Postdoctoral Position
Development of Molecular Neuro-technologies

VAZIRI LAB
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http://www.rockefeller.edu/research/faculty/labheads/AlipashaVaziri/#content

Background

Emergence of new optical technologies combined with advanced statistics and machine learning tools have led to major advances of our understanding of how the circuitry and dynamic s of neuronal population give rise to brain functions and behavior.

The Vaziri Lab of Neurotechnology and Biophysics has a major focus on the development and application of advanced optical imaging technologies with applications for systems neuroscience. Over the last few years we have developed a portfolio of optical techniques that allow near-simultaneous stimulation [1, 2] and functional imaging of neuronal activity on the whole-brain level at single-cell level in small model organisms [3, 4] and more recently in the more scattering rodent brain [5-8]. These tools are now being used to answer some of the most fundamental questions in neuroscience: How does the spatiotemporal dynamics of neuronal population activity generate behavior? How is the variability of behavior linked to the variability of neuronal dynamics? What are the neuro computational principles that facilitate cognitive brain functions?

Position

The development of our advanced neuroimaging technologies critically hinges on molecular tools and implemented genetic strategies in animal models that are best co-developed with the optical technologies. We are currently looking for highly motivated and ambitious candidates at the Postdoctoral level who are interested in taking on challenging and high-risk high-reward projects at the **interface of molecular/synthetic biology, genetic engineering and imaging technology.**

Qualifications

- Must be highly motivated, ambitious and goal-driven
- Must have PhD in **molecular biology, neuroscience, genetics, bio-engineering** or a related field
- Education emphasis in **biochemistry,** biophysics or protein engineering including previous lab experience with protein design, structural biology and large scale screening is desirable
- Experience with one or more types of optical microscopy is desirable
- Previous experience with rodent work including cranial window **surgery** or behavioral work in rodents would be desirable
- Must have excellent verbal and written communication skills, be detail oriented, dependable and self-motivated with a 'Whatever It Takes' attitude and thrive in a fast-paced environment with the ability to work both independently and part of a team.

Interested candidates should send their CV including publications, copy of transcripts and the contact information of two references to vaziri@rockefeller.edu. For more information please visit our website www.vaziria.com

References
1. Andrasfalvy, B., et al., *Two-photon Single Cell Optogenetic Control of Neuronal Activity by Sculpted Light.* **PNAS**, (2010). 107.
2. Losonczy, A., et al., *Network mechanisms of theta related neuronal activity in hippocampal CA1 pyramidal neurons.* **Nature Neuroscience**, (2010). 13(8): p. 967-72.
3. Schrodel, T., et al., *Brain-wide 3D imaging of neuronal activity in Caenorhabditis elegans with sculpted light.* **Nature Methods**, (2013). 10(10): p. 1013-1020.
4. Prevedel, R., et al., *Simultaneous whole-animal 3D imaging of neuronal activity using light-field microscopy.* **Nature Methods**, (2014). 11(7): p. 727-730
5. Robert, R. et al., *Fast volumetric calcium imaging across multiple cortical layers using sculpted light*. **Nature Methods,** (2016) 13, 1021-1028
6. Skocek,O., et al., *High-speed volumetric imaging of neuronal activity in freely moving rodents*. **Nature Methods,** (2018). 15, 429–432.
7. Nöbauer, T., et al., Video rate volumetric Ca2+ imaging across cortex using seeded iterative demixing (SID) microscopy. **Nature Methods**, (2017). 14, 811-81.
8. Weisenburger, S. et al., Volumetric Ca2+ Imaging in the Mouse Brain using Hybrid Multiplexed Sculpted Light (HyMS) Microscopy. **Cell** (2019), *in press*