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Poster Sessions

Population dynamics of hippocampal CA1 pyramidal neurons in subthreshold membrane potentials *in vivo*

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In the hippocampal CA1 area, characteristic oscillations in local field potentials (LFPs) have been related to important functions for memory encoding and consolidation. Synchronous or sequential activity of neurons during oscillations in LFPs is thought to encode information, but the relationships between LFPs and activity of multiple pyramidal neurons have not fully been investigated. In this study, we examined population dynamics of subthreshold membrane potentials, which underlie the firing activity, using multiple whole-cell recordings of up to four CA1 pyramidal neurons simultaneously with recordings of CA1 LFPs from anesthetized mice. In particular, we compared theta frequency-band (3-10 Hz) oscillations between LFPs (*i.e.*, type 2 theta) and membrane potentials of multiple neurons under urethane anesthesia. We found weak but significant correlations of event timings and frequencies of theta oscillations between LFPs and subthreshold membrane potentials. Our results provide an insight into our understanding of how subthreshold dynamics of each cell is incorporated in collective ensemble activity.