

Gamma-band oscillations in prefrontal cortex

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During sensory processing the human brain EEG shows oscillation in the gamma frequency range: 30-90 Hz. Recent advantages in functional imaging studies of human brain have shown that selective attention and working memory results from connectivity and synchronization of activity of different cortical and subcortical brain areas. Network oscillation can also be observed in brain slices of hippocampal and somatosensory cortex in mice. The fact that both the EEG band and neuronal networks in slices show gamma-band oscillations opens the possibility to link detailed observations on neuronal network properties obtained in slices to *in vivo* network properties and behavior. Although mechanisms underlying oscillations in hippocampal slices are being uncovered the cellular and synaptic mechanisms that cause coherent oscillations and synchronization of activity in attention and working memory are poorly understood.

Therefore the aim of the project is to identify the conditions under which gamma-band oscillations occur in the prefrontal cortex network *in vitro* and link these results to measurements of neuronal activity during behavior *in vivo*.

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