



The Department of Neurology of the Klinikum rechts der Isar of the Technical University Munich (TUM) is seeking a

Postdoctoral researcher in statistical analyses of multi-omics data (m/f/d)

at the earliest possible opportunity.

The Technical University of Munich (TUM) is one of Europe's top universities. It is committed to excellence in research and teaching, interdisciplinary education, and the active promotion of promising young scientists. Moreover, the university forges strong links with companies and scientific institutions across the world. TUM was one of the first universities in Germany to be named a University of Excellence and has maintained this status over all three evaluation periods.

The Department of Neurology at TUM focuses on inflammatory and degenerative diseases of the central nervous system, with a particular interest in multiple sclerosis (MS) and neurodegenerative diseases. Research activities involve experimental models, clinical trials, imaging, biomarker, and genetic studies to better understand the pathophysiology of diseases, monitor and predict the disease course, and develop new treatment strategies. The department focuses on three areas of MS research: imaging, antibodies, and genetics. We have conducted the largest MS genome-wide association study in a single population and thereby discovered new MS risk variants. We have also investigated the influence of genetics on serological (e.g., intrathecal IgG synthesis, antibodies to interferon beta, antibodies to the JC virus) and MRI parameters (e.g., lesion volume, spinal cord, and brain atrophy) related to MS. We aim to extend these studies by integrating additional multi-omics data to understand specific MS phenotypes and the disease progression in MS better.

Your tasks:

- Integrate genetic, clinical, and other phenotypic data with multi-omics, especially mass spectrometry data
- Integrate genetic with clinical data from structured electronic medical records
- Design and conduct case/control analyses and analyses of quantitative traits using rare-variant whole-exome sequencing and common-variant microarray genotype data
- Apply various statistical genetic methods to discover and annotate genetic association signals by conducting genome-wide association studies, gene-level, gene-set, and burden tests on phenotypes related to multiple sclerosis and other neurological disorders
- Calculate and analyze polygenic risk scores to assess how genetic risk influences clinical variables related to disease severity and to investigate other omics data
- Conduct differential expression and protein-QTL analyses to identify potential MS biomarkers

Your profile:

- You are a highly motivated scientist with a Ph.D. or equivalent degree in statistical genetics, genetic epidemiology, bioinformatics, human genetics, or related fields
- You have a strong background in biomedical statistical analyses of whole-exome sequencing and/or imputed genotype data
- Ideally, you have experience in analyses of expression and/or mass spectrometry data, e.g., differential expression analyses
- You have a demonstrated knowledge in the application of inferential and exploratory statistical analyses, especially logistic and linear regression models

- You have very good programming skills in *R* or Python and are familiar with PLINK and related tools
- You are familiar with high-performance computing via a Linux terminal
- You show a strong commitment, motivation, and discipline to work independently and efficiently
- You are a strong team player with the ability to work together with colleagues from various disciplines
- You show an excellent ability to communicate, present, and write in English
- You have experience in publishing scientific findings

We offer:

- A versatile and exciting position in the neuroimmunological research group, consisting of international scientists and physicians
- An outstanding international research environment
- Excellent infrastructure for research in an attractive, versatile workplace
- Access to national and international research networks
- Flexible working hours
- A place of work in the center of Munich at Max-Weber-Platz, with excellent accessibility via public transport and discounted job tickets
- Payment based on the German TV-L E13 scale (100%)

We are looking forward to receiving your application!

Please send your application via e-mail to:

Prof. Dr. B. Hemmer

Klinikum rechts der Isar der Technischen Universität München

Klinik für Neurologie

Ismaninger Straße 22

81675 München

E-Mail: hemmer@tum.de

In case of questions, please contact Brigitte Süß, tel. +49-89-4140-4601.

<https://www.neurokopfzentrum.med.tum.de/neurologie/420.html>