Postdoc in multimodal imaging (f/m)

Chair of Biological Imaging (CBI) at the Technical University of Munich (TUM) and the Institute of Biological and Medical Imaging (IBMI) at the Helmholtz Zentrum München (HMGU) in Munich, Germany, are an integrated, multi-disciplinary research structure focusing on developing optical and optoacoustic imaging and sensing methods to measure previously inaccessible properties of living systems, with the goal of catalyzing breakthroughs in biology and medicine. Comprising 11 laboratories and a multitude of researchers from more than 25 countries, CBI/IBMI offers state-of-the-art infrastructure for innovative research and forms the cornerstone of a rapidly expanding bioengineering ecosystem involving the newly founded Munich School of Bioengineering; the Research Center TranslaTUM, which integrates bioengineering and oncology and the Helmholtz Pioneer Campus, which integrates bioengineering and metabolic disorders. CBI/IBMI researchers come from the top ranks of early-career and established scientists in physics, chemistry, engineering, and biomedicine, who together create a rich, dynamic culture of enquiry and innovation that attracts significant investment from national and international sources. Our scientists serve in international societies and conferences and are recipients of a multitude of top international and German awards, including the prestigious Gottfried Wilhelm Leibniz prize and several ERC awards. In addition to scientific excellence, IBMI promotes entrepreneurship and company spin-off activities, as well as collaborations with other top academic institutions and leading corporations in the photonics, pharmaceuticals and healthcare sectors.

As part of the STARSTEM innovation program recently funded under the European Union’s Horizon 2020 scheme, we are now seeking a highly qualified and motivated postdoctoral fellow (f/m) to drive the utility of multimodal optoacoustic imaging and MRI for stem cell therapy.

The mission:
The successful candidate will work with an interdisciplinary team of engineers, physicists and biologists to develop a novel optoacoustic imaging platform for stem cell therapy. In particular, we seek to bring multispectral optoacoustic tomography (MSOT) into real-time clinical applications. MSOT is a technology invented at CBI/IBMI, commercialized in 2011 for small animal imaging and received the 2014 Germany’s Innovation Prize among several other awards. Under the Horizon 2020 support, the method is poised to revolutionize stem cell therapy by providing unprecedented ability for video-rate, high-resolution optical imaging deep inside tissues in a non-invasive way, with and without the need for exogenous contrast agents. This work involves a long-standing collaboration between CBI/IBMI and other partners in the STARSTEM consortium.

In this position you will:

- Lead technical efforts to improve multi-modal MSOT and MRI performance in specific preclinical and clinical context like regenerative therapy and inflammatory models. The initial focus will be on development of a novel registration and reconstruction methods for enabling multi-modal imaging to extract meaningful and relevant preclinical and clinical information.
- Develop novel algorithms and perform experiments to validate the efficacy of these algorithms; initially using phantoms, later translating these methods to biological and clinical applications.
- Liaise between an interdisciplinary team of MSOT developers and a team of physicians and biologists at CBI/IBMI and other collaboration partners.
- Supervise the work of postgraduate students with fixed timeframe deliverables.
- Draft research manuscripts for publication in top-ranked journals and develop research proposals for ensuing grant applications.
Your profile:
The successful applicant must have the following:

- Ph.D. in Engineering, Physics, Optics, Imaging, Mathematics or a related discipline
- Excellent track record of research achievement and multiple first author publications in top-ranked (imaging or vision) journals, e.g. TMI, TIP, Medical Physics, Medical Image Analysis, Radiology, IJCV, PAMI
- Research experience in one or more of the following areas: inverse problems, image processing, image formation, regularization theory, optical and acoustic physics, optoacoustics
- Strong motivation, scientific curiosity and commitment to scientific excellence
- Keen interest in biomedical and clinical imaging
- Demonstrated leadership ability and evidence of effective teamwork
- Excellent command of the English language

Candidates with the following additional qualities will be given preference:

- Postdoctoral experience
- Previous experience with algorithm development specifically in machine learning/inverse problems, image registration, image segmentation and image formation.

Our offer:
CBI/IBMI provides a highly international, multidisciplinary environment offering excellent opportunities for professional growth. We support career development, continuing education and teaching and training opportunities. Situated in the foothills of the Alps, Munich is consistently ranked as one of the most liveable cities in the world, with an exceptionally high quality of life. Greater Munich is also home to several world-class universities and research institutes, creating a vibrant intellectual atmosphere.

The successful applicant will initially have a 2-year contract, with the possibility of extension. Salary will be commensurate with work experience and seniority (TV –L EG 13). The Helmholtz As an equal opportunity and affirmative action employer, TUM explicitly encourages applications from women as well as from all others who would bring additional diversity dimensions to the university’s research and teaching strategies. Preference will be given to disabled candidates with essentially the same qualifications.

Your application:
We are looking forward to receiving your comprehensive application including your letter of motivation, CV and academic transcripts of records, preferably in English and in a single PDF file, via email to cbi.recruitment@tum.de. Please indicate “Postdoc in multimodal imaging” in the subject line.

For any question please contact:
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