

**Department of Radiology
Roy J. and Lucille A. Carver College of Medicine
The University of Iowa**

**Assistant/Associate Research Scientist
Position Available**

The Roy J. and Lucille A. Carver College of Medicine invites applications for a 100% Assistant or Associate Research Scientist in the Magnetic Resonance Research Facility of the Department of Radiology.

The primary function of this position is to develop a translational MR imaging research program focused on neonatal development. The primary focus of this work would be the assessment of cardiac and brain development across the lifespan in children born prematurely. This position would help to build and optimize clinical imaging protocols as well as develop a translational MR imaging research program. The successful applicant would collaborate extensively with researchers and clinicians, within the Department of Pediatrics, who are considered world leaders in the care of extremely preterm infants born as early as 22 weeks and developmental hemodynamics related to the immature heart and circulation. This position would also have strong collaborations with the Departments of Psychiatry, Neurology, and Cardiology as well as with the MR Research Facility. This position is also expected to develop image analysis pipelines for the analysis of anatomical and functional MR imaging data. This will include the development of analysis tools to generate quantitative results from the acquired data. This will include helping optimize existing clinical sequences in cardiac imaging. In addition, this position will report the results from these efforts in scientific publications as well as support the writing and submission of grant applications. Dependent on candidate, performance-based promotion to a tenure-track faculty position is anticipated in line with the strategic development plan of the program.

The incumbent is expected to work in a fast-paced research environment with diverse team of investigators, students, and staff members. The University of Iowa has state-of-the-art MR facilities including a 1.5T Siemens Aera and 3T Siemens Vida in the Stead Family Children's Hospital as well as research dedicated 3T GE Premier and 7T GE MR950 whole body scanners and a 7T GE MR901 for small animal imaging in the MR Research Facility. Finally, we have an open bay for the placement of the next generation Siemens PET/MR when that becomes available.

Candidates must be committed to the University's goal of inclusiveness and have a demonstrated history of working effectively with persons of all races, ethnicities, nationalities, genders, gender identities, sexual orientations, and religions. Candidates must be prepared to explain how they have been and/or will be involved in advancing this goal with CME and the CCOM.

EDUCATION REQUIRED

- A Ph.D. in an engineering or science field such as Biomedical Engineering, Electrical Engineering, Chemistry, Physics, or Computer Science is required.

EXPERIENCE REQUIRED

- Training in MR physics and image acquisition.
- At least 1 year of experience with medical image analysis for the Assistant position or at least 3 years of experience for the Associate position.
- Excellent verbal and written communication skills.
- Demonstrated strong analytical and data analysis skills.

- At least 1 year of experience with MRI pulse sequence development for the Assistant position or at least 3 years of experience for the Associate position.
- Experience with scripting languages (e.g. Python) for the development of image analysis pipelines.
- Candidate must be committed to the University's goal of inclusiveness and have a demonstrated history of working effectively with persons of all races, ethnicities, nationalities, genders, gender identities, sexual orientations, and religions.

HIGHLY DESIRABLE QUALIFICATIONS

- Prior postdoctoral training in MR imaging/spectroscopy is.
- Prior research experience with cardiac or brain MR imaging.
- Prior success with grant applications and peer-reviewed publications is.
- Knowledge of Siemens IDEA and GE EPIC pulse programming environments.
- Prior experience with ultra-high field MR imaging.
- Prior experience with cluster computing.

For more information, please see: <https://medicine.uiowa.edu/mri/about-mr-research-facility>

To apply: Please see requisitions #20004398 and 20004399 at
<http://jobs.uiowa.edu/jobSearch/index.php>
 Applicable background checks will be conducted.

About the MR Research Facility:

The University of Iowa MR Research Facility was established in August of 2004 and now supports research dedicated 3T and 7T whole body scanners and a 7T small animal scanner. The MRRF facility has received two NIH High End Instrumentation grants over the past ten years to help support the acquisition of these instruments. In 2016, the facility moved into the Iowa Institute for Biomedical Imaging (IIBI) located within the Pappajohn Biomedical Discovery Building (PBDB). The MRRF is run as a Core University facility.

The MR Research Center aims to maintain state-of-the-art equipment and facilities. This requires an investment in both the hardware and software that compose our center's mainstay, and also an investment in recruiting and maintaining exceptional personnel. To that end, we have been actively pursuing development in the following areas to advance the research at our University...

Diffusion Tensor Imaging (DTI) - This is of interest mainly for evaluation of brain morphology changes associated with neurological and psychiatric disorders. We have been working on novel schemes for rotating the diffusion tensor and multishot approaches for high resolution Diffusion Tensor Imaging. We are also working on tools for fiber tracking. These tools are currently available through the [Neuroimaging Informatics Tools and Resources Clearinghouse](#).

T1rho Imaging - The primary application of this technique is to assess and quantify pathologic cartilage matrix changes that are not detectable with standard morphological MRI. Initial work has focused on the knee joint in an ACL injury population to determine the suitability of T1rho as an imaging biomarker for early detection of osteoarthritis. Broader application to the ankle and hip joints are also being explored. We are also evaluating the utilization of this method to study pH changes that may result from stress including Post Traumatic Stress Disorder and depression.

Arterial Spin Labeling – Using the Siemens ASL WIP for VB13, we have started to evaluate this technique for functional brain activation studies. To date we have successfully generated reproducible measurements within the occipital cortex and are starting to evaluate higher order cognitive activation studies.

MR Spectroscopy – We have been working on tools for partial volume correction of brain MR spectroscopy studies and have been able to obtain the PEPSI sequence from Stefan Posse. Various pilot studies are currently being conducted using 1H-MRS, and at least one research group has voiced interest in evaluating treatment trials in Huntington’s disease using 1H-MRS.

Magnetic Source Imaging – We are currently working on assessing the validity and reliability of magnetic source imaging. This is a potentially powerful tool to understand brain function at a high temporal and spatial resolution.

The University of Iowa is an equal opportunity/affirmative action employer. All qualified applicants are encouraged to apply and will receive consideration for employment free from discrimination on the basis of race, creed, color, national origin, age, sex, pregnancy, sexual orientation, gender identity, genetic information, religion, associational preference, status as a qualified individual with a disability, or status as a protected veteran.