

Anusha Allawala

POSTDOCTORAL FELLOW · DEPT OF NEUROLOGICAL SURGERY

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Education

Brown University

Providence, RI

PHD, BIOMEDICAL ENGINEERING

May 2023

- Thesis Advisors: Dr. David Borton and Dr. Sameer Sheth

San Jose State University

San Jose, CA

BS, BIOMEDICAL ENGINEERING

Dec 2014

- Thesis Advisor: Dr. Katherine Wilkinson

Research Experience

Postdoctoral Fellow

June 2023 - Present

DEPT OF NEUROLOGICAL SURGERY, UNIVERSITY OF CALIFORNIA SAN FRANCISCO

Supervisors: Dr. Edward Chang and Dr. Andrew Krystal

Graduate Student

Sept. 2017 - April 2023

SCHOOL OF ENGINEERING, BROWN UNIVERSITY

Supervisors: Dr. David Borton and Dr. Sameer Sheth

Research Associate

March 2015 - July 2017

CIRCUIT THERAPEUTICS, INC.

Supervisor: Dr. Barbara Nguyen-Vu

Undergraduate Research Assistant

Aug. 2012 - Dec. 2014

DEPT. OF BIOLOGICAL SCIENCES, SAN JOSE STATE UNIVERSITY

Supervisor: Dr. Katherine Wilkinson

Undergraduate Research Assistant

May 2013 - July 2013

NATIONAL SCIENCE FOUNDATION RESEARCH EXPERIENCE FOR

UNDERGRADUATE PROGRAM, SAN JOSE STATE UNIVERSITY

Supervisor: Dr. Katherine Wilkinson

Publications

IN PREP/SUBMITTED

Allawala A., Bijanki K., Oswalt, D., Mathura R., Adkinson J., Pirtle V., Shofty B., Robinson M., Harrison M.T., Mathew S.J., Goodman W.K., Pouratian N., Sheth S.A., Borton D.A. 2023. Prefrontal network engagement by deep brain stimulation in limbic hubs. (*Submitted*; bioarxiv: <https://doi.org/10.1101/2022.09.08.507155>)

Bijanki K., **Allawala A.**, Adkinson J., Oswalt, D., Tsolaki E., Mathew S., Mathura R., Xiao J., Pirtle V., Mocchi M., Metzger B., Cohn J., Borton D., Goodman W., Pouratian N., Sheth S. 2023. Stereo-EEG-informed network neuromodulation for psychiatric disorders: the neurophysiology monitoring unit. 2023 (*Submitted*)

Allawala A., Vartany S., Ritz H., Mathura R., Bijanki K., Oswald, D., Adkinson J., Pirtle V., Provenza N., Shofty B., Harrison M.T., Shenhav A., Hayden B., Goodman W.K., Pouratian N., Borton D., Sheth S.A. 2023. Modulation of cognitive control behavior and intracranial biomarkers using deep brain stimulation in treatment-resistant depression (*In prep*)

PUBLISHED

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., Tolias A.S., Bijanki K.R., Pitkow X., Sheth S.A. 2023. Decoding depression severity from intracranial neural activity. (*Accepted at Biological Psychiatry*)

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 stimulation 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., Oswald D., Shenhav A., Goodman W., Pouratian N., Bijanki K., Sheth S.A., Borton D. 2022. Characterization and modulation of neural substrates underlying cognitive control in treatment-resistant depression. Society for Neuroscience Annual Meeting, San Diego, CA. (*Nanosymposium Talk*)
- Allawala A.**, Vartany S., Ritz H., Mathura R., 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. Congress of Neurological Surgeons Annual Meeting, San Francisco, CA. (*Oral Presentation*)
- 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., Oswalt 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. Proceedings of the Society for Biological Psychiatry Meeting, New Orleans, LA. doi:<https://doi.org/10.1016/j.biopsych.2022.02.608>

Bijanki K., Metzger B., Adkinson J., Tsolaki E., McIntyre C., Waters A., Oswalt D., Xiao J., **Allawala A.**, Goodman W., Pouratian N., Sheth S. 2022. Stereotactic EEG helps define networks and optimize stimulation parameter selection in DBS for treatment-resistant depression (TRD). Proceedings of the Society for Biological Psychiatry Meeting, New Orleans, LA. doi:<https://doi.org/10.1016/j.biopsych.2022.02.126>

Xiao J., Myers J., Metzger B., Pirtle V., Mathura R., **Allawala A.**, Adkinson J., Rey H., Goodman W., Pouratian N., Bijanki K., Sheth S. 2022. Phase synchrony within the right prefrontal cortex predicts severity of major depression. Proceedings of Congress of Neurological Surgery Meeting, Austin, TX. doi: 10.1227/NEU.0000000000001880_334

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

INVITED RESEARCH TALKS

Presenter, 'Frontotemporal network engagement following intracranial stimulation in limbic hubs'. 2022. Journal club for G. Kreiman and U. Rutishauser labs.

Presenter, 'Network-targeted deep brain stimulation for treatment-resistant depression'. 2022. Chang group lab meeting at University of California, San Francisco.

Presenter, 'Network-targeted deep brain stimulation for treatment-resistant depression'. 2022. University of California, San Francisco Intracranial/DBS Data Analysis meeting

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

Brown University

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

Sept 2022 **Black in Neuro personal statement workshop**, Mentor
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