DEMENTIA
RESEARCH
SYNAPSIS FOUNDATION SWITZERLAND

Principal Investigator Grant

Project

«Optogenetic-induced mitochondrial injury in tauopathy: impact on mitochondria transfer between astrocytes and neurons»

Granted amount	CHF 300'000
Starting date	1.7.2023
Duration	36 months

Main applicant

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Lay summary of the project

Mitochondria are paramount organelles responsible for energy production in cells. Recent studies have shown that mitochondria can be transfer between different cell types, namely between neurons and glial cells in the brain. This transfer appears to have neuroprotective effects.

Tau protein is one of the key protein involved in Alzheimer's disease and related tauopathies. Abnormal tau disturbs mitochondrial function, leading to a decrease in energy production and neuronal dysfunction. However, the underlying mechanisms remain elusive, and no study has investigated the impact of abnormal tau protein on mitochondrial transfer between brain cells.

Therefore, this project aims to fill this gap of knowledge and to propose a therapeutic approach based on mitochondrial transplantation to alleviate tau-induced energetic deficit in the brain. Simply put, this approach consists in transferring functional exogenous mitochondria into diseased cells for recovery or prevention of bioenergetic impairments. Unlike mitochondria-targeted approaches, mitochondria represent here the "therapy" itself.