PhD positions in Functional Genomics Group

Location: Ludwig-Maximilians-University Munich, Gene Center, Faculty of Chemistry and Pharmacy, Jae Group, Munich, Germany.
Web: https://www.genzentrum.uni-muenchen.de/research-groups/jae/index.html

Project: Causes, Consequences and Correction of Mitochondrial Protein Misfolding

Mitochondria experience substantial stress and become dysfunctional with age and in age-related human diseases such as Parkinson's. This typically involves the accumulation of misfolded proteins and toxic aggregates in the organelle. Surprisingly, mitochondria themselves do not encode any stress response genes and need to interface with the surrounding cell to combat such insults (Nature, 2020; Nature Comms., 2022, Mol. Cell, 2023). Despite intensive research in lower organisms, how mitochondrial protein toxicity arises and is sensed and combated in the human system is largely unknown.

Your Mission:
You will harness bleeding-edge CRISPR genome engineering and genome-wide screening approaches to unbiasedly dissect how human mitochondria detect and fight aggregated proteins. Specific focus areas will be protein misfolding in the mitochondrial intermembrane space, where we have discovered novel proteostasis components, as well as signal transmission within and out of the organelle.
This project is part of the DFG priority program SPP2453 "Mitostasis" and will be conducted in close collaboration with the Max-Planck Institute of Biochemistry. As part of the priority program, you will be able to interact with interdisciplinary teams working on cutting-edge biological questions and participate in regular meetings and other proceedings, in addition to activities of QMB and the Gene Center Munich.

Your Mission:
You will utilize cutting-edge gene editing and genomics approaches to chart the genetic landscape of mitoISR signaling with a special focus on human disease variants. This will involve complex genetic interaction screening in human cells and elucidation of the underlying molecular mechanisms using a range of methodologies from synthetic biology to biochemistry and cell biology.

Your Profile:
Are you driven by a passion for science? Can you feel the thrill of discovering completely uncharted biology? Are you eager to make a meaningful impact on the world through biomedical research? If you answered yes, then this opportunity at the Jae lab is for you.

Your Qualifications:
- Outstanding degree in a biomedical or related discipline
- Excellent communication skills and fluency in English
- Scientific precision, critical thinking and reliability

- Solid background in molecular biology, genetics and biochemistry
- Desirable: Prior experience with mammalian cell culture and gene delivery methods
- Desirable: Bioinformatics expertise (bash, SQL, python, R)

Our Offer:
You will be part of a dynamic and highly ambitious team in a brand-new research building with state-of-the-art lab space and excellent facilities.

This position is part of the Graduate School Quantitative and Molecular Biosciences Munich

The Graduate School prepares young life scientists for the emerging era of quantitative, systems-oriented bioscience. Its innovative, international PhD program bridges traditionally separate disciplines—ranging from biochemistry and medicine to bioinformatics, experimental and theoretical biophysics, and applied mathematics. While maintaining a strong foundation in their primary discipline, QMB students gain expertise in multiple approaches, learn to think across fields, and develop the ability to communicate and collaborate effectively with scientists from diverse backgrounds.

Key components of the QMB program include:

- An interdisciplinary research project
- A structured program of coursework
- Professional skills training

Requirements
Applicants must hold a completed Master's degree (or equivalent) in a relevant field before starting the PhD. Full details of our requirements are available here:
https://qbm.genzentrum.lmu.de/application/requirements/

Applications must be submitted in English via our online tool:
https://www.portal.graduatecenter.uni-muenchen.de/ocgc/qmb

Timeline

- Application opens: August 21, 2025
- Application deadline: October 6, 2025
- Reference deadline: October 14, 2025
- Interviews: scheduled individually
- Notification of results: December 2025

For questions, please contact: office-qbm@genzentrum.lmu.de

QMB is a joint initiative of leading scientists from Ludwig-Maximilians-University Munich, the Technical University of Munich, the Max Planck Institute of Biochemistry, and Helmholtz Center Munich. Employment contracts are issued either by Ludwig-Maximilians-University Munich or one of the partner institutions.