Justin M. Campbell, PhD

MEDICAL STUDENT

justin-campbell.github.io

EDUCATION

M.D. (Expected 05/2027) 6/2019-Present
University of Utah School of Medicine, Salt Lake City, UT

Ph.D. in Neuroscience 8/2021-5/2025
Dissertation: Multiscale Neural Dynamics Evoked by Intracranial Electrical Stimulation
University of Utah, Salt Lake City, UT

M.S. in Biomedical Engineering 8/2023-5/2024
Neuroengineering Track
University of Utah, Salt Lake City, UT

B.S. in Philosophy, B.S. in Psychology 8/2013-5/2018
University Honors, Cum Laude, Minors in Chemistry & Biology
Utah State University, Logan, UT

RESEARCH EXPERIENCE

Graduate Student 6/2021-5/2025
PIs: Cory Inman, Ph.D., John Rolston MD, PhD
Interdepartmental Program in Neuroscience
University of Utah School of Medicine, Salt Lake City, UT

Postbaccalaureate Researcher 8/2018-5/2019
PI: Anthony Hudetz, D.B.M, Ph.D.
Center for Consciousness Science
University of Michigan Medical School, Ann Arbor, MI

Research Assistant 6/2014-8/2018
PI: Kerry Jordan, Ph.D.
Department of Psychology
Utah State University, Logan, UT

HONORS & AWARDS

Special Commendation for Bioethics Scholarship	4/2025
National Institutes of Health Outstanding Scholars in Neuroscience Award	11/2024
Utah Medical Association Scholarship	6/2024
University of Utah Neuroscience Program Travel Award	6/2024
University of Utah Graduate Student Travel Assistance Award	5/2024
John H. Weis Memorial Graduate Student Travel Award	5/2023
Blackrock Neurotechnology Society for Neuroscience Travel Award	11/2022

Associated Students of the University of Utah Travel Award	11/2022
University of Utah Early Career & Professional Development Program Award	8/2022
Bench to Bedside Eccles & Marriott Libraries Award	4/2021
Atlantis Leaders Scholarship & Clinical Fellowship in Lisbon, Portugal	3/2018
College of Education and Human Services Undergraduate Researcher of the Year	2/2018
Psychology Department Undergraduate Researcher of the Year	2/2018
Philosophy Department Student of the Year	2/2018
Best Oral Presentation at Utah State University Research Symposium	4/2017
Koch Scholar	4/2017
Brett E. Blanch Memorial Scholarship in Philosophy	4/2017
Lyon, Maas, Mueggler Outdoor Leadership Scholarship	10/2016
Best Poster Presentation at Utah State University Research Symposium	4/2016

GRANTS AWARDED

- **NIH NINDS** T32 NS115723 7/2022-7/2024
  Training in the Development of Novel Interventions for the Treatment of Neurological and Neurobehavioral Disorders

  Two-year training fellowship that provides formal instruction in moving basic science discoveries to clinical practice. The funded project focuses on developing closed-loop intracranial electrical stimulation of the amygdala to enhance episodic memory.

- **NSF Innovation Corps** 10/2020-4/2021
  Improving the controllability and stability of neuroendovascular devices

  This project involved collecting survey data and conducting interviews with neurosurgeons and other endovascular specialists to better understand the common shortcomings of devices used in neuroendovascular procedures.

- **Undergraduate Research & Creative Opportunities Grant** 4/2016-4/2017
  Differences in contingent negative variation (CNV) when using social dilemma strategies

  This project employed wireless electroencephalography (EEG) and analysis of event-related potentials to explore the neural signatures of cooperation and defection in simulated social dilemmas.

PUBLICATIONS

* **Campbell, J.M.**, Mogavero, J.N., Pathuri, S., Rahimpour, S., Shofty, B. The effects of responsive neurostimulation in the centromedian nucleus of the thalamus on cognition and mood: a case series (*in prep*).

* **Campbell, J.M.**, Shofty, B. Ethical Considerations in Contemporary Psychiatric Neurosurgery (*in prep*).

* Owens, M., Nelson, J., **Campbell, J.M.**, Rahimpour, S. Cost Variances in Stereotactic Technique for Deep Brain Stimulation: An Overview of Surgical Methods and Cost Considerations (*in prep*).

19. **Campbell, J.M.**, Davis, T.S., Nesterovich Anderson, D., Arain, A., Davis, Z., Inman, C.S., Smith, E.H., Rolston, J.D. Macroscale traveling waves evoked by single-pulse stimulation of the human brain. *Journal of Neuroscience* (2025).

18. **Campbell, J.M.**, Cowan, R., Wahlstrom, K., Hollearn, M., Jensen, D., Davis, T., Rahimpour, S., Shofty, B., Arain, A., Rolston, J.D., Hamann, S., Wang, S., Eisenman, L., Swift, J. Xie, T., Brunner, P., Manns, J., Inman, C., Smith, E., Willie, J. Human single-neuron activity is modulated by intracranial theta burst stimulation of the basolateral amygdala. *eLife* (2025).

17. Chua, M.M.J., Jha, R., **Campbell, J.M.**, Warren, A.E.L., Rahimpour, S., Rolston, J.D. A posterior approach for combined targeting of the centromedian nucleus and pulvinar for responsive neurostimulation. *Operative Neurosurgery* (2025).

16. Findlay, M.C., **Campbell, J.M.**, Rahimpour, S., Shofty, B. In Reply: Radiographic Abnormalities in PD-DBS: Study Limitations and Future Research. *Journal of Neurosurgery* (2025).

15. Hollearn, M.K., Manns, J.R., Blanpain, L., Hamann, S.B., Bijanki, K., Gross, R.E., Drane, L.D., **Campbell, J.M.**, Wahlstrom, K.L., Light, G.F., Tasevac, A., Demarest, P., Brunner, P., Willie, J.T., Inman, C.S. Exploring individual differences in amygdala-mediated memory modulation. *Cognitive, Affective, and Behavioral Neuroscience* (2024).

14. Findlay, M.C., **Campbell, J.M.**, Rahimpour, S., Shofty, B. Incidental Brain Lesions in Parkinson's Disease: High Prevalence, Minimal Impact on DBS Outcomes. *World Neurosurgery* (2024).

13. Findlay, M., Tenhoeve, S.A., **Campbell, J.M.**, Yost, S., Gautam, D., Rahimpour, S., Botros, D., Liang, A.S., Alshaikh, J.T., Kassavetis, P., Moretti, P., Embree, L.M., Shofty, B. Radiographic Abnormalities and Their Clinical Significance in Patients with Parkinson's Disease with Deep Brain Stimulation. *Journal of Neurosurgery* (2024).

12. **Campbell, J.M.**, Yost, S., Gautam, D., Herich, A., Botros, D., Slaughter, M., Chodakiewitz, M., Arain, A., Peters, A., Richards, S., Newman, B., Johnson, B., Rahimpour, S., Shofty, B. Delays in the Diagnosis and Surgical Treatment of Drug-resistant Epilepsy: A Cohort Study. *Epilepsia* (2024).

11. Inman, C.S., Hollearn, M.K., Augustin, L., **Campbell, J.M.**, Olson, K.L., Wahlstrom, K.L. Discovering how the amygdala shapes human behavior: From lesion studies to neuromodulation. *Neuron* (2023).

10. Caston, R.M.*, **Campbell, J.M.***, Rahimpour, S., Moretti, P., Alexander, M.D., Rolston, J.D. Hemorrhagic safety of magnetic resonance-guided focused ultrasound thalamotomy for tremor without interruption of antiplatelet or anticoagulant therapy. *Stereotactic and Functional Neurosurgery* 1-5 (2023).

9. **Campbell, J.M.**, Kundu, B., Lee, J.N, Miranda, M., Arain, A., Taussky, P., Grandhi, R., Rolston, J.D. Evaluating the concordance of functional MRI-based language lateralization and language testing in epilepsy patients: a single-center analysis. *Interventional Neuroradiology* (2022).

8. Shlobin N., Clark, J., **Campbell, J.M.**, Bernstein, M., Jahromi, B., Potts, M. Ethical Considerations in Surgical Decompression for Stroke. *Stroke* 53, 2673-2682 (2022).

7. Radwanski, R.R., Winston, G., Younus, I., Gaudix, S.W., Shlobin, N.A., Rothbaum, M., Kortz, M.W., **Campbell, J.M.,** Evins, A., Greenfield, J.P., Pannullo, S.C. Reevaluating Innovations in Medical Student Neurosurgery Education: Lessons Learned Today from Data Collected Before COVID-19. *World Neurosurgery* 163, 171-178 (2022).

6. Crabb, B.T., Hamrick, F., **Campbell, J.M.**, Vignolles-Jeong, J., Magill, S.T., Prevedello, D.M., Carrau, R.L., Otto, B.A., Hardesty, D.A., Couldwell, W.T., Karsy, M. Machine Learning-Based Analysis and Prediction of Unplanned 30-Day Readmissions After Pituitary Adenoma Resection: A Multi-Institutional Retrospective Study With External Validation. *Neurosurgery 91(2), 263-271* (2022).

5. **Campbell, J.M.**, Ballard, J., Duff, K, Zorn, M., Moretti, P., Alexander, M.D., Rolston, J.D. Balance and cognitive impairments are prevalent and correlated with age in presurgical patients with essential tremor. *Clinical Parkinsonism & Related Disorders 6, 100134* (2022).

4. Shlobin, N. A.*, **Campbell, J. M.***, Rosenow, J. M. & Rolston, J. D. Ethical considerations in the surgical and neuromodulatory treatment of epilepsy. *Epilepsy & Behavior* 127, 108524 (2022).

3. Nguyen, S., Cox, P., **Campbell, J. M.,** Brockmeyer, D. L. & Karsy, M. Evaluating the utility and quality of large administrative databases in pediatric spinal neurosurgery research. *Child's Nervous System* 37(10), 2993–3001 (2021).

2. Mahamane, S., Wan, N., Porter, A., Hancock, A. S., **Campbell, J.**, Lyon, T. E., Jordan, K. Natural Categorization: Electrophysiological Responses to Viewing Natural versus Built Environments. *Frontiers in Psycholology* 11, 990 (2020).

1. **Campbell, J. M.***, Huang, Z.*, Zhang, J., Wu, X., Qin, P., Northoff, G., Mashour, G. A., Hudetz, A. G. Pharmacologically informed machine learning approach for identifying pathological states of unconsciousness via resting-state fMRI. *Neuroimage* 206, 116316 (2020).

* Authors contributed equally

INVITED TALKS

1. **Campbell J.M.** Human Single-Neuron Dynamics Under Theta Burst Stim. Blackrock Neurotech Webinar; Apr 30.

PRESENTATIONS

22. **Campbell J.M.** Intracranial Theta Burst Stimulation of the Basolateral Amygdala Modulates Hippocampal Dynamics. Oral presentation at the National Institutes of Health Outstanding Scholars in Neuroscience (NIH OSNAP) Symposium 2024; Nov 7-8; Bethesda, MD.

21. **Campbell J.M.**, Wahlstrom, K.L., Hollearn, M., Davis, T., Arain, A., Swift, J.R., Brunner, P., Shofty, B., Rahimpour, S., Rolston, J.D., Manns, J.R., Willie, J.T., Inman, C.S. Direct electrical stimulation of the basolateral amygdala modulates oscillatory dynamics in the hippocampus. Oral presentation at World Society for Stereotactic and Functional Neurosurgery; 2024; Sep 3-6; Chicago, IL.

20. **Campbell J.M.**, Wahlstrom, K.L., Hollearn, M., Davis, T., Arain, A., Swift, J.R., Brunner, P., Shofty, B., Rahimpour, S., Rolston, J.D., Manns, J.R., Willie, J.T., Inman, C.S. Direct electrical stimulation of the basolateral amygdala modulates oscillatory dynamics in the hippocampus. Poster presentation at American Society for Stereotactic and Functional Neurosurgery; 2024; Jun 1-4; Nashville, TN.

19. **Campbell J.M.**, Wahlstrom, K.L., Hollearn, M., Davis, T., Arain, A., Swift, J.R., Brunner, P., Shofty, B., Rahimpour, S., Rolston, J.D., Manns, J.R., Willie, J.T., Inman, C.S. Neurophysiological signatures of amygdala-mediated memory enhancement: insights from intracranial recordings and stimulation. Poster presentation at Society for Neuroscience; 2023; Nov 11-15; Washington, D.C.

18. **Campbell J.M.** Direct electrical stimulation of the basolateral amygdala modulates oscillatory dynamics. Oral presentation at the University of Utah Neuroscience Snowbird Symposium; 2023; Oct 27; Snowbird, UT.

17. **Campbell J.M.** Direct electrical stimulation of the basolateral amygdala modulates oscillatory dynamics. Oral presentation at the University of Utah MSTP Retreat; 2023; Sep 23; Deer Valley, UT.

16. **Campbell J.M.** Amygdala-mediated memory enhancement in humans via precision neuromodulation. Oral presentation at National Institute of Neurological Disorders and Stroke T32 Workshop; 2023; Jun 5-7; Philadelphia, PA.

15. **Campbell J.M.**, Wahlstrom, K.L., Hollearn, M., Blanpain, L., Davis, T., Swift, J., Adamek, M., Xie, T., Brunner, P., Hamann, S.B., Arain, A., Eisenman, L., Gross, R.E., Rolston, J.D., Rahimpour, S., Manns, J.R., Willie, J.T., Inman, C.S. Closed-loop direct electrical stimulation to optimize amygdala-mediated memory enhancement in humans. Poster presentation at International Conference on Learning and Memory; 2023 Apr 25-30; Huntington Beach, CA.

14. **Campbell J.M.**, Davis, T.S., Smith E.H., Rolston, J.D. Cortico-cortical evoked potentials are traveling waves. Poster presentation at Utah Neuroscience Program Snowbird Symposium; 2022 Oct 28; Snowbird, UT.

13. **Campbell J.M.**, Davis, T.S., Smith E.H., Rolston, J.D. Cortico-cortical evoked potentials are traveling waves. Poster presentation at International Conference on Spreading Depolarizations; 2022 Oct 10; Salt Lake City, UT.

12. **Campbell J.M.**, Davis, T.S., Smith E.H., Rolston, J.D. Cortico-cortical evoked potentials are traveling waves. Oral presentation at American Society for Stereotactic and Functional Neurosurgery; 2022 Jun 4-7; Atlanta, GA.

11. **Campbell J.M.**, Ballard, J., Duff, K., Zorn, M., Moretti, P., Alexander, M.D., Rolston, J.D. Analysis of balance and cognitive function in presurgical patients with essential tremor. Oral presentation at American Association of Neurological Surgeons; 2021 Aug 21-25; Virtual-Meeting.

10. **Campbell J.M**., Crabb, B., Hamrick, F., Couldwell, W.T., Karsy, M. Predicting Readmission Following Pituitary Adenoma Resection: A Machine Learning Approach. Oral presentation at Weill Cornell Medicine Neurosurgery Medical Student Neurological Surgery Research Symposium; 2020 Jan 23; Virtual-Meeting.

9. **Campbell J.M.**, Ballard, J., Duff, K., Zorn, M., Moretti, P., Alexander, M.D., Rolston, J.D. Age and cognitive function predict impaired balance in patients with essential tremor. Poster presentation at American Society for Stereotactic and Functional Neurosurgery; 2020 Jun 20; Boston, Massachusetts. (COVID interrupted)

8. **Campbell J.M.**, Davis, T., Rolston J.D. Exploring the Neurophysiology of Pain Perception with the Thermal Grill Illusion (TGI). Poster presentation at University of Utah School of Medicine Medical Student Research Forum; 2020 Jul 30; Salt Lake City, UT.

7. **Campbell J.M.**, Robinson B., Wan N.J.A., Jordan K. Are you thinking what I'm thinking? Theory of Mind activation in social dilemmas. Poster presentation at Utah State University Biology Undergraduate Research Symposium; 2018 Apr 19; Logan, UT.

6. **Campbell J.M.** You Think, Therefore I Am: Crowdsourcing Consciousness. Oral presentation at Utah State Student Research Symposium; 2018 Apr 12; Logan, UT.

5. **Campbell J.M.** Crowdsourcing Consciousness: Attention Schema Theory and the Socially Constructed Self. Oral presentation at Science of Consciousness; 2018 Apr 2-7; Tucson, AZ.
4. **Campbell J.M.**, Robinson B., Wan N.J.A., Jordan K. Are you thinking what I'm thinking? Theory of Mind activation in social dilemmas. Poster presentation at Cognitive Neuroscience Society; 2018 Mar 24-27; Boston, MA.
3. **Campbell J.M.**, Robinson B., Wan N.J.A., Jordan K. Are you thinking what I'm thinking? A neuroscientific analysis of mentalization in social dilemmas. Oral presentation at Utah State Student Research Symposium; 2017 Apr 13; Logan, UT.
2. **Campbell J.M.**, Robinson B., Wan N.J.A., Jordan K. Differences in contingent negative variation (CNV) when using social dilemma strategies. Poster presentation at Utah State Student Research Symposium; 2016 Apr 14; Logan, UT.
1. **Campbell J.M.**, Robinson B., Wan N.J.A., Jordan K. Differences in contingent negative variation (CNV) when using social dilemma strategies. Poster presentation at Cognitive Neuroscience Society; 2016 Apr 2-5; New York City, NY.

WORKSHOPS & TRAINING

Blackrock Neurotech Hands-On Electrophysiology Workshop 6/2023
Salt Lake City, UT

Two-day training workshop focused on electrophysiology data acquisition, closed-loop applications, and custom software development.

Cleveland Neurodesign Entrepreneurs Workshop 9/2022
Case Western Reserve University, Cleveland, OH

Four-day event that used the Biodesign process to explore healthcare entrepreneurship with a focus on neurotechnology. Received didactic instruction, mentoring, and one-on-one advising throughout the workshop. Collaborated with a multidisciplinary team in building a business plan to address an unmet clinical need.

Training in Advanced Statistical Methods in Neuroimaging and Genetics 2/2022
University of Utah, Salt Lake City, UT

Intensive two-week course focused on advanced statistical methods applied to neuroimaging and genetics (e.g., network science, multi-modal predictive modeling). Funded by National Institute on Neurological Disorders and Stroke (R25NS117281).

MEDICAL DEVICE INNOVATION

Bench to Bedside 2022 Competition Team Leader 10/2021-4/2022
University of Utah School of Medicine, SLC, UT

Led multidisciplinary team in developing a low-cost device for quantitatively measuring tremor to improve diagnostic accuracy and facilitate long-term disease monitoring. Prepared investor packet containing customer needs assessment, market research, IP regulatory review, and business plan.

Bench to Bedside 2021 Competition Team Leader 10/2020-4/2021

University of Utah School of Medicine, SLC, UT

Led multidisciplinary team in developing a magnetically stabilized catheter system for neuroendovascular surgery. Our team was awarded the Eccles & Marriott Libraries prize ($5,000). Prepared investor packet containing customer needs assessment, market research, IP regulatory review, and business plan.

Bench to Bedside 2020 Competition Team Leader 10/2019-9/2020
University of Utah School of Medicine, SLC, UT

Led multidisciplinary team in developing a novel two-balloon mechanical thrombectomy device. Prepared investor packet containing customer needs assessment, market research, IP regulatory review, and business plan.

SERVICE

Mentor to Students of Refugee Background 7/2020-7/2021
One Refugee, SLC, UT

Served as a professional mentor to students interested in science and medicine. Helped students to grow their professional network and discover opportunities to pursue their interests.

Co-Director of Neurology Clinic for Underserved Patients 2/2020-4/2021
Fourth Street Clinic, SLC, UT

Staffed clinic, trained students, documented patient histories, and performed physical exams. Designed and implemented a plan to transition to a telemedicine system with students, attendings, and patients during COVID-19 pandemic.

Instructor for Science Power & Science Navigators 10/2019-3/2020
University of Utah School of Medicine, SLC, UT

Planned, organized, and led day camps where elementary school students (K-6) of all backgrounds could learn about science through games, projects, and crafts.

Trip Leader & Outdoors Program Trainer 3/2015-5/2018
Utah State University, Logan, UT

Professionally trained to serve as an outdoor guide across various activities (e.g., backcountry skiing, climbing, backpacking, whitewater rafting, mountain biking). Responsible for training other students in the program.

LEADERSHIP

Co-Chair of MD/PhD Program Mentoring & Outreach Committee	9/2023-5/2025
President of American Association of Neurological Surgeons Utah Chapter	6/2022-8/2023
Co-Chair of Neuroscience Program Snowbird Conference Committee	2/2022-10/2022
Co-President of Academic Medicine Student Interest Group	4/2020-4/2021
Co-President of Neurosurgery Student Interest Group	4/2020-4/2021
Vice President of Neurology Student Interest Group	10/2019-4/2021
Co-Chair of Research for Utah Global Surgery Symposium	10/2019-3/2020

TEACHING

Undergraduate Teaching Fellow for Bioethics 1/2018-5/2018
Utah State University, Logan, UT

Undergraduate Teaching Fellow for Introduction to Philosophy 8/2017-5/2018
Utah State University, Logan, UT

Cadaver Lab Teaching Assistant 11/2016-3/2018
Utah State University, Logan, UT

Undergraduate Teaching Fellow for Research Methods 1/2016-12/2016
Utah State University, Logan, UT