

This talk will be in English.

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Neural mechanisms underlying the representation of others

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Abstract

For social animals, it is crucial to remember and recognize different conspecific individuals and exhibit appropriate social behaviors. Using the social discrimination behavioral assay, we previously demonstrated that ventral CA1 pyramidal neurons in the hippocampus store social memory (social memory engram). Even if the memory seems lost after long separation periods, optogenetic activation of the engram can fully restore that social memory. Furthermore, vCA1 social memory neurons are preferentially reactivated during sharp-wave ripples (SPW-Rs). Spike sequences of these social replays reflect the temporal orders of neuronal activities within theta cycles during social interactions.

Additionally, we found that vCA1 neurons encoded the identities and social properties, specifically sex and strain, of familiar conspecifics by using both rate and theta-based temporal coding. Optogenetic reactivation of social memories of females, but not males, induced place preference. Ablation of the upstream hippocampal dorsal CA2 region or the medial amygdala disrupted the representation of sex and the sexual dichotomy of social memory valence. Thus, vCA1 neurons employ dual coding schemes to represent the identities and social properties of familiar conspecifics as a cohesive memory.

※ 本セミナーは、大学院博士課程授業「認知・情動脳科学特論」の一環です。履修者は、レポートの提出が必要です。また、本セミナーと16:30から開催のThe 69thの両セミナーを受講することにより、大学院特別セミナー単位認定の対象となります。

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