

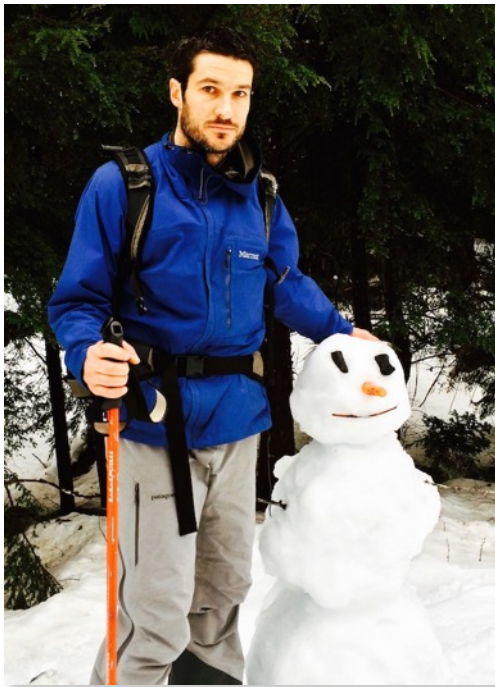


a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Cellular and Physiological Sciences

Neural coding of touch and proprioception in *Drosophila*



Dr. John Tuthill

Assistant Professor

Neuroscience

University of Washington

Hosted by Dr. J. Kopp

12:30 pm, Thursday

October 27, 2016

LSC 3

In order to respond to complex somatosensory stimuli, central circuits must integrate patterns of neural activity across diverse populations of primary mechanoreceptor neurons. By combining cell-type specific genetic tools with electrophysiology and 2-photon calcium imaging, we are investigating how sensory signals from touch receptors and proprioceptors are integrated and transformed in the central nervous system of the fruit fly, *Drosophila*. I will present a detailed analysis of three parallel pathways that process touch signals from the leg, and describe our initial results on neural coding of leg movements in a population of proprioceptive neurons. These experiments reveal for the first time how touch and proprioception are encoded by central circuits of *Drosophila*. Furthermore, they demonstrate that early somatosensory circuits use a mix of excitation, inhibition, and multimodal integration to achieve selectivity for touch and proprioceptive stimuli.