



Senior Staff Scientist Advanced Neuro-Imaging & Technologies

VAZIRI LAB

Laboratory of Neurotechnology and Biophysics

The Rockefeller University, New York, NY

<http://www.rockefeller.edu/research/faculty/labheads/AlipashaVaziri/#content>

The emergence of new optical technologies combined with molecular sensors and advanced computational tools have led to major advances of our understanding of how the circuitry and dynamics of neuronal population give rise to brain functions and behavior. The Vaziri Lab of Neurotechnology and Biophysics (LNB) has a major focus on the development and application of advanced optical imaging technologies with applications for systems neuroscience. Over the last few years the lab has 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].

Position

To further push the boundaries of neurotechnology development and brain-imaging, we are seeking to fill the position of (Senior) Staff Scientist / (Senior) Research Associate in the LNB who can develop an independent and highly synergistic research program aligned with the ongoing efforts in the laboratory. The successful candidate will be imbedded in LNB benefiting from the existing laboratory infrastructure and scientific environment while leading a team supported by independently as well as jointly acquired external funding. Possible areas of the focus of the research program of the applicants may include but are not limited to:

- **Development of new optical or non-optical methods for interrogating neuroactivity**
- **Imaging through scattering media**
- **Computational imaging technologies, machine learning and advanced statistics**
- **Development of early stage technologies for bioimaging and biology based on conceptually new approaches from quantum optics/quantum sensing, ultrafast optics, nano-photonics or other areas**
- **Development of new molecular sensors and use of biochemical or synthetic biological approaches**

Qualifications

- Highly motivated, ambitious and goal-driven
- PhD in **physics, (quantum) optics, optical / electrical engineering, synthetic biology or neuroscience**
- Demonstrated scientific excellence and substantial contributions in research in candidate's field
- Ability to manage multiple tasks and projects and work as a key part of an interdisciplinary team, excellent organizational and communication skills and willingness to work outside their core expertise.
- Prior experimental work on one and more of these areas highly desired: designing and building optical setups, ultra-fast optics, fiber optics, computational modeling, systems neuroscience, animal surgery or behavior

Key Responsibilities

- Support multiple research projects at the senior level, lead own independent projects while training and mentoring other more junior scientists
- Support Head of Laboratory with execution of the laboratory research program and acquisition of external funding that would support the lab and their own projects
- Author, publish, and present research findings
- As needed, serve as a liaison to industry and support the dissemination of developed technologies

After an initial appointment period, candidates can be considered for possible appointment as a Research Assistant Professor. This appointment requires successful review by a university committee. Interested candidates should send their CV including a list of publications, a statement of research interests and accomplishments as well as the contact information of at least three references to vaziradmin@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.
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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. Skoczek, 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*

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