

Monday, 3rd July 2017 - 11 a.m



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Slow and fast gamma rhythms in the hippocampus

Gamma rhythms are a widespread type of rhythm in the brain and have been linked to functions such as attentional selection and memory. In the hippocampus, a key brain region for memory, accumulating evidence suggests that gamma rhythms comprise two distinct subtypes, slow (~40 Hz) and fast (~80 Hz) gamma. Slow and fast gamma rhythms occur at different times and are entrained by different hippocampal inputs. During slow gamma, hippocampal subfield CA1 is coupled with neighboring subfield CA3, an area involved in memory retrieval. During fast gamma, CA1 is linked with inputs from the medial entorhinal cortex, a region that transmits current spatial information. Yet, the question of whether slow and fast gamma subtypes are functionally distinct is still debated. In this lecture, I present results that support the hypothesis that slow and fast gamma rhythms perform different mnemonic functions.