

PROGRESS IN NEUROSCIENCE PINS

Seminar Series of the Brain & Mind Research Institute Weill Cornell Medical College (WCMC) &



The Graduate Program in Neuroscience of WCMC and Sloan Kettering Institute

Thursday, 2/1/18, 4 PM, coffee at 3:45 PM Weill Auditorium

"Learning and sleep-dependent dendritic spine plasticity and maintenance"

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Dendritic spines are the postsynaptic sites of most excitatory synapses in the mammalian brain. In vivo imaging of dendritic spines in the mouse cerebral cortex indicates that spines are highly plastic during development and become remarkably stable in adulthood. In my presentation, I will discuss how learning experiences regulate the development and plasticity of dendritic spines, as well as the role of sleep in dendritic spine plasticity and maintenance. Because dendritic spines are the key elements for information acquisition and retention, understanding how they are formed and maintained in the living brain provides important insights into the structural basis of learning and memory.

Recent Relevant Publications:

- 1. Yang G, Lai CS, Cichon J, Ma L, Li W, Gan W-B. (2014) Sleep promotes branch-specific formation of dendritic spines after learning. Science. 344:1173-8. PMID: 24904169.
- Cichon J, Gan W-B. (2015) Branch-specific dendritic Ca2+ spikes cause persistent synaptic plasticity. Nature 520:180-5. PMID: 25822789.
- 3. Li W, Ma L, Yang G, Gan WB. (2017) REM sleep selectively prunes and maintains new synapses in development and learning. Nature Neurosci. 20:427-437. PMID: 28092659



