CARA D. JOHNSON

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Dedicated Biomedical Engineering professional focused on tackling intricate clinical research challenges and enhancing patient outcomes for a better quality of life. I aim to apply my technical skills and research background to aid in creating cutting-edge therapies, fostering significant progress in healthcare. My passion lies in collaborating within a dynamic, research-oriented setting, where working alongside experts from various disciplines fast-tracks the transformation of research into tangible healthcare solutions, ultimately impacting patient well-being. My key areas of interest include Cardiovascular Mechanics, Cell & Molecular Tissue Engineering, and Drug & Gene Delivery.

PROFESSIONAL EXPERIENCE

NYU Neuroscience Institute | Basu Lab June 2021 – January 2025

Research Associate | Lab Manager

"At Basu Lab, part of NYU Langone, our research delves into the intricate processes of memory formation and behavior shaping triggered by sensory experiences. We focus on the dynamic interplay between the hippocampus and the entorhinal cortex, investigating synaptic and circuit mechanisms crucial for spatial and contextual learning. Through a blend of electrophysiology, imaging, and genetic manipulations in brain slices and awake mice, we unravel how memory systems and plastic circuits impact adaptive behaviors and our capacity to navigate evolving environments."

- Supported the lab in **designing and executing multiple experiments** simultaneously and coordinated collaborations with other labs and institutions.
- **Managed and mentored** a team of 10 lab members, fostering collaboration and ensuring smooth daily operations.
- Oversaw compliance of protocols, including managing Controlled Substances, IRB, IACUC and IBC regulations.
- Organized, maintained, and oversaw lab supplies, inventory, ordering, and lab management - financial and operational to ensure successful execution of projects.

Key Achievements:

- **Reduced** the lab's monthly animal/veterinary **costs by $10K**.
- Onboarded and **trained 7 undergraduate** students, fostering lab growth and learning.
- **Secured a $60K** Diversity Supplement for piloting a new scientific project.

Jammax Construction June 2020 – June 2021

Assistant

- Responsible for generating proposals, contracts, and invoices.
- Maintained correspondence via phone and email to schedule appointments with clients and contact distributors.
- Ordered supplies and materials for renovations, managing budget and cost-effective options.

Advantage Tutoring October 2019 – June 2021

Tutor | Math & Biology

- Adapted styles of teaching for different students to cultivate their academic success to improve grades.
- Monitored and assessed student performance to develop action plans.
- Communicated with director and clients to schedule appointments and address student progress (Grades 3-10).

EDUCATION

New Jersey Institute of Technology (NJIT), Newark, NJ, Master of Science in Biomedical Engineering

Rensselaer Polytechnic Institute, Troy, NY, Bachelor of Science in Biomedical Engineering

- Undergraduate Teaching Assistant, RPI Exploring Engineering Program, 2015

SKILLS

Immunohistochemistry, Confocal Imaging, Animal Infusions, Animal Handling, Perfusions, CAD (Solidworks, Creo, Autodesk), Ansys, R: Statistical Software, Basic Lab Skills (Pipetting, Staining, Tissue Slicing/Mounting etc.), 3D Printing, LabVIEW, Microsoft Office, Proofreading, Grant Editing, Purchasing.

PUBLICATIONS

- Butola, T., Hernández-Frausto, M., Blankvoort, S., Flatset, M.S., Peng, L., Hairston, A., **Johnson, C.D.**, Elmaleh, M., Amilcar, A., Hussain, F. and Clopath, C., 2025. Hippocampus shapes entorhinal cortical output through a direct feedback circuit. Nature Neuroscience, pp.1-12.
- Moore, J. J., Rashid, S. K., **Johnson, C. D.**, Codrington, N., Chklovskii, D. B., & Basu, J. (2023). Sub-cellular population imaging tools reveal stable apical dendrites in hippocampal area CA3. Research Square.
- Bilash, O. M., Chavlis, S., **Johnson, C. D.**, Poirazi, P., Basu, J. (2023). Lateral entorhinal cortex inputs modulate hippocampal dendritic excitability by recruiting a local disinhibitory microcircuit. Cell reports, 42(1).
- Robert, V., O'Neil, K., Rashid, S. K., **Johnson, C. D.**, De La Torre, R. G., Basu, J. et al (2023). Entorhinal cortex glutamatergic and GABAergic projections bidirectionally control discrimination and generalization of hippocampal representations. bioRxiv, 2023-11.

POSTER PRESENTATIONS

- **Johnson, C. D.**, Robert, V, Basu, J. (June 2023) The Role of Excitatory and Inhibitory Inputs from Lateral Entorhinal Cortex to CA3 in Learning and Memory. Brain Initiative Meeting Poster Session. Bethesda, MD.
- **Johnson, C. D.**, Robert, V, Basu, J. (November 2023) The Role of Excitatory and Inhibitory Inputs from Lateral Entorhinal Cortex to CA3 in Learning and Memory. Society for Neuroscience Conference Poster Session. Washington, D.C.
- Robert V, O'Neil K, Rashid SK, **Johnson CD**, Delatorre RG, Zemelman BV, Clopath C, Basu J (October 2024); Longrange Glutamatergic and GABAergic inputs control discrimination and generalization in CA3. Society for Neuroscience Annual Meeting, Chicago, USA.
- Robert V, O'Neil K, Rashid SK, **Johnson CD**, Delatorre RG, Zemelman BV, Clopath C, Basu J. (November 2023); Long-range GABAergic projections allow fine control of hippocampal area CA3 function by lateral entorhinal cortex. Society for Neuroscience Annual Meeting, Washington D.C., USA.

LEADERSHIP

National Society of Black Engineers	March 2020 – Present
Crisis Text Line Counselor Volunteer	April 2020 – April 2021
Reinstated NJIT Graduate Biomedical Engineering Society (Vice President)	Jan 2018 – Dec 2018
Biomedical Engineering Department Representative for the Graduate Student Association	Oct 2017– Dec 2018