PhD project 6: Early disease mechanisms of multiple system atrophy

Supervisor: Nadia Stefanova, Mentor: Sylvia Boesch

Applications to: Neuroscience-PhD@i-med.ac.at

Multiple system atrophy (MSA) is a fatal neurodegenerative proteinopathy that differs from Lewy body disorders (LBDs) by its rapid progression and ectopic accumulation of misfolded a-syn in oligodendrocytes. Pathologic a-syn aggregates in oligodendroglia are considered a major culprit in the disease process but the underlying pathogenesis is unclear. Prion-like spreading of MSA-derived a-syn has been proposed, but evidence of oligodendroglia readily forming cytoplasmic inclusions is unavailable to date. We hypothesize that oligodendroglia are fundamentally dysfunctional in MSA as evidenced by the widespread formation of glial cytoplasmic inclusions (GCIs) associated with selective neurodegeneration. Neuroinflammation appears to be a further player in MSA disease progression. We will study how primary oligodendroglial changes affect altered neuroinflammatory responses in MSA. The applied methodology includes behavioral testing, stereotaxic surgery, immunohistochemistry and histopathology, biochemical and molecular analyses, and iPSC-based modelling.

Requirements for project 6:

- Master's degree in neuroscience, biology, medicine, or related
- Skills in wet lab techniques and data analysis are desirable