Athinoula A. Martinos Center For Biomedical Imaging

MGH/HST Athinoula A. Martinos Center for Biomedical Imaging

MASSACHUSETTS GENERAL HOSPITAL | Harvard-MIT Health Sciences & Technology

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 two postdoctoral positions based on NIH-funded projects to develop novel multi-modal neuroimaging methodology in animal models. This position is open now until filled.

Potential candidates will be considered based on the following three 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.

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

c) Implement the MRI/EEG/fiber photometry recording methods to detect brain state fluctuation and neuro-glial-vascular dynamic signaling in the brainstem lesion-induced rat coma model.

Candidates with strong computational/programming skills and experience in high-field animal 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 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@mgh.harvard.edu. Please include "Postdoc Application for Multi-modal Neuroimaging" in the subject line of your email.

Here is the selected publication list from Yu lab:

1. Chen X, Jiang Y, Choi S, Pohmann R, Scheffler K, Kleinfeld D, **Yu X**. Single-vessel cerebral blood flow fMRI to map blood velocity by phase-contrast imaging, **Plos Biology** (in press)
2. Pais-Roldán P, Takahashi K, Chen Y, Zeng H, Jiang Y, **Yu X.** Indexing arousal with multi-modal fMRI merging pupillometry and optical fiber calcium recording, **Proc Natl Acad Sci U S A. 2020,** 117 (12): 6875-6882.
3. Handwerker J, Pérez Rodas M, Vincent F, Freytag N, Beyerlein M, Pohmann R, **Yu X**, Anders J*, Scheffler K* In vivo NMR and fMRI using a needle-shaped NMR-on-a-chip transceiver, **Nature Methods. 2020**;17(1):64-67.
4. Chen X, Sobczak F, Chen Y, Jiang Y, Qian C, Lu Z, Ayata C, Logothetis NK, **Yu X**. Mapping optogenetically-driven single-vessel fMRI with concurrent neuronal calcium recordings in the rat hippocampus. **Nature Communications. 2019**;10(1):5239.
5. Chen Y, Pais-Roldan P, Chen X, Frosz M, **Yu X**. MRI-guided robotic arm drives optogenetic fMRI with concurrent Ca2+ recording. **Nature Communications,2019;**10(1):2536. (highlights for Light-controlled Biology Methods in Nature Communications.)
6. Pais-Roldán P, Edlow BL, Jiang Y, Stelzer J, Zou M **Yu X**, Multimodal assessment of recovery from coma in a rat model of diffuse brainstem tegmentum injury, **NeuroImage,2019;**189:615-630.
7. Wang M, He Y, Sejnowski TJ, **Yu X**. Brain-state dependent astrocytic Ca2+ signals are coupled to both positive and negative BOLD-fMRI signals. **Proc Natl Acad Sci U S A**, **2018**;115(7):E1647-E56.
8. He Y, Wang M, Chen X, Pohmann R, Polimeni JR, Scheffler K, Rosen BR3, Kleinfeld D, **Yu X**. Ultra-slow single vessel BOLD and CBV-based fMRI spatiotemporal dynamics and their correlation with neuronal intracellular calcium signals. **Neuron, 2018**;97(4):925-939 (highlights in Neuron)
9. **Yu X***, He Y, Wang M, Merkle H, Dodd SJ, Silva AC, Koretsky A*. Sensory and optogenetically driven single-vessel fMRI. **Nature Methods, 2016**;13(4):337-340. ***Corresponding author.**
10. **Yu X***, Qian C., Chen D-Y, Dodd S, Koretsky A*. Deciphering laminar-specific neural inputs with line-scanning fMRI. **Nature Methods**, **2014**;11(1): 55-58. ***corresponding authors.**