POSTDOCTORAL POSITIONS AVAILABLE – PRINCETON NEUROSCIENCE INSTITUTE

Sam Wang's laboratory at Princeton has three fully funded positions available immediately. We study the cerebellum and other brain regions in rodents with a wide variety of tools, including two-photon microscopy, optogenetic circuit perturbation, virtual reality systems, and virus-based tracing methods.

We are looking for the following individuals.

An in vivo electrophysiologist who would like to get into autism-related research. We are inspired by the hypothesis that sensitive-period actions of cerebellum-forebrain communication can drive cognitive development, and that disruption of these actions can account for autism's key features (see Kloth, Badura, and Wang 2014 *Neuron*). We have developed methods for circuit silencing during development (e.g. DREADDs) and quantitative behavioral monitoring. An in vivo physiologist could record single-neuron activity to understand how neural coding throughout the brain is altered by cerebellar perturbation. He/she would have the opportunity to learn in vivo two-photon imaging, virtual reality systems, and other behavioral monitoring.

A brain slice physiologist who would like to get into probe design. We are interested in rapid monitoring of brain circuitry. We have developed "Fast-GCaMPs," the fastest-responding calcium indicator proteins made to date. Now we want to fully exploit our strategy by (a) optimizing the probe to combined speed and brightness, and (b) targeting it to subcellular structures to achieve maximum time resolution. A slice electrophysiologist could contribute by doing measurements to demonstrate the ability of Fast-GCaMPs to operate in "spike counting mode,", i.e. to resolve individual spikes spaced closely together in time. He/she would also have the opportunity to develop high-throughput assays for screening kinetic parameters of purified Fast-GCaMPs, and to use Fast-GCaMPs in vivo to decode cerebellar activity during behavior.

Other individuals may qualify as well if they are familiar with the quantitative study of animal behavior, cellular physiology, or in vivo imaging. More important than any specific skill is an openness to learning and using new methods.

Our recent publications can be found at http://synapse.princeton.edu. The new Princeton Neuroscience Institute (http://neuroscience.princeton.edu) provides a collegial environment for projects in circuit, systems, and cognitive neuroscience. Our work is supported by funding from the National Institutes of Health, the McKnight Foundation, and the Nancy Lurie Marks Family Foundation. Work may involve collaboration with the laboratories of Carlos Brody, Lynn Enquist, Sebastian Seung, David Tank, and Ilana Witten, as well as with the nearby Lewis-Sigler Institute for Integrative Genomics and the Department of Molecular Biology. To learn more about the opportunities described above contact Sam Wang, sswang@princeton.edu.