PROP-AD

Protein aggregation strongly depends on amino acid sequence and overall folding behaviour. In the light of Creutzfeld-Jacob disease (CJD) it has been discussed whether or not similar folding and aggregation mechanisms are found in other neurodegenerative diseases without being infectious but transmissible as CJD. Amyloidoses are a group of proteopathies in the peripheral organs and the central nervous system with specific aggregation behaviour leading to beta-sheeted aggregates of specific proteins, which can be stained using Congo Red dye. By definition these aggregates show bi-fringence in polarised light, and only then they are called amyloidoses. During the recent years it has been discussed whether β-sheeted species can serve a folding matrix and also to propagate disease-related, misfolded/misaggregated proteins.

In the PROP-AD project, we analyse how specifically-labelled proteins/amyloids can reach the brain from the periphery (peritoneum, spleen, gut/intestinal lymph nodes) using MS isotope tags. Special emphasis lies thereby on recently discovered clearance mechanisms (ABC Transporters, LP1). We utilize a set of new mouse models with functional abrogation at the blood-brain barrier (e.g. humanized ABC transporter) and isotope-labelled amyloids to detect the spatial and temporal distribution behaviour of peripherally injected amyloid-β (Aβ).

The pitch talk will introduce into the topic of ABC transporters and blood-brain barrier clearance, new treatment options and amyloid spreading from gut to brain as part of the ongoing experiments.