

GABRIEL ROJAS-BOWE [bou-we]

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EDUCATION

University of California, Los Angeles

- **Ph.D.** Neurosciences Interdepartmental Program, Sep 2021-Present
- GPA: 3.88
- National Science Foundation (NSF) Graduate Research Fellowship, 2023-2026
- Achievement Rewards for College Scientists (ARCS) Foundation Los Angeles Founder Chapter Scholar Award, 2022-2024
- Graduate Dean's Scholar Award, 2021-2023
- Eugene V. Cota-Robles Fellowship, 2021-2025

University of Puerto Rico-Rio Piedras (UPRRP)

- **B.S.** Cell and Molecular Biology. Dates attended: Aug 2016-May 2021
- GPA: 3.66
 - Relevant coursework: *Neurobiology, Biological Psychology, Introduction to Psychology, Introduction to Computer Science*
- Dean's List 2017-2021

RESEARCH EXPERIENCE

May 2022-Present

University of California, Los Angeles

Ph.D. Thesis Advisor: **Dr. Anne Churchland**

- **Projects:**
 - May 2022-Jun 2023: *Engaged decision-makers align spontaneous movements to stereotyped task demands*
 - Aug 2022-Present: *Movement, task, and sensory encoding of primary visual cortex during freely moving decision-making*
- Techniques learned:
 - Automated behavioral experiment pipelines
 - Pose estimation tracking (i.e. *DeepLabCut*)
 - MATLAB and Python, basic Unix
 - Building command-line interface tools
 - Linear regression and psychometric curve fitting analyses
 - Cranial window implantation surgeries
 - Intracranial viral injections

August 2018-July 2021

University of Puerto Rico-Medical Sciences Campus, Undergraduate Researcher

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

- **Projects:**
 - Oct 2019-Jul 2021: *Neural encoding of approach/avoidance conflict in the prelimbic cortex*
 - Aug 2018-Oct 2019: *Divergent projections of the prelimbic cortex bidirectionally regulate active avoidance*
- Techniques learned:
 - Data analyses of single-unit recordings using Plexon Offline Sorter, CinePlex Studio, NeuroExplorer, and MATLAB
 - Stereotaxic surgeries in rats to:
 - infuse adeno-associated viruses and implant optical fibers for optogenetic experiments
 - implant electrode arrays for unit recording experiments
 - Behavioral rodent experiments: auditory fear conditioning, platform-mediated avoidance conditioning, platform-mediated approach-avoidance conflict conditioning, bar press training, open-field test (OFT), social exploration test, elevated plus maze (EPM), novel object recognition
 - Rat perfusions and brain histology
 - cFos labeling
- **Funding:**
 - Jul 2019-May 2021: NIH Maximizing Access to Research Careers (MARC) program
 - Aug 2018-Jul 2019: NIH Research Initiative for Scientific Enhancement (RISE) program

SUMMER RESEARCH EXPERIENCE

June 2020-August 2020

University of California, Los Angeles (UCLA) Brain Research Institute – Summer

Undergraduate Research Experience (*BRI-SURE* program), virtual experience

Principal Investigator: **Dr. Gina Poe**

- **Project:** *REM sleep deprivation in single prolonged stress exposure*
- Techniques learned:
 - Sleep scoring using MATLAB
 - Basic Python
- **Funding:** NIH MARC (home institution)

June 2018-August 2018

University of Chicago Molecular Genetics and Cell Biology Research Experience for Undergraduates (*MGCB-REU program*)

Principal Investigator: **Dr. Robert A. Carrillo**

- **Project:** *Identifying interactors of the Dpr-DIP pathway in Drosophila melanogaster*
- Techniques learned:
 - Wide-field fluorescence microscopy
 - Fly care and larval dissections
 - Immunohistochemistry
- **Funding:** National Science Foundation (NSF) REU

VOLUNTEER RESEARCH EXPERIENCE

November 2017-June 2018

University of Puerto Rico Molecular Sciences Research Center

Principal Investigator: **Dr. Marvin Bayro**

- **Project:** *Interactions between HIV-1 Gag and lipid membranes: mechanisms and nanotechnology applications*
- Techniques learned:
 - UV-Vis spectrophotometry

PUBLICATIONS

- Yin, C., Melin, M.D., **Rojas-Bowe, G.**, Sun, X.R., Gluf, S., Couto, J., Kostiuik, A., Musall, S., Churchland, A.K. "Engaged decision-makers align spontaneous movements to stereotyped task demands." *bioRxiv* (**2023**). doi: 10.1101/2023.06.26.546404
- Diehl MM, Iravedra-García, J.M., Morán-Sierra, J., **Rojas-Bowe, G.**, González-Díaz, F.N., Valentín-Valentín, V., Quirk, G.J. "Divergent projections of the prelimbic cortex bidirectionally regulate active avoidance." *eLife* (**2020**). doi: 10.7554/eLife.59281

AWARDS AND FELLOWSHIPS

- National Science Foundation (NSF) Graduate Research Fellowship, 2023-2026
- Achievement Rewards for College Scientists (ARCS) Foundation Los Angeles Founder Chapter Scholar Award (2022-2024)
- Eugene V. Cota-Robles Fellowship, UCLA (2021-2025)
- Graduate Dean's Scholar Award, UCLA (2021-2023)
- Competitive Edge: Summer Transition Program to the Doctorate, UCLA (2021)
- Registration Scholarship for the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Virtual Conference (2020)

- 3rd Best Poster Presentation at the UCLA BRI Undergraduate Research Poster Fair
- Princeton Ph.D. Preview (P3) Program Scholar (2019), Travel award
- NIH-Maximizing Access to Research Careers (MARC) fellowship (2019-Present)
- NIH-Research Initiative for Scientific Enhancement (RISE) fellowship (2018-2019)
- Outstanding Poster Presentation Award in the category of Developmental Biology and Genetics at the Annual Biomedical Research Conference for Minority Students (ABRCMS) (2018)

RESEARCH PRESENTATIONS

- **Rojas-Bowe, G.**, Caban-Murillo, A., Bravo-Rivera, H., Ayala-Rosario, S., Pérez-Torres, J., Valentín-Valentín, V., Rivera-Rivera, A., Quirk, G.J., Bravo-Rivera, C. *Prelimbic neurons signal approach-avoidance conflict*. Poster presentation given at the Society for Neuroscience: A Global Connectome 2021 meeting, Virtual, January 2021.
- **Rojas-Bowe, G.**, Caban-Murillo, A., Bravo-Rivera, H., Ayala-Rosario, S., Pérez-Torres, J., Valentín-Valentín, V., Rivera-Rivera, A., Quirk, G.J., Bravo-Rivera, C. *Prelimbic neurons signal approach-avoidance conflict*. Oral presentation given at the Puerto Rico Neuroscience Conference 2020, Virtual, December 2020.
- **Rojas-Bowe, G.**, Caban-Murillo, A., Pérez-Torres, J., Ayala-Rosario, S., Morán-Sierra, J., Vélez-Avilés, A., Valentín-Valentín, V., Rivera-Rivera, A., Bravo-Rivera, H., Quirk, G.J. *Prefrontal neuronal signaling of approach-avoidance conflict*. Poster presentation given at the SACNAS 2020 meeting, Virtual, October 2020.
- **Rojas-Bowe, G.**, Dean, J., Delorme, J., Arias-Delphi, Y., Poe, G. *The effects of REM sleep deprivation in the extinction of traumatic memories*. Oral presentation given at the UCLA BRI Undergraduate Summer Research Poster Fair, Virtual, August 2020.
- **Rojas-Bowe, G.**, Valentín-Valentín, V., 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 Puerto Rico Neuroscience Conference 2019, Bayamón, PR, December 2019.
- **Rojas-Bowe, G.**, Valentín-Valentín, V., 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 ABRCMS 2019 meeting, Anaheim, CA, November 2019.
- **Rojas-Bowe, G.**, Valentín-Valentín, V., 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 18th Annual Molecular and Cellular Cognition Society meeting, Chicago, IL, October 2019.
- **Rojas-Bowe, G.**, Diehl, M.M., Iravedra-García, J.M., Morán-Sierra, J., González-Díaz, F.N., Valentín-Valentín, V., Quirk, G.J. *Interrogating the projections of rostral prefrontal cortex to the nucleus accumbens*. Poster presentation delivered at the 18th Annual Molecular and Cellular Cognition Society meeting, Chicago, IL, October 2019.

cortex that drive active avoidance. Poster presentation delivered at the 2do Congreso de NeuroBoricuas meeting, San Juan, PR, August 2019.

- **Rojas-Bowe, G.**, Diehl, M.M., Iravedra-García, J.M., Morán-Sierra, J., González-Díaz, F.N., Quirk, G.J. *Interrogating the projections of rostral prelimbic cortex that drive active avoidance*. Poster presentation delivered at the Annual Research and Education Forum MSC UPR meeting, San Juan, PR, April 2019.
- Iravedra-García, J.M., González-Díaz, F.N., Morán-Sierra, J., Diehl, M.M., **Rojas-Bowe, G.**, Quirk, G.J. *Interrogating the projections of rostral prelimbic cortex that drive active avoidance*. Puerto Rico Neuroscience Conference 2018, Ponce, PR, December 2018.
- **Rojas-Bowe, G.**, Sorrentino, V., Carrillo, R. A. *Identifying interactors of the Dpr-DIP pathway*. Poster presentation delivered at the Annual Biomedical Research Conference for Minority Students (ABRCMS) meeting, Indianapolis, IN, November 2018.
- **Rojas-Bowe, G.**, Sorrentino, V., Carrillo, R. A. *Identifying interactors of the Dpr-DIP pathway*. Oral and poster presentation delivered at the MGCB-REU summer symposium, Chicago, IL, August 2018.

TEACHING EXPERIENCE

- Jan 2024-Present: Neuroscience 210B – Methods in Neuroscience TA, UCLA, Neuroscience Graduate Program
- Oct 2023-Dec 2023: Neuroscience 150 – Biotechnology in Neuroscience TA, UCLA, Neuroscience Undergraduate Program
- Aug 2018-Dec 2018: Organic Chemistry TA, University of Puerto Rico-Rio Piedras, Chemistry Undergraduate Program
- Aug 2017-Mar 2018: General Biology TA, University of Puerto Rico-Rio Piedras, Biology Undergraduate Program
- Aug 2015-Dec 2015: Tutor for 4th graders at a local after-school center.

PROFESSIONAL SOCIETIES

- 2019-Present: *Society for Neuroscience* member
- 2019-Present: *SACNAS* member

LEADERSHIP

- Dec 2023-Present: **Graduate Student Representative**, UCLA Brain Research Institute Steering Committee
- 2023-Present: UCLA Brain Awareness Week **Program Coordinator**. Planned and led UCLA's Brain Awareness Week programming. In 2023, over the course of a week, 4 schools (180+ students in total ranging from Grades 4th-12th) visited our

campus and engaged in a multitude of educational neuroscience activities which included:

- Sheep brain dissections
- Comparative anatomy demonstrations
- Human brain demonstrations
- *My Journey to Becoming a Scientist* talks
- On-campus lab tours to various neuroscience labs (fly- and mice-based)
- 2021 Competitive Edge **Cohort Representative**: Alongside two other representatives, I planned social events throughout the summer program and acted as liaison communication between Grad Division at UCLA and the 2021 Competitive Edge Cohort.
- **NeuroBoricuas UPR Río Piedras**: Island-wide program led by neuroscientists in PR to promote/foster neuroscience outreach to high school students.
 - Jul 2020-May 2021: **Secretary** of the Student Leadership. My responsibilities included keeping an up-to-date record of meetings and active members, managing the organization's email address, and coordinating all activities and workshops throughout the school year.
 - Aug 2019-Jun 2020: **Founding member** of the Student Leadership. I participated actively in all meetings, fundraisers, and activities, including visiting public and private high schools throughout Puerto Rico for neuroscience outreach activities.

OUTREACH

- Oct 2023-Present: **Member** of the Knowing Neuron's Outreach and Translation Team. Knowing Neurons is an award-winning neuroscience website run by neuroscience graduate students
 - **Member** of the Translation Project, a collaboration between UCLA and Universidad Autónoma de Madrid (Spain) where English neuroscience articles are translated to Spanish and later converted into lesson plans given to 7-12th grade students in outreach activities (including Brain Awareness Week UCLA). In this role, I check the scientific quality of the Spanish translations and oversee the creation of the outreach lesson plans.
- Oct 2023: **Recruiter** for the UCLA Biosciences Graduate Program at SACNAS 2023 in Portland, OR
- Aug 2022: **Talk** on my journey to graduate school and my experience as a graduate student in UCLA's Neuroscience program to the BRI-SURE Summer Program 2022 cohort
- Jul 2022: **Moderator** for Biology-themed and Neuroscience-themed oral presentation sessions at the 2022 National McNair Conference at UCLA.
- Jul 2022-Jul 2023: **Mentor** at Project SHORT (Students for Higher-Ed Opportunities and Representation in Training), an organization of volunteer students, residents, postdocs, and faculty who offer pro-bono consulting for medical and graduate school admissions nationwide.
- Jul 2022-Jul 2023: **Pen Pal STEM professional** at Letters to a Pre-Scientist, an organization that connects students to STEM professionals through snail mail to

broaden students' awareness of what STEM professionals look like and do at work and inspire all students to explore a future in STEM.

- Apr 2022: **Judge** in 2022 California Science & Engineering Fair. Judged several presentations with another graduate student for a Brain Research Institute (UCLA) Sponsored Prize
- Nov 2021: **Talk** in Spanish titled “La neurociencia del consuelo durante tiempos de pandemia” (translates to: “The neuroscience of comfort during pandemic times”). Given at the Escuela Secundaria de la Universidad de Puerto Rico as part of a school-wide STEM symposium.
- Dec 2020: **Speaker** on panel given to 12th-grade students about applying to college, pursuing neuroscience research as undergraduates, and applying to summer internship programs. Given at the C.R.O.E.V. High School in Villalba, Puerto Rico as part of a NeuroBoricuas activity.
- Oct 2020: **Talk** titled “*Behavioral and Neural Mechanisms of Threat-Reward Conflict*”. Given at the Escuela Secundaria de la Universidad de Puerto Rico to the 11th grade AP Biology class.
- Oct 2020: **Community outreach activity on basic concepts of neuroscience and careers in medicine** given at Dr. Carlos González de Aguada High School as part of a NeuroBoricuas activity.
- Sep 2019: **Community outreach activity on neurons and the neuromuscular system** given at Escuela Montessori de Cupey (high school) as part of a NeuroBoricuas activity.
- May 2019: **Talk** titled “*RNAi’s and deficiencies: understanding connectivity in the Drosophila nervous system*”. Given to the *Genetics* course at my home institution (UPRRP).
- Mar 2019: **Brain Awareness Week**, Isabela, PR: led neuroscience activities with public middle and high school students on 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.
- Jan 2019: Co-produced video: “*Neuroscience Mentoring in Puerto Rico*” based on Dr. Gregory Quirk’s lab in collaboration with the **NIMH**.
<https://www.youtube.com/watch?v=1faUekhuOFo&feature=youtu.be>