

UT Southwestern Medical Center
Advanced Imaging
Research Center

Four Post-Doc positions in Ultra High-Field MRI

The Advanced Imaging Research Center (AIRC) at the UT Southwestern Medical Center in Dallas / Texas / US invites applications for four postdoctoral positions in the field of methodological development for ultra-high-field MRI. The global aim is the development of 7T MRI for neuroscientific applications with focus on 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.

Potential topics include (i) sequence development; (ii) image reconstruction; (iii) data analysis algorithm & pipeline development (including machine learning based approaches); (iv) parallel transmission (RF coils, RF pulses, pTX sequences); (v) B₀ shimming (hardware and software) and (vi) motion correction. Modalities of interest include anatomical imaging, ¹H/³¹P/¹³C/²H MRS/MRSI, CEST, non-proton imaging (²³Na, ³⁹K), SWI and ASL. Target regions are the human brain, spinal cord and myocardium.

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 ¹³C 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 B₀ 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 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 contributing to a team of RF engineers, other postdoctoral fellows, PhD students and clinical collaborators, get acquainted with new methods and knowledge quickly, have good communication skills and be willing to work with experimental hardware. Good programming skills (C++, MATLAB, PYTHON, IDL), knowledge in optimization and numerical math or experience with self-build electronics is required. Experience in either MRI sequence development (Philips, Siemens), MRI or MRSI image reconstruction, RF pulse design, EM simulation (CST) or hardware development (RF coils, B₀ shimming, PCB boards, control circuits, amplifiers) is of advantage.

The positions are available immediately and funded for 5 years, pending satisfactory performance and research progress. Compensation is in accordance with guidelines of UTSW for postdoctoral researchers including years of experience. The application for a career development grant during the employment is encouraged and supported and mentoring with regard to further career development is provided.

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 if applicable (Bachelor, Master); a short 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 related Papers & Abstracts 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.