

Anusha Allawala

PHD CANDIDATE · BIOMEDICAL ENGINEERING

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Education

Brown University

PHD, BIOMEDICAL ENGINEERING

- Thesis Advisors: Dr. David Borton and Dr. Sameer Sheth
- Expected graduation: Spring 2023

Providence, RI
09/2017 - present

San Jose State University

BS, BIOMEDICAL ENGINEERING

- Thesis Advisor: Dr. Katherine Wilkinson

San Jose, CA
01/2009 - 12/2014

Research Experience

Graduate Research Assistant, Carney Institute for Brain Science at Brown University

CO-ADVISORS: DR. DAVID BORTON AND DR. SAMEER SHETH

- Dissertation: "Characterization and modulation of oscillatory dynamics in cognitive control: implications for psychiatric neuromodulation"

Providence, RI
Sept. 2017 - Present

Research Associate, Circuit Therapeutics, Inc.

PROJECT MANAGER: DR. BARBARA NGUYEN-VU

- Projects: "Optogenetic modulation of the STN and evaluation of motor deficits in parkinsonian rodents"

Menlo Park, CA
March 2015 - July. 2017

Undergraduate Research Assistant, Dept of Biology

ADVISOR: DR. KATHERINE WILKINSON

- Thesis: "The Characterization of muscle spindle afferents to inflammation in adult male mice"

San Jose, CA
Aug 2012 - Dec 2014

Undergraduate Research Assistant, Dept of Biology

ADVISOR: DR. KATHERINE WILKINSON

- National Science Foundation Research Experience for Undergraduates (NSF-REU) Program Project: "The use of capsaicin as a pharmacological tool to silence pain receptor afferents"

San Jose, CA
Summer 2013

Publications

Allawala A., Oswald D., Adkinson J., Tsolaki E., Mathura R., McIntyre C., Noecker A., Chiu K., Malekmohammadi M., Mustakos R., Mathew S., Goodman W., Pouratian N., Bijanki K., Sheth S.A., Borton D.A. Dual-target deep brain stimulation drives differential engagement of networks underlying treatment-resistant depression. (*In preparation for submission*)

Xiao J., Provenza N.R., Asfour J., Myers J., Mathura R.K., Metzger B., Adkinson J.A., **Allawala A.B.**, Pirtle V., Oswald D., Shofty B., Robinson M.E., Mathew S., Goodman W.K., Pouratian N., Schrater P.R., Patel A.B., Tolia A.S., Bijanki K.R., Pitkow X., Sheth S.A. Decoding depression severity from intracranial neural activity. (*Under review*)

Adkinson J., Tsolaki E., Sheth S.A., Oswald D., Metzger B., McIntyre C., Mathura R.M., Waters A.C., Robinson ME, **Allawala A.**, Noecker A.M., Malekmohammadi M., Chiu K., Mustakos R., Goodman W., Borton D., Pouratian N., Bijanki K. 2022. Imaging versus electrographic connectivity in human mood-related fronto-temporal networks. *Brain Stimulation*. doi: <https://doi.org/10.1016/j.brs.2022.03.002>

Allawala A., Bijanki K., Goodman W., Cohn J.F., Viswanathan A., Yoshor D., Borton D.A., Pouratian N., Sheth S.A. 2021. A novel framework for network-targeted neuropsychiatric deep brain stimulation. *Neurosurgery*. doi: <https://doi.org/10.1093/neuros/nyab112>

Sheth S.A., Bijanki K., Metzger B., **Allawala A.**, Pirtle V., Adkinson J., Myers J., Mathura R., Oswald D., Tsolaki E., Xiao J., Noecker A., Strutt A., Cohn J., McIntyre C., Mathew S., Borton D.A., Goodman W., Pouratian N. 2021. Deep brain stimu-

lation for depression informed by intracranial recordings. *Biological Psychiatry*.
doi: <https://doi.org/10.1016/j.biopsych.2021.11.007>

Dastin-van Rijn E., Provenza N.R., Calvert J.S., Gilron R., **Allawala A.**, Darie R., Syed S., Matteson E., Vogt G.S., Avendano-Ortega M., Vasquez A.C., Ramakrishnan N., Oswald D., Bijanki K., Wilt T., Starr P.A., Sheth S.A., Goodman W., Harrison M.T., Borton D.A. 2020. Uncovering biomarkers during therapeutic neuromodulation with PARRM: Period-based Artifact Reconstruction and Removal Method. *Cell Reports Methods*.
doi: <https://doi.org/10.1016/j.crmeth.2021.100010>

Powell M., Romeo J.A., Gilron R., Provenza N.R., **Allawala A.**, Silva D., Bijanki K., Oswald D., Adkinson J., Pouratian N., Sheth S.A., Goodman W., Jones S.R., Starr P.A., Borton D.A. 2020. NeuroDAC: An open-source arbitrary biosignal waveform generator. *Journal of Neural Engineering*.
doi: <https://doi.org/10.1088/1741-2552/abc7f0>

Black C.J., **Allawala A.**, Bloye K., Vanent K.N., Edhi M.M., Saab C.Y., Borton D.A. 2020. Automated, conscious and rapid self-report of nociception in transgenic mice. *Scientific Reports*.
doi: <https://doi.org/10.1038/s41598-020-70028-8>

Provenza N.R., Matteson E.R., **Allawala A.B.**, Barrios-Anderson A., Sheth S.A., Viswanathan A., McIngvale E., Storch E., Frank M.J., McLaughlin N.C.R., Cohn J.F., Goodman W.K., Borton D.A. 2019. The case for adaptive neuromodulation to treat severe intractable mental disorders. *Frontiers in Neuroscience*.
doi: <https://doi.org/10.3389/fnins.2019.00152>

Zaytseva D., **Allawala A.**, Franco J.A., Putnam S., Abtahie A.M., Bubalo N., Criddle C.R., Nguyen T.A., Nguyen P., Padmanabhan S., Bremer M., Abramson T., Wilkinson K.A. 2018. Lipopolysaccharide-induced inflammation does not alter muscle spindle afferent mechanosensation or sensory integration in the spinal cord of adult mice. *Physiological Reports*.
doi: <https://doi.org/10.14814/phy2.13812>

Presentations

⁺ *undergraduate mentee*

CONFERENCE PRESENTATIONS

Allawala A., Vartany S., Mathura R., Ritz H., Adkinson J., Shenhav A., Goodman W., Pouratian N., Bijanki K., Borton D., Sheth S.A. 2022. Deep brain stimulation-induced improvement in cognitive control is mediated by theta oscillations: implications for psychiatric neuromodulation. Computational Psychiatry Course (CPC++), New York City, NY. (*Data Blitz Talk*)

Allawala A., Adkinson J., Oswald D., Tsolaki E., Mathura R., McIntyre C., Noecker A., Chiu K., Malekmohammadi M., Mustakos R., Goodman W., Pouratian N., Bijanki K., Sheth S., Borton D. 2022. Dual-target, current-steered deep brain stimulation drives differential engagement of networks in treatment-resistant depression. Eighth Annual BRAIN Investigators Meeting. Virtual. (*Poster*)

Allawala A., Adkinson J., Oswald D., Mathura R., Goodman W., Pouratian N., Bijanki K., Borton D. Sheth S. 2022. Dual-target deep brain stimulation drives differential engagement of networks underlying treatment-resistant depression. American Society for Stereotactic and Functional Neurosurgery, Atlanta, GA. (*Awarded Best Poster*)

Allawala A., Adkinson J., Bijanki K., Vartany S., Mathew S., Goodman W., Pouratian N., Sheth S., Borton D. 2021. Modulation of Cognitive Control Network in Treatment-Resistant Depression with Deep Brain Stimulation. Society for Neuroscience Global Connectome, Virtual. (*Poster*)

Vartany S.⁺, **Allawala A.**, Ritz, H., Adkinson J. Mathura R., Bijanki K., Shenhav A., Goodman W., Pouratian N., Sheth S., Borton D. 2021. Deep Brain Stimulation in Treatment-Resistant Depression Modulates Oscillations Above 1/f Spectral Noise in Cognitive Control Networks. Neuromatch Conference 4.0

Allawala A., Adkinson J., Myers J., Pirtle V., Goodman W., Mathew S., Pouratian, N., Borton D, Bijanki K., Sheth S. 2020. Domain-Based Conceptualization of Mood-Regulating Networks: Implications for DBS for Depression. American Society for Stereotactic and Functional Neurosurgery, Virtual. (*Poster*)

Allawala, A., Adkinson J., Myers J., Pirtle V., Goodman W., Mathew S., Pouratian N., Borton D.A., Bijanki K., Sheth S.A. 2020. Modulation of the Cognitive Control Network in Treatment-Resistant Depression with Deep Brain Stimulation. Sixth Annual BRAIN Initiative Investigators Meeting, Virtual. (*Poster*)

Allawala A., Black C., Saab C., Borton D.A. 2018. Towards Interneuron Characterization in the Spinal Cord. Society for Neuroscience Annual Meeting. (*Poster*)

Nguyen-Vu T.D., Leung L., **Allawala A.** (presenting author), Arnold C., Zwilling D., Sawatzki R., Kaplitt M. 2016. Optogenetic Inhibition of STN Rescues Motor Defects in Parkinsonian Rodents. Society for Neuroscience Annual Meeting, San Diego, CA. (Poster)

Allawala A., Wilkinson K. 2014. The Characterization of Muscle Sensory Receptors Following Inflammation in Adult Male Mice. Annual Biomedical Research Conference for Minority Students, San Antonio, TX. (Oral Presentation)

Allawala A., Wilkinson K. 2014. The Effect of Inflammation on Muscle Sensory Function in Adult Female Mice. Annual Experimental Biology Meeting, San Diego, CA. (Poster)

Allawala A., Wilkinson K. 2013. The Effect of Inflammation on Muscle Sensory Function in Adult Female Mice. Biomedical Engineering Society Annual Meeting, Seattle, WA (Poster)

CONFERENCE PROCEEDINGS

Allawala A., Adkinson J., Oswald D., Tsolaki E., Mathura R., McIntyre C., Noecker A., Chiu K., Malekmohammadi M., Mustakos R., Goodman W., Pouratian N., Bijanki K., Borton D., Sheth S. 2022. Dual-target deep brain stimulation drives differential engagement of networks underlying treatment-resistant depression. Biological Psychiatry(Proceedings of the Society for Biological Psychiatry Meeting, New Orleans, LA. doi: <https://doi.org/10.1016/j.biopsych.2022.02.608>

Allawala A., Behnke S., Zaytseva D., Wilkinson K. 2014. Characterization of changes in muscle afferent response to stretch following inflammation in male and female mice. The FASEB Journal. doi: https://doi.org/10.1096/fasebj.28.1_supplement.1128.1

Awards, Fellowships, & Grants

- 2021 - 2027 **F99/K00 - Blueprint Neuroscience D-SPAN Fellow**, National Institutes of Health
- 2021 **Neuroscience Scholars Program (NSP) Associate**, Society for Neuroscience
- 2020 **Trainee Professional Development Award**, Society for Neuroscience
- 2017 - 2021 **Graduate Research Fellowship Program**, National Science Foundation
- 2014 **Travel Award**, California State University Program for Education and Research in Biotechnology
- 2014 **Honorable Mention, Sally Casanova Pre-doctoral scholarship**, California State University Program for Education and Research in Biotechnology
- 2013 - 2014 **Ronald E. McNair Scholarship**, San Jose State University
- 2013 **Travel Award**, Annual Biomedical Research Conference for Minority Students
- 2013 **Travel Award**, Annual Biomedical Engineering Society (BMES) Meeting
- 2013 **Undergraduate Research Award**, Office of the Provost, San Jose State University
- 2013 **Intuitive Surgical Inc. Scholarship**, San Jose State University
- 2013 **Department Service Award, Department of Biomedical, Chemical and Materials Engineering**, San Jose State University
- 2012 - 2014 **National Science Foundation Engineering Leadership Pathways Scholars Program**, San Jose State University
- 2012 **Barnum-Everett Memorial Scholarship**, San Jose State University
- 2011 **Varian Scholarship**, San Jose State University

Teaching Experience

Fall 2021 **Sheridan Teaching Seminar - Reflective Teaching**, Certificate completion

Brown University

Summer 2018 **Biomedical Engineering and Device Design – Brown PreCollege Program**, Course instructor

Brown University

Mentoring

- 2020-2022 **Stephanie Vartany**, Undergraduate student, Neuroscience, Brown University
- 2019-2021 **Michelle Akerman**, Undergraduate student, Biomedical Engineering, Brown University
- 2021 **Ron Gadot**, M3 Medical student, Baylor College of Medicine
- 2020 **Venkata Jonnakuti**, MD/PhD Rotation student, Baylor College of Medicine

Outreach & Professional Development

SERVICE AND OUTREACH

- 2018 - 2022 **Skype a Scientist Program**, Science communicator
- 2021 - 2022 **Annual Biomedical Research Conference for Minority Students**, Research Poster Judge
- 2020 **Graduate Students of Color Orientation, Brown University**, Panelist: *Department Culture*
- 2020 **Leadership Alliance seminar, Brown University**, Panelist: *Pursuing a PhD*
- 2018 - 2019 **Peer Mentor & Organizer**, Graduate School Center for Students of Color, Brown University
- 2012 - 2013 **Vice President**, Biomedical Engineering Society, San Jose State University Chapter

Skills

SOFTWARE MATLAB, Python, AutoCAD, Fusion 360, ProE/Creo, Adobe Illustrator, Photoshop

ELECTRICAL/MECHANICAL Arduino, soldering, circuit design and analysis

BIOLOGICAL Microscopy (Confocal, Bright Field), sectioning on cryostat and microtome, slide preparation, rodent stereotaxic and intraspinal surgery, immunohistochemistry