SmartAge ESR project 5

Host: University Hospital Jena, Germany

Secondments: Karolinska Institute, Sweden / Lifelines, Netherlands

The **Department of Neurology** (head: Prof. Dr. Otto W. Witte) at the **University Hospital Jena, Germany,** offers a PhD position for an Early-Stage Researcher (ESR) for the project: **Age-dependent impact of physical activity on gut-brain axis in humans**. The position is part of the EU-funded Innovative Training Network SmartAge ("Gut-brain-axis: Targets for improvement of cognition in the elderly") with full-time employment for a duration of 3 years, starting in March 2021.

Objective of the project: To analyse the impact of physical activity in humans on cognitive function, gut barrier integrity, inflammatory / immune markers. We will investigate healthy individuals of both gender >65-75 years following a well-designed physical activity training compared to age matched control groups. Different domains of cognition will be explored: attention, memory and executive function (Clinically established neuropsychological tests and experimental psychophysical paradigms). fMRI scans and the BrainAGE score will be applied to analyse the biological brain age and to further assess neuro-morphological signatures and signs of inflammaging. To explore gut barrier integrity, subjects will be exposed to a lactulose:mannitol test before and after the intervention at gastroenterology. Blood samples will be collected to measure various markers of microbial translocation/gut barrier function, inflammation and to process for metabolomics. Calprotectin levels will be measured in the fecal samples. Frozen fecal samples will be characterized for microbiota composition and microbiota-derived metabolites. The PhD student will join an existing team with extensive knowledge in human cognitive, neural and microbiome aging. PIs are Prof. Dr. phil. Kathrin Finke, PD Dr. med. Stefan Brodoehl and Prof. Dr. med. Andreas Stallmach.

Requirements for the applicant: We expect a Master´s degree (or equivalent) in Health and/or Life Sciences (e.g., Psychology, Neurobiology, Movement Sciences) or Medicine. Furthermore, the applicant should be able to perform team-oriented as well as independent work. Desirable methodological skills: excellent theoretical background in cognitive and neural functions, experience in cognitive assessment and neuro-scientific research, excellent knowledge in statistics, interest in neuroimaging techniques and complex data analyses.

Very good language skills in English are required.

Please note the eligibility criteria for researchers: Candidates must be in the first four years of his/her research career, not have a doctoral degree, and not have resided in Germany for more than 12 months in the 3 years immediately before the recruitment date.

Selection process: Interested candidates please send a motivation letter, a CV including publications (if available), copies of university degrees and courses (including obtained grades), and the names and e-mail addresses of two scientists who can provide references (all summarized in one pdf) to smartage@med.uni-jena.de . Preferential treatment will be given to applications received before 30 November 2020.

For more information concerning the research project please contact **Prof. Dr. Kathrin Finke** (Tel.: +49-3641–9323474; kathrin.finke@med.uni-jena.de).