



Universität
Basel

Research Project

Molecular mechanisms underlying age-dependent learning and memory decline in *C. elegans*

Third-party funded project

Project title Molecular mechanisms underlying age-dependent learning and memory decline in *C. elegans*

Principal Investigator(s) [Stetak, Attila](#) ;

Project Members [Peter, Fabian](#) ; [Gharat, Vaibhav Ganpat](#) ;

Organisation / Research unit

Departement Psychologie / Molecular Neuroscience (Papassotiropoulos)

Department

Project start 01.11.2018

Probable end 31.10.2022

Status Completed

With the continuous increase of life expectancy in modern societies, age-dependent cognitive decline, which predisposes individuals to neurological and psychiatric disorders, emerges as a great challenge for the healthcare. So far, a lot of knowledge accumulates on the mechanisms of learning and memory, but we have much less understanding on the early molecular changes leading to functional impairment of memory in senescence. In the frame of this proposal, we will investigate early molecular events leading to physiological age-dependent learning (A) and memory (B) decline. In detail, we will study: A., The role of actin capping proteins (EPS-8 and ADD-1) and in general the structural changes of the actin cytoskeleton in age-dependent learning decline. B., The cellular and molecular role of MPS-2 in memory and the link between regulation of MPS-2, the CREB pathway, potassium-channel activity and age-dependent memory decline. Due to the functional conservation at the molecular level between *C. elegans* and vertebrates, our results may provide an essential step to understand molecular mechanisms of the age-dependent cognitive decline in general.

Keywords forgetting; memory; MiRP; ageing; mps-2; eps-8; *Caenorhabditis elegans*; actin; learning

Financed by

Swiss National Science Foundation (SNSF)

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