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Poster Sessions

Beta oscillations in the mouse hippocampus during object location recognition

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Memories about the location of environmental cues are crucial for survival and are supported by a distributed network including the hippocampus and the retrosplenial cortex (RSC). The relationships between neuronal activity of these brain areas and object location memory are not fully understood. In this study, we monitored local field potential oscillations simultaneously from the hippocampus and the RSC in freely moving mice during the object-location task, a test to assess memories about the locations of environmental cues. In this task, mice were exposed to two identical objects in an open field and were allowed to explore objects and learn the location of each object. We discovered that immediately before explorations to the objects during memory encoding sessions, beta oscillations (23-30 Hz) transiently increased in the hippocampus and the RSC. Moreover, spectral coherence in the hippocampus-RSC circuit in the beta band was also enhanced before the explorations. Furthermore, mice with better memory showed greater enhancement of the beta power during memory encoding sessions. Our data suggest that enhanced beta oscillations facilitate memory acquisition about the location of landmarks.