(Senior) Research Associate | Research Assistant / Associate Professor
Advanced Neuro-Imaging & Technologies

VAZIRI 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 a leadership role 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

Key Responsibilities

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

Qualifications

- Highly motivated, ambitious and goal-driven
- PhD in physics, optics, optical / electrical engineering or related fields
- 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 experience in academia or industry on one and more of these areas is highly desired: designing and building optical systems, ultra-fast optics, fiber optics, computational modeling, systems neuroscience
- Track record of acquisition of research funding is required for appointments at Research Assistant / Associate Professor level

Depending on candidates' qualifications and scientific achievements the initial appointment can be made as a **(Senior) Research Associate** or **Research Assistant / Associate Professor**. Appointment as a **Research Assistant / Associate Professor** will be subject to successful review by a university committee.

How to Apply

Interested candidates should send their CV including a list of publications, a statement of research interests as well as the contact information of at least three 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), **177**, 1–17