The Dimou lab - Molecular and Translational Neuroscience – is offering a

PhD Position (f/m/d): Molecular Mechanisms of Myelin Regeneration and Brain Aging

Aging is associated with impaired myelin integrity, reduced oligodendrogenesis, and diminished microglial clearance, all of which contribute to cognitive decline and increased vulnerability to neurodegenerative diseases. Microglia and NG2-glia (oligodendrocyte progenitor cells, OPCs) are essential regulators of myelin maintenance and repair, yet both cell populations undergo age-related functional decline.
This PhD project aims to identify and validate molecular targets that enhance oligodendrocyte differentiation and myelin formation. Using human induced pluripotent stem cell (iPSC)-derived OPCs and oligodendrocytes, combined with single-nucleus RNA sequencing (snRNA-seq) analyses and targeted pharmacological or viral gene modulation, the project will investigate mechanisms that promote remyelination and restore myelin homeostasis during aging. The long-term goal is to uncover therapeutic strategies that preserve cognitive function and counteract age-related neurodegeneration.

Your Responsibilities

- Differentiate and culture human iPSC-derived OPCs and oligodendrocytes
- Perform and optimize cell-based assays to assess oligodendrogenesis and myelination
- Apply pharmacological and viral gene modulation approaches to validate candidate molecular targets
- Present research findings at lab meetings, conferences, and scientific workshops
- Contribute to scientific publications and collaborative research activities

We Are Looking For

We seek a highly motivated and enthusiastic PhD candidate with a strong interest in neuroscience and cellular mechanisms of brain aging.

Essential Qualifications

- Master's degree (or equivalent) in Neuroscience, Molecular Biology, Cell Biology, Biomedical Sciences, or a related discipline
- Strong interest in neurobiology, glial biology, and aging research
- Hands-on experience with mammalian cell culture and *in vitro* experimental techniques
- Excellent communication skills in spoken and written English
- Ability to work independently while contributing effectively to a collaborative research environment
- Strong organizational skills and a structured, reliable approach to scientific work

We Offer

- A fully funded PhD position with structured supervision and mentoring
- An exciting and interdisciplinary research project at the interface of neuroscience, aging, and regenerative medicine
- A supportive, collaborative, and international research environment
- Access to state-of-the-art facilities and training opportunities
- Opportunities for scientific networking, conference participation, as well as academic and industrial collaborations

- Career development support and professional training programs

Application

Please submit your application as a single PDF file including:

- A motivation letter describing your research experience and explaining why you are a suitable candidate for this project
- Curriculum vitae (CV)
- Copies of relevant academic degree certificates and transcripts
- Contact information for two academic references

to Prof. Dr. Leda Dimou, leda dimou@uni-ulm.de until July 15th.