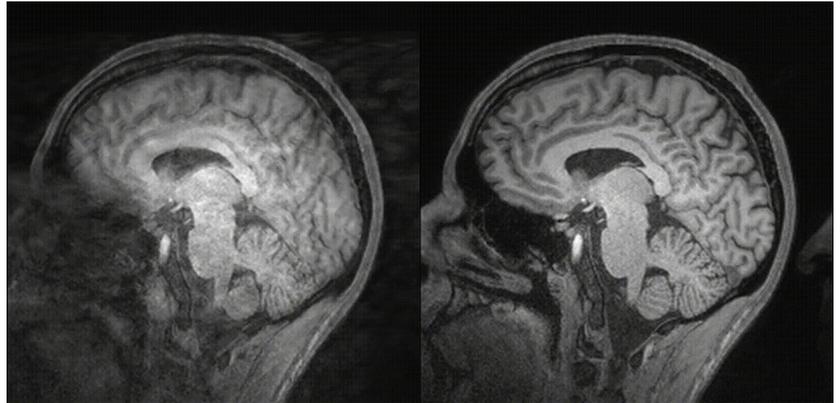


# Postdoctoral Fellowship in Motion-Resilient Pediatric Neuroimaging



## Description of Research:

Dr. Dylan Tisdall is recruiting a postdoctoral fellow to develop novel motion-resilient pediatric magnetic resonance neuroimaging technologies. This project combines the resources of the University of Pennsylvania and NOUS Imaging ([www.firmm.io](http://www.firmm.io)), taking a multi-pronged approach to addressing the practical needs of both clinical and neuroscience imaging studies in infants and young children.



The major technical goals of the project will be: 1) development of novel methods to

detect and quantify subject motion using navigators or self-navigated acquisitions; 2) integration of these technologies with real-time displays of motion and data quality, to help scanner operators adapt their protocols to each subject; and 3) development of prospective and retrospective motion-correction methods to ensure studies produce high-quality data in challenging cohorts. The fellow will work with Dr. Tisdall to build on the existing volumetric navigators (vNavs) motion tracking and prospective correction framework — used in the Adolescent Brain Cognitive Development (ABCD), and Human Connectome Project - Development studies, and under continued development. They will also collaborate with NOUS imaging, whose widely-used FIRMM motion monitoring and display product is now being refined for clinical applications. Work will include:

- developing novel pulse sequences and image reconstruction pipelines to minimize motion effects;
- developing methods for predicting image quality from real-time motion measurements;
- collaborating with NOUS Imaging on the integration of these technologies with FIRMM; and
- collaborating in the evaluation these technologies in pediatric neuroimaging studies.

## 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 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; women and applicants of underrepresented minorities are particularly encouraged to apply.

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