

Postdoctoral Research Fellow – October 2020

The *Network Control Laboratory* of Dr. Emiliano Santarnecchi at the **Berenson-Allen Center for Noninvasive Brain Stimulation** at Beth Israel Deaconess Medical Center (**BIDMC, Harvard Medical School, Boston, MA, USA**) is seeking candidates for a multi-year postdoctoral fellowship in noninvasive brain stimulation, EEG, MRI, and clinical medicine. The fellow will be part of a randomized, double-blind, placebo-controlled clinical trial investigating the impact of 40Hz transcranial Alternating Current Stimulation (**tACS**) for *gamma induction and protein clearance* in patients with **Alzheimer's Disease** ("Gamma Induction in Alzheimer's Disease", *GUARD* trial). The trial, coordinated by **Dr. Santarnecchi** in Boston, includes partners at Massachusetts General Hospital (MGH, Dr. **Georges El-Fakhri**, Gordon Center for Medical Imaging) and Industry, and has a duration of 3 years. The trial heavily relies on multimodal imaging both for personalization of stimulation targets and evaluation of treatment effects, including longitudinal amyloid- β and tau PET imaging, MRI, fMRI, DTI and ASL, on top of cutting-edge electrophysiological recordings (EEG, TMS-EEG), offering exposure to multiple aspects of translational clinical neuroscience.

The fellow will be responsible for collection and analysis of EEG and TMS-EEG data, as well as conduction of tACS sessions. Given the multimodal nature of the trial, the candidate will have the opportunity to learn about other data modalities and analyses thanks to the interaction with collaborators and other members of the lab. The laboratory currently also has ongoing studies in healthy subjects exploring novel targeting approach for network engagement, as well as other clinical trials investigating gamma-induction via tACS and/or multisensory audio-video stimulation (e.g. in patients with *Frontotemporal Dementia*). Collaboration across studies is available and encouraged.

The Berenson-Allen Center for Noninvasive Brain Stimulation is a world leading institution for research and clinical applications, as well as teaching of noninvasive brain stimulation techniques and their integration with EEG, neuroimaging and cognition. The Center specializes in applying these techniques to human neuroscience and clinical neurology and psychiatry. The fellow will be exposed to a dynamic, collaborative atmosphere, and be immersed into the rich scientific and clinical environment offered by the city of Boston.

Candidates should have two or more of the following:

- Prior conduct of neurostimulation experiments (preference for tACS and TMS), with an understanding of the strengths and limitations of various study designs
- Prior experience with clinical populations
- Prior experience with EEG (not necessarily TMS-EEG), including grounding or formal training in signal processing for time-series data and/or connectivity analysis and/or source analysis
- Experience with coding (e.g. Matlab, Python)
- Experience with Neuroimaging data analysis, with particular emphasis on fMRI, ASL or PET
- Prior experience with teaching and supervision of students and technicians

We expect to be able to train a successful candidate in several of these areas according to his/her ability and interests. Both MDs and PhDs are invited to apply. Position is available immediately.

This position is full-time and inclusive of a full, standard benefits package.

Please send a cover letter, CV, and the names of 2-3 references to Emiliano Santarnecchi (esantarn@bidmc.harvard.edu) c/o Alisha Roby (aroby@bidmc.harvard.edu). A good cover letter will explain why your skills and interests overlap with our Center's goals, what you hope to gain from working with us, and what you will bring to the team.