Annabelle Flores-Bonilla

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Addiction Neuroscientist

- Interested in the neurobiology of resilience, and I aim to understand the cellular and circuit adaptations in response to stress and addiction.
- Experienced in cognitive and addiction-associated behavior in transgenic and disease rodent models, with expertise in histology, molecular biology, and fluorescent confocal microscopy.
- Awarded fully funded fellowships for research training by the National Science Foundation, University of Massachusetts, and Society for Neuroscience.

Education

University of Massachusetts, Amherst, MA.
Ph.D. Neuroscience and Behavior *Expected May 2026*
NIH-Postbaccalaureate Research Education Program 2020

Pontifical Catholic University of Puerto Rico, Ponce, PR. 2019
B.S. in Biology; Magna Cum Laude; Biology Award

Publications

1. A history of adolescent drinking increases myelination of axons within the corticotropin releasing factor-enriched subregion of the central amygdala in adult mice. ***Flores-Bonilla A****, Akli S, Rajvanshi A, Milczarek A, and Richardson HN. In prep.*
2. Adolescent alcohol binge drinking induced long-lasting changes in the population of myelinating oligodendrocytes that differentiated prior to adolescence in male and female mice. ***Flores-Bonilla A****, Akli S, Kagen L, De Oliveira B, Rajvanshi A, Amira N, and Richardson HN. In prep.*
3. Adolescent drinking causes loss of aspartoacylase-expressing oligodendrocytes and hypomyelination of anterior cingulate and corpus callosum axons in male mice, but not female. *Akli S*, **Flores-Bonilla A****, *Nouduri S, Scott S, Richardson HN. (2026). BioRxiv* and submitted to Neuroscience. **Co-first authors.*
4. Shortening time for access to alcohol drives up front-loading behavior, bringing consumption in male rats to the level of females. ***Flores-Bonilla A****, De Oliveira B, Silva-Gotay A, Lucier KW, and Richardson HN.* (2021). *Biology of Sex Differences*. 12(51).
5. Sex differences in the Neurobiology of Alcohol Use Disorder. ***Flores-Bonilla A*** *and Richardson HN.* (2020). *Alcohol Research: Current Reviews.*40(2):04

Relevant Research Experience

University of Massachusetts, Amherst, MA | Neuroscience PhD Candidate and GFRP Researcher
Heather Richardson, Ph.D. | Neurobiology of Stress and Addiction Lab | 06/2019 – 05/2026

- Characterized the effects of adolescent alcohol binge drinking on white matter fiber tracts in mice using immunofluorescent confocal microscopy and analyses.
- Led a team of research assistants to conduct behavioral analyses and characterize the population of oligodendrocyte lineage cells in frontotemporal and stress circuits in mice following alcohol exposure.
- Designed and executed operant condition experiments of alcohol consumption in rats.

Johns Hopkins University School of Medicine, Baltimore, MD | Undergraduate Summer Intern
Patricia Janak, Ph.D. | Addiction Learning and Reward Lab | 06/2018 – 08/2018

- Researched the role of individual differences driving reward seeking behaviors in rats.
- Characterized dopamine function in reward-associated learning using operant chambers.

Ponce Health Science University, Ponce, PR | Undergraduate Research Technician
Devin Mueller, Ph.D. | Cocaine Addiction Lab | 01/2017 – 12/2017

- Conducted hands-on conditioned place preference using rats following cocaine exposure.

- Assessed the role of calcium-dependent astrocyte signaling in cocaine-associated memories.

Skills and Competencies

- Transgenic Mouse Colony Management
- Rodent administration of drugs and alcohol
- Rodent Behavioral and Cognitive assays
- Experimental Design and Grant Writing
- Brain Histology and Immunofluorescent Confocal Microscopy Imaging and Analysis
- Statistical Analysis and Data Visualization in R and GraphPad PRISM

Honors for Research Funding and Professional Development

- Trainee Professional Development Award (TDPA), Society for Neuroscience (SFN) 2024
- Spaulding-Smith Fellowship, University of Massachusetts, Amherst, MA 2020 – 2026
- National Science Foundation (NSF) Graduate Research Fellowship Program 2020 – 2025

Relevant Scientific Communication

Flores-Bonilla A "Sex Differences in Myelin Remodeling Following Adolescent Alcohol Use." March 16th, 2026; *Invited talk at Weera Addiction Neuroscience Lab.* Tufts University, Medford, MA. *Oral Presentation.*

Akli S, **Flores-Bonilla A,** Nouduri S, Scott S, Senthilkumar R, and Richardson HN. "Adolescent Drinking Disrupts Maturation of Late-Stage Oligodendroglia in Mice." June 2025; *48th Annual Research Society in Alcohol Scientific Meeting 2025.* New Orleans, LA. *Poster Presentation.*

Flores-Bonilla A, Akli S, Senthikumar R, De Oliveira B, Rajvanshi A, Amira N, Richardson HN. "A history of adolescent drinking increases myelination of axons within the corticotropin releasing factor-enriched subregion of the central amygdala in adult mice." *2024 SFN Conference.* Chicago, IL.

Flores-Bonilla A. "Examination of the escalation of alcohol drinking and myelination of stress circuits after adolescent alcohol consumption" *Neuroscience and Behavior Seminar Series*, Old Chapel, University of Massachusetts, Amherst, MA. March 6th, 2024. *Oral Presentation.*

Professional Associations

- Member of the Society for Neuroscience 2023-Present
- Research Society on Alcohol 2020-Present
- The Leadership Alliance 2018-2019
- Puerto Rico Louis Stokes Alliance for Minority Participation (PR-LSAMP) 2017-2018

Relevant Leadership experience

- Spaulding-Smith Peer Mentor, provided 1:1 assistance to a 1st year PhD student 2025
- NSB Community and Social Coordinator, created events for neuroscience networking 2024
- NSB Chair of the Mentorship Committee, coordinated mentor-mentee connections 2024
- PREP Near Peer Mentor, feedback for graduate school and fellowship applications 2021-2024
- NSF Graduate Research Fellowship Program (GRFP) Mentor, a competitive and trained position to evaluate and provide feedback on the NSF GRFP application materials. Co-facilitated an Office of Professional Development workshop 2021
- Student Mentors Project, provided guidance on the student's enrollment in the department of biology, biotechnology, chemistry, and mathematics 2017

Languages

- Native speaking, reading, and writing: Spanish
- Bilingual speaking, reading, and writing: English