COME DISCOVER NEW ROLES FOR THE CEREBELLUM!
POSTDOCTORAL POSITIONS AVAILABLE – PRINCETON NEUROSCIENCE INSTITUTE

Sam Wang's laboratory at Princeton University (http://synapse.princeton.edu) has multiple positions available to study how the cerebellum contributes to nonmotor function. We study this problem in rodents with a wide variety of tools including in vivo two-photon microscopy, optogenetic circuit perturbation, virtual reality systems, and virus-based tracing methods. We seek ambitious persons in the following areas.

NONMOTOR ROLES OF THE CEREBELLUM. The same cerebellar circuit motifs that control movement and balance may also have other functions, depending on their long-distance connections. For example, cerebellar regions that connect to prefrontal cortex might contribute to nonmotor processes. We are testing the idea that specific cerebellar zones play a key role in cognitive processing. Projects include a) in vivo optical imaging during a working memory task in virtual reality, and b) transsynaptic tracing and perturbation of long-distance pathways.

THE CEREBELLUM, SENSITIVE PERIODS, AND AUTISM. Animal and clinical evidence suggest that the cerebellum guides the maturation of cognitive development. We wish to test whether sensitive-period disruption of cerebellum-forebrain communication can account for autism's key features. Projects use circuit silencing (*e.g.* DREADDs) and intensely quantitative behavioral monitoring. http://bit.ly/CerebellumAutism

NEW PROBES FOR THE RAPID MONITORING OF BRAIN CIRCUITRY. We are designing calcium indicator proteins to track the full range of activity levels and dynamics. Our motivation is to track changes in large numbers of neurons in behaving animals, including cerebellar granule cells. Using computational protein design and high-throughput kinetic assays based on microfluidic devices, we are optimizing the speed of GCaMP6. Already we have the fastest-responding calcium indicator proteins made to date. We seek a probe designer interested in optimizing and using "Fast-GCaMPs." http://bit.ly/fastgcamp

The new Princeton Neuroscience Institute provides a collegial environment for projects in circuit, systems, and cognitive neuroscience. Our work is supported by funding from the National Institutes of Health (R01, R21, and a U01 BRAIN Initiative grant), as well as 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.