

Max Delbrück Center for Molecular Medicine in the Helmholtz Association - Experimental Ultrahigh Field



The Experimental Ultrahigh Field Magnetic Resonance group at the Max Delbrück Center for Molecular Medicine in the Helmholtz Association (MDC) works on magnetic resonance imaging and spectroscopy in preclinical, translational, and biomedical research projects. This Master thesis will be carried out in close cooperation with the MDC Organoid Platform. The project is positioned at the interface of organoid biology, neuroscience, biomedical imaging, and translational research. There is a perspective for the Masters project to develop into a funded PhD position, provided it develops successfully and there is a good mutual fit. The project aims to combine biological characterization of human-derived 3D organoid models with ultra-high-field micro-MRI to study organoid development, maturation, viability, and responses to environmental or disease-relevant factors. By combining human-derived organoids with non-invasive imaging approaches, the project contributes to the 3Rs principles — Replacement, Reduction, and Refinement — by supporting the development of complementary model systems and longitudinal methods that may help reduce reliance on animal experiments where appropriate. The MDC is a biomedical research center in Berlin-Buch focused on molecular medicine, disease mechanisms, advanced technologies, and translational research. Within this environment, our group develops and applies ultra-high-field magnetic resonance methods to study biological systems non-invasively. Our group operates magnetic resonance infrastructure up to 9.4 Tesla, including cryogenically cooled radiofrequency coils for high-sensitivity imaging and spectroscopy. These technologies support structural and functional magnetic resonance imaging, diffusion-weighted imaging, quantitative imaging, spectroscopy, and image acquisition and analysis development.

Masterarbeit: Biological Characterization of Organoids for Ultra-High-Field Micro-MRI

Aiming to reduce animal use in research by enabling high-resolution, non-invasive MRI technologies in 3D human-derived organoid model

City: Berlin-Buch; Starting date (earliest): At the earliest possible; Remuneration: not yet;
Closing date: 30/09/26

Tasks

Biological characterization of human-derived organoids
Organoid culture and experimental handling
Neuroscience / brain development
Environmental influences on brain pathology
Magnetic Resonance Imaging / Micro-MRI
Ultra-high-field MRI
Magnetic Resonance Spectroscopy
Biomedical imaging
Biophysics
Translational medicine
3D tissue models
Alternatives to animal research / 3Rs

Requirements

We are looking for a motivated Master student with an interest in biological organoid models and translational biomedical imaging.

The background of candidate can be varied: engineering, physics, biology, molecular medicine, neuroscience, biomedical sciences, biotechnology, biochemistry, biophysics, biomedical engineering, or a related field

Ideally the student has:

- Interest in environmental factors that may influence brain development or brain pathology
- Interest in human-derived 3D organoid models and brain development
- Interest in magnetic resonance imaging and non-invasive characterization methods
- Willingness to work in an interdisciplinary environment with MRI scientists, biologists, and engineers
- Careful, structured, and reliable working style
- Good English skills

Prior experience with organoids, microscopy, image analysis, or MRI is an advantage but not required.

What we offer

- Research training in an interdisciplinary biomedical imaging environment
- Hands-on experience with human-derived 3D organoid models
- Training in biological characterization methods for organoid research
- Introduction to ultra-high-field micro-MRI and magnetic resonance spectroscopy
- Work with modern preclinical MRI infrastructure, including 9.4 Tesla MRI
- Collaboration with researchers from magnetic resonance imaging, biology, engineering, and neuroscience
- Opportunity to contribute to the development of non-invasive methods for longitudinal organoid assessment
- Potential contribution to conference abstracts and scientific publications
- Supervision of a Master thesis
- Perspective to continue the project as a funded PhD position after successful completion of the Master thesis
- Work on translational methods that may help reduce and replace animal experiments in biomedical research

Application

Please send an email to sonia.waiczies@mdc-berlin.de

More information at <https://stellenticket.de/206436/UP/>
Offer visible until 09/09/26

