

# University of Maryland

## Neuroscience and Cognitive Science Seminar

### *The unipolar brush cell: a class of neuron tailored for radical transformation of neural signals*

#### **Dr. Larry Trussell**

Oregon Health & Science University



The unipolar brush cell (UBC) is an excitatory interneuron in the cerebellum and cochlear nucleus. It receives glutamatergic signals through mossy fiber synapses that originate from diverse sources. We showed that there are two types of UBC, one that is excited by glutamate (ON UBC) and one that is inhibited by glutamate (OFF UBC). Both kinds of signals are slow, lasting hundreds of milliseconds to seconds, even in response to brief bursts of presynaptic action potentials. Our work has described the biophysical basis of these slow signals, finding significant roles for glutamate transporters and for accessory subunits to AMPA receptors. Additionally, we have developed ways to track the anatomical origin of the mossy fiber that contacts each subtype, learning that the ON and OFF phenotype may transform distinctly different types of cerebellar or auditory input.

**Friday, April 13, 2018**

10:15am, Room 1103 Bioscience Research Building

Host: Dr. Joshua Singer  
Email: [jhsinger@umd.edu](mailto:jhsinger@umd.edu)  
Phone: 301-405-9784  
[www.nacs.umd.edu](http://www.nacs.umd.edu)



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