



Career Development Award

Project

«The effect of locus coeruleus on the hippocampus during memory formation in Alzheimer's disease»

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Duration 24 months



Main applicant

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Lay summary of the project

More than 50 million people worldwide today are suffering from various types of dementia. The most famous and malicious of them is Alzheimer's disease, which at the late stage, is characterized by the formation of beta-amyloid plaques and neurofibrillary tangles in the brain.

Numerous pharmaceutical endeavors targeting the clearance of beta-amyloid plaques have unfortunately been ineffective in improving AD-related cognitive decline, especially episodic memory loss. The lack of promising therapeutic tools is largely due to our limited understanding of the neuronal mechanisms of episodic memory formation. Episodic memory formation is critically dependent on the hippocampus. It can be strongly enhanced by neuromodulatory input from the locus coeruleus, a major source of dopamine and norepinephrine in the brain.

In Alzheimer's patients, the hippocampus and locus coeruleus are among the earliest brain regions affected by the disease. Therefore, it remains intriguing how the reduced functionality of the locus coeruleus contributes to the hippocampal-dependent memory loss at the early onset of Alzheimer's disease. Revealing such a causal link may open new avenues for novel potential therapeutic strategies to alleviate or even rescue memory loss at the early onset of AD, thereby preventing the subsequent cognitive decline.