

Poster presentation

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Mechanisms of carbachol oscillations

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Carbachol (CCh) is a cholinergic agonist that causes spontaneous theta frequency oscillations in the entorhinal cortex and hippocampus. To better understand the mechanism by which these oscillations are generated, we measured the effect of CCh on phase response curves from pyramidal neurons and stellate cells in the entorhinal cortex. Based on the measurements, it was predicted that CCh would facilitate synchronization of a network of pyramidal neurons but would have little or even a desynchronizing effect on stellate cells. The pyramidal cell results were then confirmed by coupling pairs of pyramidal neurons using the dynamic clamp and measuring their synchrony in control and CCh conditions.