



Dr. med. Salvador Castaneda Vega · University of Tübingen · Röntgenweg 13 · 72076
Tübingen

**Department of Preclinical Imaging and
Radiopharmacy**

Prof. Dr. Bernd J. Pichler
Chair

**Department of Nuclear Medicine and Clinical
Molecular Imaging**

Prof. Dr. Christian la Fougère
Chair

Translational Neuroimaging

Dr. med. Salvador Castaneda Vega

Research Group Leader

salvador.castaneda@med.uni-tuebingen.de

<http://wsic.isct.uni-tuebingen.de>

Tübingen, February 24th 2025

We seek a highly motivated PhD Candidate to join our research project.

Goal of the project:

This DFG-funded research project offers a 3-year PhD position (TV-L E13, 65%) focused on developing an advanced machine learning workflow to accurately distinguish glioblastoma tissue from post-radiogenic changes using a multiscale imaging approach. The study integrates *in vivo* PET/MRI, nuclear reporter gene systems, and *ex vivo* light sheet microscopy to create robust ground truth datasets that bridge macroscopic and microscopic imaging data. Glioblastoma models in rats are used to validate imaging biomarkers through dual labeling of tumor cells using reporter genes for PET and LSM, enabling precise tumor localization. The project aims to optimize ML algorithms to enhance the interpretability of PET/MRI data, facilitating accurate tumor segmentation and improving clinical decision-making. The goal is to create a translational pipeline that refines diagnostic imaging in glioblastoma by leveraging high-resolution preclinical data and machine learning strategies to enhance clinical neuroimaging outcomes.

Overview

The ideal candidate will possess a strong background in biology, as well as proficiency in programming languages such as Python and MATLAB. This role will involve working on multimodal imaging **machine learning** approaches including PET/MRI, reporter genes and Light-Sheet-Microscopy, which require both **biological insights and advanced computational skills**. The work is highly specialized, and the candidate should expect a challenging complex project and corresponding robust collaborative support.

Key Requirements

Academic Qualifications

- Bachelor's or Master's degree in Biology, Bioinformatics, Computational Biology, or a related field.

Technical Skills

- Proficiency in Python: Demonstrated experience in writing and debugging Python code, as well as using Python for data analysis, machine learning, or bioinformatics applications.
- Familiarity with other programming languages and tools such as MATLAB for computational modeling, data visualization, and other relevant applications is a plus.
- Experience with bioinformatics tools and databases, and the ability to develop custom scripts and pipelines for data analysis.

Research Experience

- Previous research experience in biology, oncology or a related field, with a focus on computational methods is highly desirable.
- Ability to design, conduct, and analyze experiments independently or as part of a team.
- Biomedical imaging research experience is a plus but not required.
- Strong analytical skills and the ability to interpret complex biological data

Soft Skills

- Excellent written and verbal communication skills
- Strong problem-solving abilities and attention to detail
- Ability to work collaboratively in a multidisciplinary team environment
- Self-motivated with a strong work ethic and the ability to manage multiple tasks and projects simultaneously.

We offer

- A collaborative research environment that bridges biology, imaging, and computational science, providing hands-on experience in translational research with access to state-of-the-art facilities at the Werner Siemens Imaging Center.
- A position funded according to the German federal pay scale for PhD students (TV-L E13, 65%) adhering to DFG funding guidelines.
- The opportunity to participate in international conferences, workshops, and specialized training programs, with funding provided for travel and registration to foster academic growth and further professional development.

- A multidisciplinary setting with co-affiliation to the Department of Nuclear Medicine, ensuring that the research environment extends beyond the preclinical setting into clinical applications, making translational medicine a key focus of the work.

Application Process

Interested candidates should submit the following documents:

- Cover letter detailing research interests, relevant experience, and motivations for pursuing a PhD in this field.
- Curriculum Vitae (CV) highlighting academic achievements, research experience, and technical skills.
- Copies of academic transcripts and relevant certifications.
- Contact information for at least two academic or professional references.

Contact Information

For further information or to submit an application, please contact:

Dr. Salvador Castaneda Vega

Salvador.castaneda@med.uni-tuebingen.de

Werner Siemens Imaging Center

Department of Nuclear Medicine and Clinical Molecular Imaging

University Hospital Tübingen

We look forward to receiving applications from talented individuals eager to contribute to our research endeavors and advance their academic and professional careers in this exciting field.



Dr. Salvador Castaneda Vega