

Postdoctoral Research Fellow Position at Massachusetts General Hospital/Harvard Medical School

The Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology at Massachusetts General Hospital is offering several postdoctoral positions based on NIH-funded projects to develop novel multi-modal neuroimaging methodology for translational applications in the Translational Neuroimaging and Neural Control (TNNC) Laboratory. These positions are open now until filled.

Potential candidates will be considered based on the following four research directions:

- a) Optimize the high spatiotemporal fMRI method, e.g. line-scanning and single-vessel fMRI, to specify circuit dysfunction and vasomotion impairment in animal models with a degenerative disease or vascular dementia.

The candidate will participate in ongoing projects to optimize the awake mouse fMRI with 100um isotropic resolution. And, further develop the ultrafast fMRI mapping methods at millisecond temporal scales.

- b) Develop a novel wireless implantable RF coil array in combination with fiber photometry or electrophysiological recordings to acquire neuro-glia-vascular signals across different scales.

The candidate will implement novel RF coil arrays (up to 8 receiving channels for the 14T scanner) to image multiple subjects to investigate the function-behavior signatures of transgenic mouse models with cognitive impairments

- c) Apply neural network computational methods to analyze fMRI/EEG/fiber photometry recording-based brain dynamic signals, aiming to interpret the consciousness state changes of comatose animal models.

The candidate will compare different numerical analytic schemes when investigating the causality of information flow in the unique spatiotemporal dynamic patterns of animal brains.

- d) Develop an advanced optical imaging device (e.g. MR-compatible miniscope) for brain dynamic signal recordings, e.g., Ca^{2+} , Glutamate, dopamine, CNiFERs, with simultaneous fMRI in awake rodents.

The candidate will collaborate with leading optical imaging labs to implement two-photon imaging and fMRI to investigate the neuronal and vascular dynamics of transgenic mouse models.

A Ph.D. (or equivalent) in electrical engineering, biomedical engineering, computer science, medical physics, or a related field is required; however, strong candidates with other scientific backgrounds will also be considered.

Candidates with strong computational/programming skills and experience in fMRI are preferred. Also, we welcome candidates with experience in multi-photon optical imaging, fiber photometry, or *in vivo* electrophysiology in animal models (rodents) to apply for this position, who can be trained to learn how to perform animal fMRI and perform fMRI data analysis.

We welcome candidates with high motivation, curiosity, and scientific maturity. The candidate should have strong teamwork skills and be flexible for night or weekend imaging time shifts.

Please send your CV and a cover letter to describe your background, interests, and research goals to Dr. Xin Yu by e-mail: xyu9@mgm.harvard.edu. Please include "Postdoc Application for Multi-modal Neuroimaging" in the subject line of your email.