JOHNS HOPKINS
BIOMEDICAL ENGINEERING

Kavli
NEUROSCIENCE
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INSTITUTE

BME & Kavli NDI Special Seminar

Karel Svoboda, PhD
Senior Group Leader
Janelia Research Campus
Howard Hughes Medical Institute

Host: Reza Shadmehr
Professor, Biomedical Engineering

Thursday, May 17
Noon – 1:00 p.m.
Clark 110
VTC Traylor 709

Optical and electrophysiological studies of multi-regional neural networks during behavior

Abstract: Our goal is to uncover the principles by which mammalian neural circuits perform fundamental computations, from perception to action. Cortex is parcellated into areas with distinct functions, each of which contains complex local circuits. Cortical areas in turn associate into mesoscale circuits with other cortical and subcortical areas via long-range connections. Information is represented by action potentials in widely distributed ensembles of neurons. What are the mechanisms shaping neural representations, and how do the representations drive behavior? We use molecular, optical, electrophysiological, and computational methods to address these questions in behaving mice in the context of motor planning and short-term memory.

Biography: Karel Svoboda is a senior group leader at HHMI's Janelia Research Campus. Svoboda's work is at the intersection of neuronal biophysics and cognition. A current focus is to identify core principles underlying information processing in multi-regional neural circuits in the context of planning and execution of voluntary movements. Svoboda is also developing new methods to interrogate neural function in intact brains. Svoboda earned a PhD in Biophysics (1994) from Harvard University. He was a postdoctoral fellow at Bell Laboratories (until 1997) and a principal investigator at Cold Spring Harbor Laboratories (until 2006).