

## セミナーのご案内

---

演題 “Theta oscillations provide temporal windows for local circuit computation in the entorhinal-hippocampal loop”

演者 水関 健司 博士

Center for Molecular and Behavioral Neuroscience,  
Rutgers University

日時：平成21年9月11日(金)16:00～17:00

場所：先端科学研究棟1階セミナー室（103号室）

Theta oscillations are believed to play an important role in the coordination of neuronal firing in the entorhinal (EC)-hippocampal system but the underlying mechanisms are not known. We simultaneously recorded from neurons in multiple regions of the EC-hippocampal loop and examined their temporal relationships. Theta coordinated synchronous spiking of upstream EC neuronal population predicted the timing of current sinks in target downstream layers in the hippocampus. However, the temporal delays between population activities in successive anatomical stages were longer (typically by a half theta cycle) than expected from axon conduction velocities and synaptic integration of feed-forward excitatory inputs. These findings suggest that during theta oscillations most spikes are generated by local circuit interactions, reflecting a considerable degree of computational independence in subdivisions of the EC-hippocampal loop. Principal neurons in all regions showed theta phase precession with highest prevalence in the hippocampus. We hypothesize that EC inputs select a subset of hippocampal neurons at the late phase of the theta cycle and the interactions among the selected members sustain phase-advancing self-organized activity during subsequent cycles.

連絡先：生体情報科学講座 渡邊 大 (TEL 753-4437)

Supported by Kyoto University Global COE  
Program "Center for Frontier Medicine"

