

## Effects of scent on cognitive ability

**Natsumi Ageta-Ishihara, Naoto Fukumasu, Naoki Fuse, Makoto Kinoshita**

*Division of Biological Science, Nagoya University Graduate School of Science*

Japan faces the super-aged society on which the increasing number of patients with dementia is becoming a fast social problem. It reported that individuals diagnosed with mild cognitive impairment show deficits in pattern separation and the decline of the hippocampal function due to aging induces the disability to separate similar patterns. However, the molecular basis is still unclear. The molecular basis about simple memory formation such as fear memory formation, is well understood now. On the other hand, in addition to intrinsic factors, external factors such as aroma and exercise etc., are intricately involved in memory retention decline. Therefore, there is not enough information to stop the progression of forgetfulness with age.

We have been studying the physiological significance of the neural network formation, rearrangement and maintenance of the septin cytoskeleton consisting of the nucleotide binding protein family SEPT1-14 (Ageta-Ishihara et al., Nature Commun 2013, 2015, Neurochem Int 2018, Neurosci Res 2020). In the course of this study, we found that *Septin*-deficient mice retain memory of spatial context for 2h, but not for 24h in the spatial pattern separation paradigm (unpublished).

In this study, we developed a new behavioral paradigm to examine the influence of external factor on memory retention, evaluated this new pattern separation paradigm in *Septin*-deficient mice and assessed effects of aroma (Vanilla Musk) on cognitive ability. Our new behavioral paradigm sheds light on providing new lifestyle modification (using aroma) as the scientific basis for prevention of “forgetfulness” in elderly people.