

Ausschreibung:

## PHD Position

**The Department of Biomedical Imaging and Image-guided Therapy at the Medical University of Vienna (<https://radnuk.meduniwien.ac.at>) is offering a PhD position:**

The overarching goal of this project is to decipher breast cancer (BC) heterogeneity and tackling the hypoxic tumor microenvironment (TME) challenge with correlative multimodal imaging and radiomics. BC heterogeneity is driven by tumor genomic instability and pressures from the TME with hypoxia being one of the most significant. TME hypoxia induces adaptive mechanisms of angiogenic and metabolic switches that result in lethal BC. The TME is a critical factor of BC progression and one of the major causes of therapy resistance. Current invasive tools and imaging technologies can't provide a comprehensive assessment of BC heterogeneity of the tumor in its entirety and thus may underestimate its lethality. We will, for the first time, decipher BC heterogeneity and the TME challenge by coupling positron emission tomography/magnetic resonance imaging (PET/MRI) with molecular tumor profiles obtained with MALDI mass spectrometry imaging (M-MSI), mass cytometry (CyToF) and multi spectral imaging (MS). Coupling these imaging techniques through conversion of images into minable data (radiomics) and machine learning constitutes a visionary step towards bridging the gap between ex-vivo and in-vivo imaging. Project results will provide a clear advantage over existing technologies, significantly broaden the understanding of BC heterogeneity and the TME challenge with the ultimate goal to revolutionize risk stratification and treatment of BC.

For the DECIPHER PET/MRI imaging part we offer a full PHD position according to the MedUni Wien guidelines:

- You have a Master Degree in biology, bioengineering, molecular biology, medicine or equivalent
- You have expertise in image analysis (MRI / PET).
- Knowledge of image analysis software's
- Eager to learn and apply machine learning and artificial intelligent tools
- Ability to communicate with different professions
- Excellent communication skills in German and English (written and spoken)
- Autonomous, able to analyze and solve problems and be flexible.

Please send your application including a CV to:

Thomas Helbich, MD, MSc, MBA  
Professor of Radiology  
Medical University of Vienna & General Hospital  
Department of Biomedical Imaging and Image-guided Therapy  
Head: Division of Molecular and Structural Preclinical Imaging  
Waehringer Guertel 18-20, Floor 7F  
1090 Vienna, Austria  
[thomas.helbich@meduniwien.ac.at](mailto:thomas.helbich@meduniwien.ac.at)