

UT Southwestern Medical Center
Advanced Imaging
Research Center

Two Research Scientist positions in Metabolic MRI Sequence Development and Analysis Methods

The Advanced Imaging Research Center (AIRC) at the UT Southwestern Medical Center in Dallas, Texas (USA) invites applications for two research scientist positions in the field of methodological development for metabolic MRI. The global aim is to develop and maintain comprehensive multi-modal scan and analysis pipelines for metabolic MRI in human subjects at 3T and 7T MRI for neuroscientific and clinical applications. This development shall enable large cohort studies with metabolic MRI in brain cancer, psychiatric, neurodegenerative and neuroinflammatory as well as traumatic brain and spinal cord disorders in humans as part of a larger neuroscience initiative at UTSW.

The job profiles of the two positions serve to complement each other. The first position aims to establish a data management system for multi-modal MRI data inside the AIRC (result of a preceding EU funded project) and the development and integration of custom-written partly pre-existing automatized data reconstruction and analysis pipelines for $^1\text{H}/^{31}\text{P}/^{13}\text{C}$ MRS and MRSI, CEST, non-proton imaging and SWI. The second position aims to setup a software version control system for MRI sequence development and the development, implementation and maintenance of multimodal metabolic imaging sequences in a cross-vendor compatible manner for 3T and 7T human MRS and MRI. Both positions include the possibility to conduct own research in the area of the development of novel sequences, analysis pipelines, applications in clinical trials and machine learning based biomarker screening.

Since its creation in 2005, the AIRC has established a track record of excellence in metabolic imaging including the development of MRI contrast agents, a hyperpolarization program, magnetic resonance spectroscopy as well as the investigation of tissue extracts by NMR after ^{13}C labelled isotope infusion. Due to the recent establishment of the O'Donnell Brain Institute at UTSW and to better support an active clinical and basic science neuroimaging community at UTSW, UTD and UTA we aim to develop a strong MRI neuroimaging methodology expertise to complement the existing focus. UTSW has an international reputation in clinical and basic science excellence. There have been six Nobel Prize recipients since 1985.

AIRC has provided access to imaging equipment for faculty and students at the three University of Texas academic institutions in north Texas to advance human imaging studies and translational research in animals. The AIRC currently consists of 10 core faculty and more than 20 adjunct faculty and is expanded by about 5 core faculty in near future. AIRC is equipped with three small animal MR scanners (4.7T, 7T, 9.4T), three human research-only 3T MR scanners (Philips Ingenia, Siemens Prisma, GE 750w), one human 7T MR scanner (Philips), two hyperpolarization setups (HyperSense for preclinical and SpinLab for human application), 7 NMR spectrometers and a MRI contrast agent chemistry lab. In the nearby Radiology Department, there is access to a cyclotron for producing radiotracers, small animal and human PET/CT and SPECT/CT scanners and to highly focused ultra-sound (HIFU) systems integrated with small animal MRI. The instrumentation inside the AIRC is undergoing a major upgrade that includes the installation of a parallel transmission system, a

major upgrade of the spectrometer, receive channels and B_0 shimming hardware and extended multi-nuclear capability at the human 7T. The installation of a new generation UHF human MRI possibly > 7T (AIRC), an integrated human PET-MRI system (Radiology) and an integrated MR-LINAC (Radiation Oncology) are foreseen in future.

Applicants for these positions should have obtained their PhD in metabolic MRI methods development and show a competitive publication track record in accordance to their career stage including first author and co-author publications in scientific journals and conference abstracts. They should have an electrical engineering, physics, computational science, biomedical engineering or applied mathematics background. Candidates are expected to be able to work independently as well as contribute to a team comprised of postdoctoral fellows, PhD students and clinical collaborators. Successful candidates will be expected to quickly become acquainted with new methods and knowledge and have good communication and organizational skills. Good programming skills (C++, MATLAB, PYTHON, IDL) combined with either experience in MRI sequence development (Philips, Siemens) or MRI/MRSI image reconstruction and data analysis pipeline development is required. Knowledge in optimization and numerical math, machine learning or experience with data management systems is of advantage.

These classified positions are available immediately and will initially be funded for 5 years, pending satisfactory performance and research progress. Compensation is accordance with the guidelines of UTSW for Research Scientists and contingent upon experience and qualifications. Pending funding and research progress, these positions may extend beyond 5 years.

UT Southwestern Medical Center is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans and individuals with disabilities are encouraged to apply.

Applications should include a letter of interest, a curriculum vitae, a list of publications (peer-reviewed original articles; review articles; book chapters; conference contributions; patents; other), a list of grants if applicable (please clearly distinguish grants as PI, as Co-PI and as person funded by the grant); a list of supervised students (Bachelor, Master, PhD) and PostDocs; a summary of past research experience and future research interests (max 2 pages); PhD, Bachelor/Master and High School certificates and respective transcripts; PDF copy of PhD thesis or 5 most important papers and three references (contact details only).

All materials should be sent **electronically as a single PDF** file to Anke Henning, Director, Advanced Imaging Research Center, UT Southwestern Medical Center, Dallas, Texas, US: Anke.Henning@UTSouthwestern.edu.