

# FUNDING PROGRAM FOR NEXT GENERATION WORLD-LEADING RESEARCHERS

**Project Title:** Research for the effects of aging on neural mechanisms underlying human memory processes and the potential application

**Name:** Takashi TSUKIURA

**Institution:** Kyoto University

## 1. Background of research

Human memory is declined by aging (inhibition of memory by an aging factor). On the other hand, human memory is improved by several psychological processes, such as emotional or rewarding processes (enhancement of memory by a psychological factor). However, little is known about the neural mechanisms underlying the interaction between these factors of aging and psychological processes in human long-term memories.

## 2. Research objectives

The purposes of this research project are 1) to investigate the neural mechanisms underlying this interaction, and 2) to find the principles of memory training methods to maintain memory functions in older adults.

## 3. Research characteristics (incl. originality and creativity)

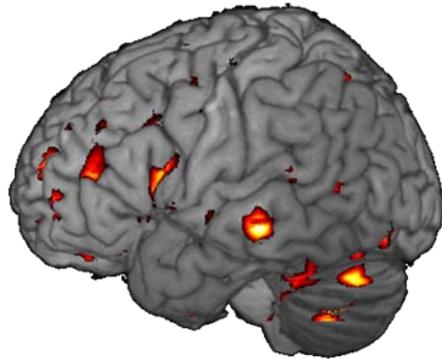
In this research project, we are employing three research techniques to achieve our purposes. The first approach is the functional neuroimaging approach for healthy young and older adults, in which we examine the aging effect on brain activations in several memory tasks. The second one is the neuropsychological approach for brain-damaged patients, who are assessed their memory impairments by several psychological tests. In the third approach, we are trying to examine the effect of some intervention programs on memory functions in elderly people. This multidisciplinary approach could lead success in our research project.

## 4. Anticipated effects and future applications of research

Our research could contribute to the development of bodily and socially healthy life in elderly people. In addition, the successful way of our research project could be helpful for the world-leading “aging study” from Japanese society.

# Framework of our research

*The three-way approach by combining psychology with neuroscience*



Functional neuroimaging  
for healthy young and  
older adults

*Investigation of  
functional relevance in  
brain regions*

*Proposal of  
new research methods*

Neuropsychology for  
brain-damaged  
patients

Application research  
for older adults

**•Nutrition/ Life-style  
•Memory training**

*Investigation of  
potential  
applications*

