

Post-Doctoral Fellowship in Neuroimaging and Deep-Brain Neuromodulation Employing Focused Ultrasound

Position: Dr. Salvador Guinjoan is currently seeking a post-doctoral scholar to be involved in mechanistic studies linking brain structure and functioning with symptoms of depression. Specifically, the lab is committed to (1) Employing low-intensity focused ultrasound (a novel and noninvasive method to produce temporary neuromodulation of deep brain tissue) to establish mechanisms of negative affect and rumination production and maintenance and (2) Exploring structural and functional magnetic resonance imaging connectivity correlates of depressive symptoms. The lab is also planning to incorporate other forms of noninvasive neuromodulation with the same purposes. This post-doctoral position provides specialized training and experience in: (1) Analysis of structural (grey matter volumetry, white matter tractography) and functional 3T MR images, (2) Advanced data analysis and statistical methods to establish mechanistic relationships between neuromodulation-mediated changes in tissue structure and function and changes in symptoms, and (3) Interpretation of imaging results in light of detailed brain anatomical and circuit models of normal and abnormal behavior. The aim of the post-doctoral work is to discover methods to characterize personalized neuromodulation targets in individuals with depression. Given the multidisciplinary nature of this work, a successful candidate will be supervised by both Dr. Guinjoan and Dr. Rayus Kuplicki, who is the Data Analytics Lead at LIBR. A successful candidate will (1) Analyze functional and structural MRI, (2) Analyze behavioral data, including clinical symptom data, (3) Gain experience with longitudinal research design to test mechanistic brain-behavior hypotheses, (4) Model the ultrasound effects in the deep brain tissue of individual subjects, (5) Prepare and publish papers, give presentations, and write K-level National Institutes of Health (NIH) grant applications, and (6) Progress toward an independent research career.

Institute: Located in Tulsa, Oklahoma, LIBR is a privately-funded non-profit clinical neuroscience research institute affiliated with the main psychiatric hospital in Northeastern Oklahoma (Laureate Psychiatric Clinic and Hospital). Our mission is to reduce the suffering of psychiatric patients by leveraging leading talent and technology to discover novel therapies. LIBR offers excellent training opportunities in a dynamic, interactive, and multidisciplinary environment with a diverse team of collaborators. LIBR is an Equal Opportunity/Affirmative Action employer, compliant with the Americans with Disabilities Act, and seeks to hire scholars from a wide variety of backgrounds. The institute is committed to supporting a culture of diversity and respect.

Facilities: A state-of-the-art neuroimaging research environment, including two 3-Tesla MRI scanners (GE Discovery MR750 and Siemens Prisma, both fully research-dedicated), equipped with blood-oxygen-level-dependent, diffusion tensor imaging, arterial spin labeling pulse sequencing, a custom-developed real-time fMRI system, and MRI-compatible psychophysiology and electroencephalography systems.

Requirements: (1) Ph.D. in Physics, Engineering, Biology, Cognitive Science, or Informatics, and (2) A solid foundation in statistics.

Preferred Skills: (1) Experience with biological signal analysis, particularly functional and structural MRI analysis and scripting, (2) Experience with R statistical analysis software.

Salary/Benefits: This is a full-time research position for 2 years, with renewable funding up to 3-5 years. A full benefits package is available.

Start Date: Fall/Winter 2023-2024

How to Apply: Interested candidates should email a CV, a brief statement of long-term career goals, and contact information for 3 references to Dr. Salvador Guinjoan, LIBR Principal Investigator:
SGuinjoan@laureateinstitute.org.