscience* 13.
Goodwill, H., G. Manzano-Nieves, **M. Gallo**, H. Lee, E. Oyerinde, T. Serre, K. Bath. (2019). "Early life stress leads to sex differences in the development of depressive-like outcomes in mouse model". *Neuropsychopharmacology* 44 (4), 711.
Manzano-Nieves, G., A. Nitenson, **M. Gallo**, K.G. Bath (2018). "Impact of early life stress on sexual maturation and variation in anxiety-like behavior over the estrous cycle in female mice". *Frontiers in Molecular Neuroscience* 12(27).
Manzano-Nieves, G., M. Gaillard, **M. Gallo**, and Bath, K.G. (2018). Early life stress increases foot-shock sensitivity threshold in both adult male and female mice. *Behavioral Neuroscience* 132(4):247-57.
Bath, K.G., A. Schilit Nitenson, E. Lichtman, C. Lopez, W. Chen, **M. Gallo**, H. Goodwill, G. Manzano-Nieves. (2017). "Early life stress leads to developmental and sex selective effects on performance in a novel object placement task". *Neurobiology of Stress* 7: 57-67.

PROFESSIONAL PRESENTATIONS

- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) “Early life adversity slows reinforcement learning and disrupts optimal decision making in adult mice”. Society for Neuroscience, *San Diego, CA*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) “Early life adversity slows reinforcement learning and disrupts optimal decision making in adult mice”. International Society for Developmental Psychobiology, *San Diego, CA*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) “Early life adversity slows reinforcement learning and disrupts optimal decision making in adult mice”. Computational Psychiatry Course, *New York, NY*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) “Mouse model of early life adversity alters reinforcement learning and strategies for decision making”. *RLDM, Providence, RI*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) “Mouse model of early life adversity alters reinforcement learning and strategies for decision making”. *Stress Neurobiology Workshop, Columbia, SC*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) “Early life adversity diminishes reward sensitivity and slows reinforcement learning in mice”. *Winter Conference for Brain Research, Aspen, CO*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2021) “Early life adversity alters reward learning and decision making mechanisms in mice”. *International Society for Developmental Psychobiology, Chicago*.
- Gallo, M.**, A.A. Hamid, A. Jaskir, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2021) “Early life adversity alters reward learning and decision making mechanisms in mice”. *Society for Neuroscience, Chicago*.
- Gallo, M.**, A.A. Hamid, D. Ofray, D. Shleifer, E. Hrabachuk, , K.G. Bath (2019) “The effects of early life adversity on instrumental reward learning”. *Society for Neuroscience, Chicago*.
- Gallo, M.**, A.A. Hamid D. Ofray, D. Shleifer, E. Hrabachuk, K.G. Bath (2019) “The effects of early life adversity motivational vigor and striatal dopamine functioning in a mouse model”. *Pavlovian Society*.
- Gallo, M.**, T. Campbell, A. Olaniyan, K. Bath. (2018). The effects of early life stress on central and peripheral immune development in male and female mice. *Society for Neuroscience. San Diego*.
- Gallo, M.** H. Goodwill, K. Bath. (2018). “The effects of early life stress on striatal dopamine and depressive-like behavior”. *International Society for Developmental Psychobiology. San Diego*.
- Gallo, M.**, Olaniyan, A., Godoy, L., Campbell, T., and Bath, K.G. (2018). Early life stress in a mouse model: An in-depth analysis of the limited bedding paradigm and its outcomes. *FLUX. Berlin*.
- Gallo, M.**, A. Olaniyan, T. Campbell, K. G. Bath. (2017) “Early life stress: In depth analysis of maternal behavior in response to limited bedding”. *Society for Neuroscience, Washington D.C.*
- Gallo, M.**, G. Manzano-Nieves, A. Nitenson, K. G. Bath. (2017) “The Effect of Early Life Stress on Sexual Maturation and Immune Development”. *International Society for Developmental Psychobiology*.
- Gallo, M.**, G. Manzano Nieves, C. Lopez, K.G. Bath. (2017). “The Effects of Early Life Stress on Sexual Maturation and the Development of Sexually Dimorphic Brain Regions”. *APS Annual Conference. American Psychological Sciences, Boston, MA*.
- Gallo, M.**, K. Phillips, K.G. Bath, C. Bloom. (2017). “Inhibiting Inhibition: Consequences of *Gabrg-2* on Fear and Anxiety”. *Mind Brain Research Day. Brown University, Providence, RI*.
- Gallo, M.**, M. Gaillard, G. Manzano-Nieves, and K.G. Bath. (2016). “Sex selective effects of early life stress on behavioral phenotypes: implications of the estrous cycle”. *24th Annual Lifespan Hospitals Research Celebration Day. Rhode Island Hospital, Providence, RI. Honorable Mention*.

INVITED TALKS

- “Exposure to early life adversity disrupts mechanisms of reward learning and decision making in mice”. Lerner Lab Meeting, Northwestern University. March 2022.
- “Exposure to early life adversity disrupts mechanisms of reward learning and decision making in mice”. Cognition Seminar, Brown University. February 2022.
- “Exposure to early life adversity disrupts mechanisms of reward learning and decision making in mice”. Winter Conference for Brain Research, Aspen, Colorado. February 2022.
- “Exposure to early life adversity disrupts reward processing in mice”. Gee-Brenhouse-Pena-Bath Joint Lab Meeting. December 2021.
- “Approaches to assessing reward motivated behaviors”. Experimental Biological Psychology, Providence College. May

2021.

“Effects of early life adversity on reward motivated behaviors”. Brenhouse Lab, Northeastern University. April 2021.

“Early life adversity is not a monolithic experience”. Developmental Neuroscience Group, New York University. January 2021.

“Effects of early life adversity on mechanisms of reward learning and decision making”. Lee Lab, Weill Cornell. August 2020.

“The effects of early life adversity on reward seeking”. New York Psychiatric Institute. May 2020.

“Characterizing a mouse model of early life adversity”. Rhode Island College. April 2018.

TEACHING

2016-Current Graduate Student Mentor (Mentee list below)

2020 *Instructor*, Introduction to Cognitive Neuroscience (Summer at Brown University); Fully enrolled class canceled due to COVID-19

2020 *Teaching Assistant*, Laboratory on Genes and Behavior (Brown University)

2019 *Instructor*, Introduction to Cognitive Neuroscience (Summer at Brown University)

2019 *Teaching Assistant*, Introduction to Biological Psychiatry (Brown University)

2018 *Instructor*, Introduction to Cognitive Neuroscience (Summer at Brown University)

2018 *Teaching Assistant*, Introduction to Animal Behavior (Stem 1 at Brown University)

2018 *Teaching Assistant*, Brain and Behavior (Brown University)

2017 *Teaching Assistant*, Memory and the Brain (Brown University)

2017 Sheridan Center Teaching Certificate

2017 *Teaching Assistant*, Introduction to Animal Behavior (STEM 1 at Brown)

STUDENT MENTEES

**Denotes honors directed thesis*

Emily Sun (2021-Present), Tracy Pan (2020-2022)*, Cassandra T-Peterson (2020-2021)*, Daniel Shleifer (2018-2020)*, Eugene Hrabarchuk (2018-2020)*, Aliyah Oliyan (2016-2018), Talia Campbell(2016-2018)*, D’Nea Galbraith (2017), Marques Love (2017)

LEADERSHIP, COMMUNICATION AND COMMUNITY OUTREACH

2017-2019 *Graduate Women in Science and Engineering (GWISE) Outreach Coordinator*

Facilitating outreach events fostering connections to local community to empower women and girls in science

2017-2019 *Young Scholars Conference Planning Team*

Organized conference with Brown University’s Office of Institutional Equity and Diversity to prepare graduate and post-doctoral women in STEM for the job market in industry and academia. Organized events at the conference, recruited participants, reviewed applicants, and invited speakers.

SKILLS

- Sheridan Center Teaching Certificate
- Animal care
 - Breeding, weaning, ear punching, tail clippings, tissue collections, intraperitoneal cavity injections, euthanasia, perfusions, necropsies, blood collections, stereotaxic surgery
- Behavioral assays
 - Elevated plus maze, open field test, forced swim, tail suspension, fear conditioning, Barnes maze, sucrose preference, digging task, lickometry, magazine and lever training, probabilistic bandit task
- Biochemical and molecular methods
 - Western blots, ELISAs, DNA/RNA isolation, monocyte isolation, rtPCR, qPCR
- Cellular Analysis
 - Confocal/light and florescent microscopy, cell counting
- Computer analysis/programming
 - Matlab, R Studio, Ethovision, SPSS, Labview, computational modeling of behavior
- Neural imaging
 - dLight fiber photometry
- Histology
 - Immunohistochemistry, H&E staining, RNAscope