Title: Dendritic spines and the making of neural circuits

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Abstract

By virtue of their bulbous heads and constricted necks, dendritic spines provide important biochemical and electrical compartmentalization within neurons, housing the postsynaptic density of excitatory synapses and associated organelles. Previous studies in species ranging from mice to humans demonstrated that spines are highly dynamic during development, growing rapidly during an early phase of rapid spinogenesis, while undergoing significant synapse/spine pruning during the transition through adolescence. The early findings from fixed tissues were recently confirmed by in vivo imaging in the mouse sensory cortices. Here, we discuss the molecular mechanisms underlying spinogenesis and spine pruning, the regulation of these processes by natural sensory experience, and the link between spine-related defects and developmental neurological disorders.

References: