第 16 回 最先端脳科学セミナー

Memory allocation and manipulation in mice

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要 旨

Memories are thought to be encoded by ensembles of neurons. However, the identification of the specific collection of neurons supporting a given memory (the “memory trace”) has been challenging, perhaps because memories are sparsely encoded. It was previously found that neurons in the lateral amygdala expressing elevated levels of CREB (cAMP/Ca2+ responsive element binding protein) are preferentially recruited into fear memory trace (***Science***, 316:457-460, 2007). Moreover, selectively ablating this small subset of neurons impairs subsequent expression of that fear conditioning memory (***Science***, 323:1492-1496, 2009). However, it has been unknown whether artificially activating just these selected neurons in the absence of behavioral cues is sufficient to recall that fear memory. Here, using an ectopic rat vanilloid receptor TRPV1/capsaicin system, we report that activating this specific ensemble of neurons was sufficient to recall established fear memory. Furthermore, this neuronal activation induced reconsolidation-like reorganization process or strengthening of the fear memory. Therefore, our findings establish direct link between the activation of specific ensemble of neurons in the lateral amygdala and recall of fear memory and its subsequent modifications (***Nat Neurosci***, 17(1): 65-72, 2014).

※ 本セミナーは、大学院の単位認定の対象となります。

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