

Do projections from nucleus reuniens to dorsal CA1 area control fear memory extinction?

An important issue for neurobiologist is to know how the memory is formed, how it is stored and rebuild in healthy brain. Because these processes are impaired in dementia like Alzheimer disease and for curiosity this mechanism is worth to understand. We would like to know also how the fear memory is stored and how it is formed because it is still unclear. These processes are impaired in human anxiety disorders.

In the current project we would like to propose the experiments which shall reveal the function of the remodeling of dendritic spines on the principal neurons of the CA1 area in fear memory extinction. We will focus on their innervation from nucleus reuniens (NR) to CA1. Our unpublished observations show that fear memory extinction induces generation of new spines in the distal domains of dendritic tree innervated presumably by NR and medial entorhinal cortex (MET). We plan to analyze the changes of the neuronal morphology in a dorsal hippocampus during fear memory extinction. These studies will lead us to elucidation the morphological and molecular processes underlying fear memory extinction.