

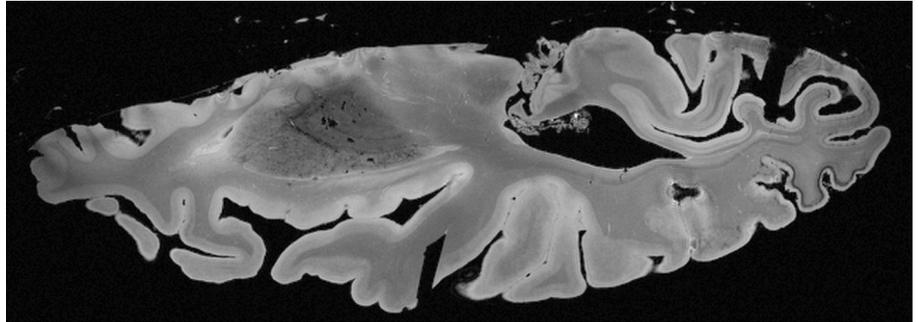
Postdoctoral Fellowships in 7 T Imaging Biomarker Development Targeting Frontotemporal Dementia



Description of Research:

Drs. Murray Grossman, Jim Gee, and Dylan Tisdall are recruiting two postdoctoral fellows to develop new imaging biomarkers to improve diagnosis, stratify phenotypes, and quantify treatment efficacy in frontotemporal dementia and related diseases. This project combines the resources of the Penn Frontotemporal Dementia Center (FTDC), Penn Image Computing & Science Lab (PICSL), and the Center for Functional Neuroimaging (CfN) to improve our understanding of the underlying biology, and ultimately improve treatment, of this understudied family of neurodegenerative diseases.

The major goals of the project will be 1) the integration of *ex vivo* whole-hemisphere (and potentially whole-brain) 7 T MRI with targeted histopathology to generate detailed understanding of the relationship between microscopic disease processes and mesoscopic imaging features; and 2) the translation of these findings to *in vivo* biomarkers



using both novel pulse sequences and image analysis methods. The fellows will work with Dr. Tisdall to build on the existing *in vivo* and *ex vivo* 7 T MRI program at the FTDC, led by Dr. Grossman, in collaboration with image analysis researchers in PICSL, led by Dr. Gee. Depending on interests, fellows' work will include:

- developing novel pulse sequences for both *in vivo* and *ex vivo* applications, with Dr. Tisdall in the CfN;
- designing *ex vivo* MRI/histopathology experiments, with Dr. David Irwin's histopathology lab in FTDC; and
- developing novel analysis methods to generate quantitative biomarkers from our imaging data, working with Dr. Gee in PICSL, and Dr. Corey McMillan's Imaging Core in the FTDC.

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 analysis of medical imaging data, particularly MRI, is preferred. Experience with ultra-high-field MRI neuroimaging is especially valued, as is experience with pulse sequence development and/or MRI reconstruction, particularly in the Siemens IDEA environment; however, researchers with strong computer programming backgrounds in C/C++ can also receive training and supervision to learn pulse sequence development during the fellowship. Experience with Python, Matlab, Mathematica, or other tools for rapid prototyping and data analysis is also desired.

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. Research-dedicated MRI instrumentation includes two 3 T Siemens Prisma scanners and a 7 T Siemens Terra scanner, as well as research-shared 1.5 T and 3 T scanners in the adjacent hospital, and both large and small-bore systems for specimen and animal studies. Our research-dedicated 3 T and 7 T scanners also have KinetiCor motion-tracking cameras installed, which can be integrated with the new sequences developed as part of this project.

Applying:

The University of Pennsylvania is an equal opportunity employer and women and applicants of underrepresented minorities are particularly encouraged to apply.

Please contact Dr. Dylan Tisdall (mtisdall@pennteam.upenn.edu) and provide 1) a cover letter outlining research interests, experience, and qualifications; 2) a CV; and 3) the names of two references.