Connor Johnson

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Education:
Boston University | Boston, MA
Bachelor of Arts Degree: Neuroscience Major — Degree Received *May 2019*

Research Experience:
Department of Biology | Brandeis University - Incoming PhD Student
August 2022 – Present

- Incoming student to the PhD in neuroscience program, which will begin mid August.

Department of Biology | Boston University - Laboratory Manager Cruz-Martín lab
June 2019 – Present – **Dr. Alberto Cruz-Martín**

- Using microendoscopes (miniscopes) and genetically encoded calcium sensors, I identified distinct subgroups of VIP-expressing interneurons in the ACC (VIP^{ACC}) that reliably encoded behavioral states by preferentially activating to anxiety-related, social, or non-social stimuli. My data show that VIP^{ACC} are functionally heterogeneous and provide a cellular substrate for encoding different types of stimuli.
- Besides having my own project in the Cruz-Martín lab, I was the laboratory manager. As part of this position, I helped the PI write animal protocols and SOPs, trained graduate and undergraduate students so they could perform several techniques and experiments, and I oversaw the daily operations in the lab.

Department of Biology | Boston University - Research Assistant
May 2018 - June 2019 – **Dr. Alberto Cruz-Martín**

- Researching the effects of the over expression of complement component 4 in the CNS. As an undergraduate student I performed confocal imaging experiments, animal perfusions, and preparation of brain tissue for IHC experiments.

Center for Integrated Life Sciences and Engineering | Boston University - Research Assistant
July 2017 - May 2018 - **Dr. Howard Eichenbaum and Dr. Michael Hasselmo**

- Investigating neural representations of context in hippocampus and entorhinal cortex of rodents using in-vivo electrophysiology and optogenetics.

University of New England - Internship
April 2015 - June 2015

- Rotated through labs at UNE in the neuroscience department studying opioid addiction in rodents.

Publications:

Johnson C, Kretsge LN, Yen WW, Sriram B, Jimenez JC, Jinadasa TJ, O'Connor A, Liu RS, Nguyen TPH, Cho ES, Fuchs E, Spevack ED, Escude Velasco B, Hausmann FS, Cruz-Martín A (*In Press, Molecular Psychiatry, 2022*) Highly Unstable Heterogeneous Representations in VIP Interneurons of the Anterior Cingulate Cortex. DOI: https://doi.org/10.1038/s41380-022-01485-y

Poster Presentations:

WW Yen, DP Leman, JR Clevenger, HE Fawcett, **C Johnson**, LN Perkins, WA Liberti III, TPH Nguyen, IG Davison, A Cruz-Martin, TJ Gardner, and TM Otchy. (2019). 1P2C: a miniscope for multiplexed single-photon imaging of two spectrally distinct fluorescent reporters in freely-behaving animals. *2019 Society for Neuroscience Meeting*. Chicago, Illinois, USA.

William W. Yen, Lisa N. Kretsge, **Connor Johnson**, Ruichen Liu, Frances S. Hausmann, Margaret A. Minnig, Erelle Fuchs, Thanh P.H. Nguyen, Daniel P. Leman, Alberto Cruz-Martín. (2019) Dissecting the role of VIP interneurons within the anterior cingulate cortex during a social cognitive task. *2019 Society for Neuroscience Meeting*. Chicago, Illinois, USA.

Tushare Jinadasa, Rhushikesh Phadke, **Connor Johnson**, Kevin Liu Kot, Ashley L Comer, Shirley Mai, Frances Hausmann, Alberto Cruz-Martín. (2019) Expansion microscopy of mouse prefrontal cortex reveals microglial engulfment of synaptically targeted intrabodies. 2019 *Society for Neuroscience Meeting*. Chicago, Illinois, USA.

Skills:

Computational: highly proficient in MatLab and Python; I have performed extensive computational analysis using machine learning to understand how neuronal activity can predict rodent behavior; I have experience in statistical methods in MatLab; I have extensive experience using DeepLabCut and CaImAn to analyze neuronal and behavioral data

Organizational: I have extensive experience managing laboratories; I routinely helped graduate student organize their computational pipelines; I routinely trained graduate and undergraduate students to follow lab safety procedures, SOPs; Together with the PI, I routinely wrote and edited animal protocols and SOPs; I am aware of project deadlines and tight lab budgets and worked with my PY to obtain data for projects in a timely manner.

Wet lab: Handling viral vectors, including AAVs and G-deleted Rabies; Aseptic Surgical Technique; Viral Injections; GRIN lens implants for in-vivo calcium imaging using microendoscopes, 3D printing of microendoscopes; Neonatal ventricular injections; craniotomies for performing imaging experiments; Mouse and Rat handling and husbandry; Fixed Tissue Processing; Fluorescent microscopy (Widefield, Confocal); Electrophysiology (patch clamping, beginner); Fluent in Spanish

Mentoring:
September 2018 - May 2019 Synaptic Connection Mentor. I mentored an undergraduate neuroscience student and helped her find positions in labs, plan coursework, and experience new fields within neuroscience to broaden her knowledge of careers in neuroscience.

Awards/Grants:
Undergraduate Research Opportunity Program

$1320 | Oct - Dec 2018