Experience-Dependent Synapse Reorganization in the Living Brain

June 25

Tuesday, 12:30 pm

Weekly Colloquium

Billings Building Rosedale Conference Room



Speaker: Yi Zuo, Ph.D. Professor, Molecular, Cell and Developmental Biology University of California, Santa Cruz Santa Cruz, CA

Host: Edmund Hollis II, Ph.D.

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Abstract

One fundamental question in neuroscience is how the brain processes and stores information. As the informationprocessing elements in the brain, neurons communicate via specialized connections called synapses. The majority of excitatory synapses reside at dendritic spines, which serve as a good proxy for synaptic connectivity. Using

transcranial twophoton microscopy to visualize fluorescentlylabeled neurons in transgenic mice, our recent studies followed the dynamics of spines on apical dendrites of L5 pyramidal neurons in the living brain. In this talk. I will discuss our findings on how experience (both positive and negative) affects cortical circuits and synapse plasticity.



1. Xu T, Yu X, Perlik A, Tobin W, Zweig J, Tennant K, Jones T, and Zuo Y (2009) Rapid formation and selective stabilization of synapses for enduring motor memories. Nature462(7275):915-919

2. Fu M, Yu X, Lu J and Zuo Y (2012) Repetitive motor learning induces coordinated formation of clustered dendritic spines in vivo.Nature 483(7387):92-95

3. Chen C-C, Lu J, Yang R, Ding JB and Zuo Y(2017) Selective activation of parvalbumin interneurons prevents stress-induced synapse loss and perceptual defects. Mol. Psych.23(7):1614-1625



