Postdoctoral Fellowship in Imaging Biomarker Development for Frontotemporal Dementia

Perelman School of Medicine
University of Pennsylvania

Research Position:

Dr. Dylan Tisdall is recruiting postdoctoral fellows to join the Robust Methods for Magnetic Resonance (RMMR) Group at the University of Pennsylvania (http://rmmrgroup.org) for a 2-year position with the possibility of further extension. Trainees will join an NIH-funded project combining the resources of RMMR, the Penn Image Computing & Science Lab (PICSL), and Penn Frontotemporal Dementia Center (FTDC) to develop and validate novel imaging biomarkers for Frontotemporal Lobar Degeneration (FTLD) and related diseases. Trainees are encouraged to pursue their individual interests within the major goals of the project:

1) development of novel pulse sequences, reconstruction methods, and sample preparation strategies for *ex vivo* MRI and its fusion with digital histopathology to better understand FTLD pathology;
2) leveraging results of *ex vivo* MRI and histopathology to develop novel pulse sequences and imaging protocols to acquire *in vivo* imaging biomarkers of FLTD and related diseases; and
3) validating the use of *in vivo* imaging biomarkers to stratify disease phenotypes, quantify disease burden, and predict disease progression in patients with FLTD and related diseases.

We are particularly interested in the development and validation of high-resolution QSM, *in vivo* and *ex vivo,* to localize and quantify pathologic iron as a marker if neuroinflammation and degeneration.

Neuroimaging Research at Penn:

The University of Pennsylvania hosts a diverse research program in neuroscience and neuroimaging, with a strong emphasis on cross-department collaboration. RMMR, PICSL, and FTDC are all located in the historic Richards Biomedical Research Building, recently renovated to house neuroscience researchers affiliated with Perelman School of Medicine (*a.k.a*, “The Brain Space”). Research-dedicated MRI instrumentation includes three 3T Siemens Prisma, one 7T Siemens Terra, and a 9.4T Bruker small-bore scanner, along with research-shared 1.5T and 3T scanners in the adjacent adult hospital, walking distance from the RMMR Group’s space.

Penn and Philadelphia:

The University of Pennsylvania has had a major role in American medicine, including the nation's first hospital (Pennsylvania Hospital, 1751), first medical school (1765), and first university hospital (1874). Philadelphia is one of the 10 largest metropolitan areas in the USA, with a lively cultural and restaurant scene and an affordable cost of living. Both New York City and Washington D.C. are day-trips by train or car, as are the popular Atlantic Ocean beaches in New Jersey, the Chesapeake Bay, and the Pocono “mountains”.

Qualifications:

Applicants should have a PhD in Biomedical Engineering, Computer Science, Electrical Engineering, or a related field. A track record of research in the acquisition and/or analysis of medical imaging data, particularly MRI, is preferred. Experience with MRI pulse sequence development and/or reconstruction, particularly in the Siemens IDEA environment, is highly valued. However, researchers with strong scientific and C/C++ programming backgrounds can learn MRI physics and pulse sequence development during the fellowship. Experience with Python, Julia, Matlab, or other tools for rapid prototyping and data analysis is also desired.

Applying:

The University of Pennsylvania is an equal opportunity employer; women and members of other underrepresented populations in science and engineering are particularly encouraged to apply. Please contact Dr. Dylan Tisdall (mtisdall@pennmedicine.upenn.edu) and provide 1) a cover letter outlining research interests, experience, and qualifications; 2) a CV; and 3) the names of two references.