

Semester project: The role of *C. elegans* as a bio-reporter model of Alzheimer's Disease

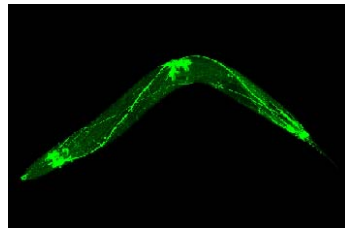
Alzheimer's disease (AD) is the world's most common neurodegenerative disorder, affecting 46.8 million people worldwide in 2015 (World Alzheimer Report 2015). This prevalence cost the world US\$818 billion in 2015 (World Alzheimer Report 2015); and the social and economic burdens of this disease will only continue to grow. For these reasons, efforts to develop effective diagnostic methods, treatment options and eventually find a cure for Alzheimer's disease are being made in all parts of the world.

EPFL is part of a European Consortium (AD-Gut, <http://adgut.eu/>) working towards such a cure and novel technologies associated with theragnostics. This proposed semester project will play a role in investigating the use of *C. elegans*, a common disease experimental model, as a bio-reporter of Alzheimer's disease in the context of investigating the impact of GI tract metabolites on the development of AD via amyloidosis.

The project will involve monitoring wild type and AD transgenic *C. elegans* for signs of disease development and/or progression in response to treatment with various GI tract metabolites. This includes quantifying AD-associated symptoms such as mortality and paralysis, as well as tracking amyloid deposits via fluorescence imaging. This project is inherently multi-disciplinary and the student will be immersed in a motivated and innovative group of scientists. The student we are looking is interested in working in an interdisciplinary environment, proactive, independent and driven.



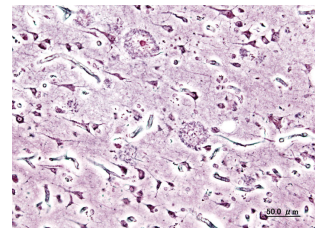
C. elegans: a transparent, mm-long nematode and powerful model for human diseases



C. elegans neuronal inter-connectivity illustrated by GFP-tagging



Metabolites extracted from GI tract bacteria potentially associated with AD pathology



Amyloid deposits (here seen in the brain) are associated with Alzheimer pathology

For further information and offer of candidature, please contact either the project supervisor Dr. Taoufiq Harach (taoufiq.harach@epfl.ch) or Arielle Planchette (arielle.planchette@epfl.ch).

Assistant: Arielle Planchette

Supervisor: Taoufiq Harach, Theo Lasser

Bibliography:

World Alzheimer Report 2015, <https://www.alz.co.uk/research/worldalzheimerreport2015summary.pdf>

AD-gut project, <http://adgut.eu/>

Photographs

<http://jcs.biologists.org/content/117/22/5209>

<http://wormclassroom.org/>

<http://science.howstuffworks.com/life/cellular-microscopic/bacteria.htm>

<http://scitechdaily.com/disrupted-sleep-patterns-linked-to-alzheimers/>