

EDNE – Neurobiology Doctorate Program

Lausanne, September 23, 2020

PhD Position in Cryo-Electron Microscopy of Neurodegeneration in the Human Brain

A PhD student position is available in the Stahlberg laboratory to study the structure of proteins involved in neurodegenerative diseases, using high-resolution cryo-electron microscopy and computer image processing. Such proteins include fibrillar proteins such as the proteins alpha-synuclein that can form specific folds (prionoid strains), which may be correlated with the individual form of the disease. Parkinson's Disease (PD), Dementia with Lewy bodies (DLB) or Multiple System Atrophy (MSA), for example, are all synucleinopathies (i.e., related to the protein alpha-synuclein), but it is not clear, how the protein alpha-synuclein and its potentially fibrillar form is involved in the neuronal damage in affected brain areas. Other proteins of interest are soluble or membrane proteins, such as the microtubule binding protein LRRK2.

In this project, proteins will be expressed and purified in our group or obtained from collaborators. Frozen hydrated preparations of these proteins will be studied by cryo-electron microscopy and computer image processing, and their 3D structure as individual molecules or fibrils or in association with protein binding partners will be determined. This project lies at the interface between structural biology, molecular life sciences, neurobiology, and cryo-electron microscopy / image processing.

The candidate for this PhD position should hold a Master's degree in Biology or Physics or a related field (in exceptional cases, a Bachelor's degree will also be accepted). The lab language is English. The candidate must be accepted by the doctoral schools in Neurosciences or Molecular Life Sciences.

For more information, please contact henning.stahlberg@epfl.ch.