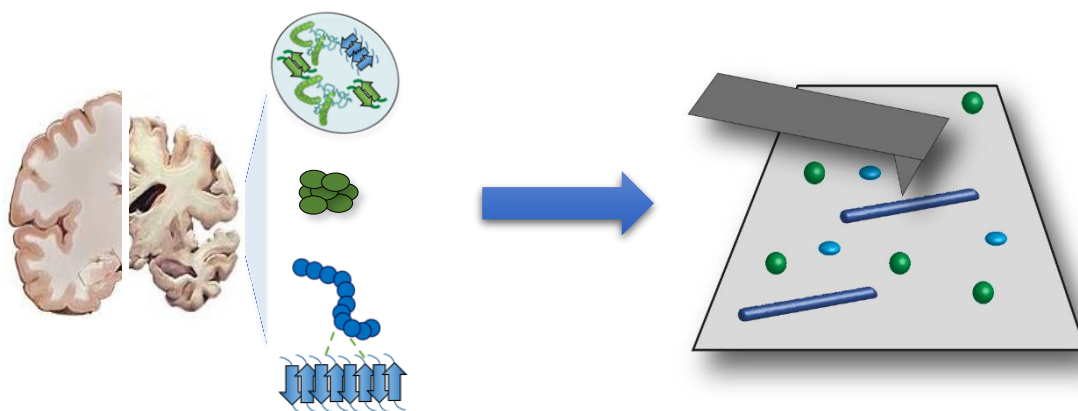

Group: Laboratory of Organic Chemistry/Nanoscale Microscopy and Spectroscopy

Project: Investigating the Role of Tau Phosphorylation in Neurodegeneration

Supervisors: Francesco Simone Ruggeri

Key-words: Tau Phosphorylation, Neurodegenerative Disorders, Nanoscale Imaging, Atomic Force Microscopy, Vibration Spectroscopy

Introduction: Tau is a microtubule-associated protein, which is related to critical cellular processes involved in regulating the stability and dynamics of neuronal cytoskeletons in the brain. However, phosphorylation of tau protein in brain leads to abnormal aggregation, associated to the onset of neurodegenerative disorders like Alzheimer's disease. Therefore, understanding the mechanisms underlying the abnormal phosphorylation of tau proteins is critical for developing effective therapies for neurodegenerative diseases. Methods as Atomic Force Microscopy (AFM) allows to image at the single molecule level the aggregation of protein, such as wild type and phosphorylated tau.



Aim

- Contribute in understanding the role of tau phosphorylation in Alzheimer's disease.

Objective

- Unravel at the nanoscale the differences between non-pathogenic wild type tau and pathogenic phosphorylated tau.
- Unravel by spectroscopy the vibrational signature of tau.

What will you learn

- ✓ Handle protein samples and study their aggregation.
- ✓ Nanoscale imaging using AFM.
- ✓ Quantitative analysis of AFM data.
- ✓ Acquire and Analysis of Spectroscopy data.

Contact Dr. Francesco Simone Ruggeri, simone.ruggeri@wur.nl for more details.

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