# Viviana P. Valentín-Valentín

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# **EDUCATION**

Emory University

- Ph.D., Neuroscience. Dates attended: August 2021 present
- GPA: 4.0
- Expected May 2026

University of Puerto Rico-Rio Piedras (UPR-RP)

- B.S., Cellular and Molecular Biology. Dates attended: August 2017-Present
- GPA: 3.6 / 4.0 scale
- Conferred May 2021

### **RESEARCH EXPERIENCE**

#### July 2022 - present

Emory University - Department of Pediatrics Principal Investigator: Dr. Shannon Gourley

- Understanding the neural mechanisms underlying habit formation in the young brain
  - Central hypothesis: habits are driven by subcortical regions (i.e. vHC and CeA), which mature early in development, whereas goal-directed behaviors recruit frontal cortical structures, which develop later.

#### January 2019-June 2021

University of Puerto Rico – Medical Sciences Campus, Departments of Psychiatry and Neurobiology & Anatomy

#### Principal Investigator: Dr. Gregory J. Quirk

- Interrogating the projections of rostral prelimbic cortex that drive active avoidance in rats
  - Hypothesized that projections from the prelimbic cortex (PL) to the ventral striatum (VS) and basolateral amygdala (BLA) would be necessary for modulating expression of avoidance behavior.
  - Conditioned rats to avoid threats and optogenetically manipulated PL-VS and PL-BLA pathways.
  - Showed that photoactivating PL-BLA pathways accelerates avoidance whereas photoactivating PL-VS projections impairs avoidance. This suggests that the PL exerts bidirectional control of avoidance by promoting avoidance through PL-BLA projections or suppressing avoidance through PL-VS projections.
- *Characterizing distinct strategies for the resolution of approach-avoidance conflict* 
  - Hypothesized that rats would develop distinct adaptive strategies to resolve approachavoidance conflict in our novel task that pits the motivation to avoid a shock against the motivation to pursue reward.
  - Showed that there are three subgroups with different responses to conflict in our task: approach-preferring animals, avoidance-preferring animals, and timers.
  - Showed through pharmacological and optogenetic inhibition that PL and its projections to the BLA are important during conflict resolution.

#### March 2018-December 2018

University of Puerto Rico – Rio Piedras Campus, Department of Biology Principal Investigator: **Dr. Miguel. A. Acevedo-Torres** 

- The effects of malaria parasites (plasmodium) in Anolis gundlachi reproductive fitness
  - Hypothesized that the cost of infection of malarial infections in lizards (*Anolis gundlachi*) would reduce body condition and competitiveness.
  - Diagnosed malaria-infected lizards through microscopical examination of blood samples. Analyzed body condition and competition trials for food between infected and uninfected lizards.
  - Showed that malaria infections increased lizards' competitiveness resulting in higher probability of obtaining food resources and had no effect on body condition. This suggests that *Anolis gundlachi* are tolerant, rather than resistant, to malaria infections.

### **PUBLICATIONS**

• Diehl MM, Iravedra-García, J.M., Morán-Sierra, J., Rojas-Bowe, G., González-Díaz, F.N., **Valentín-Valentín, V.P.**, Quirk, G.J. "Divergent projections of the prelimbic cortex bidirectionally regulate active avoidance." *eLife* (2020)

### FELLOWSHIPS AND GRANTS

- NIH Training Grant in Systems and Integrative Biology: Neuroscience (2022- present)
- NIH Blueprint Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (ENDURE) fellowship (2019-2021)

### HONORS AND AWARDS

- Laney Graduate School Fellowship (2021 present)
- Emory University Centennial Scholars Program (2021-present)
- Emory University's Learning About Laney Virtual Visitation Program Scholar (2020)
- University of Michigan, Department of Psychology's Diversity Recruitment Weekend Scholar (2020)
- Northwestern University's Introduction to Graduate Education (IGEN) Scholar (2020)
- Dean's Honor List (2017, 2018, 2019, 2020)
- Awarded 2<sup>nd</sup> place at the poster presentation competition at the ASBMB Rio Piedras 6<sup>th</sup> Annual Research Symposium (2019)
- Awarded 2<sup>nd</sup> place at the poster presentation competition at the ASBMB Rio Piedras 5<sup>th</sup> Cellular and Molecular Biology Meeting (2018)
- CECN Outstanding Member: Natural Sciences Faculty Student Council (CECN) at University of Puerto Rico, Rio Piedras Campus (2018)

### PRESENTATIONS

• Valentín-Valentín, V.P., Bravo-Rivera, H.D., Cabán-Murillo, A., Vélez-Aviléz, A.N., Ayala-Rosario, S., Pérez, J., Bravo-Rivera, C., Quirk, G.J. *The prelimbic cortex mediates decisionmaking during conflict*. Oral presentation at the NeuroID Program Student Meeting, San Juan, PR, May 2021

- Valentín-Valentín, V.P., Rojas-Bowe, G., Diehl, M.M., Iravedra-García, J.M., Morán- Sierra, J., González-Díaz, F.N., Quirk, G.J. *Divergent projections of the prelimbic cortex bidirectionally regulate active avoidance*. Poster presentation for Experimental Biology Conference, San Diego, CA, April 2020 \*cancelled due to COVID-19
- Valentín-Valentín, V.P., Rojas-Bowe, G., Diehl, M.M., Iravedra-García, J.M., Morán-Sierra, J., González-Díaz, F.N., Quirk, G.J. *Prelimbic cortex exerts bidirectional control of active avoidance through inputs to ventral striatum and basolateral amygdala*. Poster presentation delivered at the 27<sup>th</sup> Puerto Rico Neuroscience Conference, Bayamón, PR, December 2019.
- Valentín-Valentín, V.P., Rojas-Bowe, G., Diehl, M.M., Iravedra-García, J.M., Morán-Sierra, J., González-Díaz, F.N., Quirk, G.J. *Prelimbic cortex exerts bidirectional control of active avoidance through inputs to ventral striatum and basolateral amygdala*. Poster presentation delivered at the ASBMB Rio Piedras 6<sup>th</sup> Cellular and Molecular Biology Meeting, San Juan, PR, November 2019.
- Valentín-Valentín, V.P., Rojas-Bowe, G., Diehl, M.M., Iravedra-García, J.M., Morán-Sierra, J., González-Díaz, F.N., Quirk, G.J. *Prelimbic cortex exerts bidirectional control of active avoidance through inputs to ventral striatum and basolateral amygdala*. Poster presentation delivered at the Society for Neuroscience Diversity Fellows Poster Session, Chicago, IL, October 2019.
- Valentín-Valentín, V.P., Vega-Reyes, A.M, Clark, D.R., Iglesias, P.M., Tavarez-Grullón, L.B., Cruz, A.M., Acevedo-Torres, M. A. *Weathering the storm: malaria infection cost pre- and post-Hurricane Maria*. Poster presentation delivered at the ASBMB Rio Piedras – 5<sup>th</sup> Cellular and Molecular Biology Meeting, San Juan, PR, December 2018.

# WORKSHOPS

- Nov 2022: Safe Space Training. This workshop was offered by the Office of LGBT Life at Emory University to provide knowledge and skills on how to promote a safer, more inclusive environment on campus.
- Aug 2022: TATTO: Emory's teaching workshop to prepare graduate students for teaching assistantships covering topics such as active learning, course design, inclusive pedagogy, leading effective discussion and academic integrity.
- Mar 2021: NSF NeuroNex Technology Hub: Undergraduate Practicum on Bioluminescence at Marine Biological Laboratory, Woods Hole, MA. Introduction to the applications of bioluminescence techniques in neuroscience research. (virtual)
- Jan 2020: Quantitative Methods Workshop at Massachusetts Institute of Technology, Boston, MA. Introduction to MATLAB programming language, and experimental tools such as fMRI, MEG, and Calcium imaging used to generate experimental data.
- Jun 2018: Molecular Biology Science Academy at Universidad Central del Caribe, Puerto Rico. Learned and practiced molecular techniques: PCR, Western Blot, bacterial transformation.

# **RESEARCH SKILLS**

Stereotaxic Surgery. Pharmacological infusions. Optogenetics. Laser cable construction. Optogenetic implants construction. Fear conditioning. Platform-mediated avoidance conditioning. Approach-avoidance conflict conditioning. Novel object recognition test. Social exploration test. Elevated plus maze (EPM). Open-field test (OFT). Animal husbandry. Transcardial perfusions.

Immunohistochemistry. Tissue dissections. Tissue staining. Light microscopy. Fluorescent microscopy. Behavioral scoring. AnyMaze behavioral tracking software. Data analysis using Microsoft Excel and Graphpad Prism.

# SERVICE AND LEADERSHIP

- **Present:** Atlanta Brain Bee 2023 Competition: Exhibition Coordinator
- **Present:** Mentor for first-year graduate students starting at Emory as part of the "Neurobuddy" Program.
- Oct 2022: SACNAS conference recruiter for Emory University.
- Oct 2022: Panelis for the Neuropsychology PR Career Week for which I spoke and answered questions regarding my journey as a graduate student.
- Aug 2022 present: Teaching assistant and guest lecturer for the Behavioral Neuroscience course taught to Emory undergraduates.
- Aug 2022 present: Pen pal for the Letters to a Pre-Scientist program STEM professionals are paired with a middle school student to become pen pals with the purpose of humanizing scientists, and increasing science accessibility for students from disadvantaged backgrounds.
- Mar 2022- present: Graduate Student reviewer for *Grey Matters Emory* an undergraduate interdisciplinary neuroscience research journal.
- Mar 2022 May 2022: Science Gallery Atlanta's translating team leader translated all of the texts that was part of the exhibition *HOOKED: When Want Becomes Need* to Spanish in an effort to make the exhibition accessible to hispanic communities around Atlanta.
- Mar 2022: Emory's Neuroscience Grad Program Recruitment Week participated in panels and met one-on-one with prospective students to answer questions about the program and life at Emory.
- Jan 2022 Mar 2022: Atlanta Brain Bee 2022 Competition designed and implemented a workshop lesson plan, lecture, and activity to help prepare students for the competition. Additionally, developed questions for the final written and oral exams of the competition.
- Jan 2022: Mock interviewer for Científico Latino and DNA Deviants programs helped multiple grad school applicants prepare for their upcoming interviews by providing advice, practice questions, and feedback on answers.
- Oct 2021: Panelist for the Emory's Neuroscience Grad Program Open House
- May 2021: CIMATEC's "Life in College" panel: served as a panelists for high school students to ask questions about how to adapt to college life and how to make the best out of the college experience.
- Jun 2020 Sep 2020: Explore Biology's (XBio) translating team Translated educational scientific content to Spanish with the purpose of impacting a larger Hispanic audience interested in studying biology topics.
- 2019 2021: Neuroboricuas UPR Río Piedras Activity coordinator This organization focuses on spreading neuroscience knowledge to high school students and undergraduates in Puerto Rico through outreach activities, social media posts, seminars, and workshops.
  - **Talks and Seminars:** "Sleep for resilience and cognition" (September 2020), "Neuropharmacology of memory and attention" (Jul 2020), "Neuropharmacology 101" (May 2020), "How the brain falls in love" (Feb 2020), "Tourette's Syndrome" (Nov 2019), "Consequences of the unnecessary use of Adderall" (Nov 2019), "Neurotransmitters of Happiness" (Nov 2019).

- Workshops: "Strategies for remote studying" (Apr 2020), "3D printing workshop" (March 2020), "How to deal with your Impostor Syndrome" (Nov 2019), "Let's talk about mental health!" (Sep 2019).
- **Outreach:** activities for public school students and the general public on the structure and function of neurons and the neuromuscular system (Sep 2019, Oct 2019, Mar 2020, Oct 2020), exposition on the effects of coffee in your brain for the general public (Dec 2019).
- 2019 2021: National Neuroscience Student Association (NNSA) Committee member This NIH-ENDURE sponsored organization focuses on providing career training opportunities and mentoring to undergraduate students who are interested in neuroscience research while also promoting scientific outreach.
  - Workshops: "Sign language workshop" (Feb 2020), "How to be a successful Graduate School applicant" (Oct 2019).
  - **Outreach**: talk on the neural basis of drug addiction for children at Casa de Niños Manuel Fernández Juncos (Nov 2019), expositions on the basic anatomy of the brain, the basis of neural communication and how our autonomic nervous system works for the general public at The Arecibo Observatory (Oct 2019).
- Dec 2019: Natural Sciences Faculty Mental Health Fair at UPR-RP: presented a poster and interacted with the general public to raise awareness about the use and abuse of cocaine.
- Mar 2019: Brain Awareness Week: taught public school students about visual processing, memory consolidation, and fundamentals of nervous system signaling. Students also had the chance to interact with a human brain and learn about its anatomy.
- Sep 2017-Jan 2019: Department of Biology representative as part of the Natural Sciences Student Council (CECN) at the University of Puerto Rico, Rio Piedras Campus.
- Aug 2018-Dec 2018: Genetics tutor at University of Puerto Rico, Rio Piedras Campus. Gave one-on-one and group tutoring sessions to undergraduate students taking the Genetics course.
- Jun 2017: PR Science Heroes Outreach Program: visited a group home for young girls and presented science-related expositions and activities for their learning and enjoyment.