Postdoc / PhD positions:
Advanced Neuro-Imaging & Technologies

The Rockefeller University, New York, NY

Background
Over the last decade neuroscience has been revolutionizing our understanding of the brain. A major driver underlying this transformation has been the emergence of new optical technologies combined with advanced statistics and machine learning tools. Our lab has a major focus on development and application of advanced optical imaging technologies with applications for systems neuroscience.

What we do
We have pioneered optical techniques that allow near-simultaneous stimulation [1, 2] and functional imaging of neuronal activity on the whole-brain level at single-cell resolution in small model organisms [3, 4]. Thereby we are also for the first time in a unique position to discover the underlying principle of some of the most fundamental question about the brain: How does the brain represent sensory inputs? How does the spatiotemporal dynamics of neuronal population generate animal behavior? How does the brain make decisions? We are addressing these questions in model organisms such as zebrafish larvae and by using *in vivo* imaging in rodents.

Positions
We are currently looking for several highly motivated and ambitious candidates for the following projects:

- **Development of new high-speed imaging methods for large scale functional recording of neuronal circuits**
- **Imaging through scattering media**
- **Development of computational imaging techniques and big-data analysis using machine learning & advanced statistics**
- **Application of quantum optics and ultrafast optics to biology**

Qualifications
Ideally, the candidate should have the following profile:
- Highly motivated, ambitious and passionate about science
- PhD / Masters in **physics, (quantum) optics, optical or electrical engineering or neuroscience**
- Basic programming skills (e.g. Matlab, Python, LabView)
- Experience with one or more of these areas would be highly desired: optics or optical engineering, ultra-fast laser systems, fiber optics, RF electronics, craniotomy surgery procedures in rodents, rodent behavioral experiments, experience with large scale data processing using distributed computing
- Ability to work in an interdisciplinary team, managing multiple tasks, good organizational skills, willingness to work outside their core expertise.

The successful candidates will join the lab at the Rockefeller University and will be embedded in our network of active collaborations in the New York area and beyond which are supported by dedicated recent awards. Interested candidates should send their CV including publications, copy of transcripts as well as the contact information of two references to Prof. **Alipasha Vaziri** (vaziri@rockefeller.edu). For more information please visit our website www.vaziria.com or
http://www.rockefeller.edu/research/faculty/labheads/AlipashaVaziri/#content

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