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Research Interests

The remarkable information processing capacity of neurons in the mammalian brain stems from the intricate organization of their synaptic connections and the ability of these synapses to change with experience. In brain areas such as the hippocampus, the ability of principal neurons to accommodate dense networks of synaptic connectivity is critical for higher cognitive functions such as learning and memory.

Our group is interested in the molecular mechanisms that control the development, maintenance and plasticity of these synapses, and in particular, how the compartmentalization of these processes in dendrites can service the unique demands of different synaptic sites impinging on the same neuron. Our research uses a combination of electrophysiology, biochemistry, and molecular approaches in conjunction with high-resolution imaging in living neurons to study these questions.

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