

Learning in Neural Circuits: Insights from Electric Fish

October 22

Tuesday, 12:30 pm

Billings Building—Rosedale Room

SPEAKER:



Nathaniel Sawtell, Ph.D.

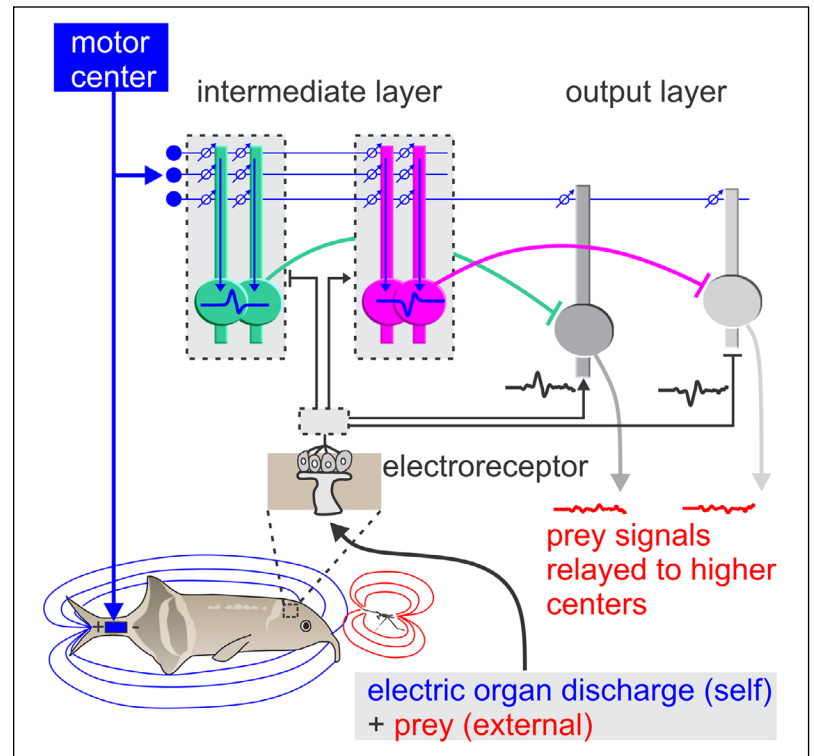
Professor
Department of Neuroscience
Zuckerman Institute
Columbia University

Host: Glen Prusky, Ph.D.

For more information contact
Darlene White
daw9085@med.cornell.edu

Abstract

I will discuss my laboratories ongoing efforts to understand the neural mechanisms for generating learned predictions of the sensory consequences of action. By taking advantage of unique features of a species of African weakly electric fish and combining electrophysiological, high-resolution anatomical (connectomic) and theoretical approaches, our studies have shed light on a number of general issues in neurobiology including: how copies of motor commands are transformed into predictions of sensory events, the functions of cerebellar granule cells, and how synaptic plasticity operating within specific neural circuitry performs a behaviorally relevant computation.



Publications

1. Enikolopov AG, Abbott LF, Sawtell NB. (2018) *Internally Generated Predictions Enhance Neural and Behavioral Detection of Sensory Stimuli in an Electric Fish*. *Neuron*. 11;99(1):135-146.e3. PMID: PMC6561334.
2. Muller, S., Zadina, A., Abbott, L.F., and Sawtell, N.B. (2019) *Continual learning in a multi-layer network in an electric fish*. *Cell*. 179:1382-1392. PMID: PMC6986370.
3. Pedraja, F. and Sawtell, N.B. (2024) *Collective sensing in electric fish*. *Nature*. 628(8006):139-144. PMID: 38448593.