



Postdoctoral fellowships in tissue microstructure imaging and quantitative MRI

PIs: Els Fieremans and Dmitry Novikov

Join a diverse team of scientists in New York City to help turn MRI into a precise, pathology-specific scientific instrument. You will contribute to rethinking the whole MRI pipeline: From image reconstruction and artifact correction, to biophysical modeling of brain microstructure and model validation, to clinical translation of novel early-stage pathology biomarkers.

The Projects

We have a number of long-term NIH-funded projects, each requiring a different set of skills, such as:

- *Noise removal during image reconstruction* — use random matrix theory to separate noise from the signal in multi-modal raw MR data (diffusion and fMRI), develop the reconstruction pipeline, and translate into presurgical planning. *Required skills in one of the following:* MR reconstruction (ICE programming a plus); fMRI / diffusion processing; artifact correction; fiber tracking.
- *Distinguish between demyelination, axonal loss & inflammation* — use biophysical modeling to develop clinically feasible MRI acquisitions and validate early sensitive markers for neurodegenerative diseases. *Required skills in one of the following:* Monte Carlo simulations of diffusion; q -space trajectories; diffusion theory / parameter estimation; machine learning.
- *Clinical translation of cellular-level markers of pathology* — translate the quantitative MRI pipeline into clinical studies of neurodegeneration (multiple sclerosis, Alzheimer's disease, traumatic brain injury, migraine, and other pathologies). *Required skills in one of the following:* Statistical analysis and experience with big datasets; background in neurological disorders.

The Candidate

You are a self-driven, creative, and interactive scientist strongly motivated to acquire new skills and to engage in interdisciplinary research. You have earned (or are about to earn) a PhD in a relevant area, such as neuroscience, physics, computer science, biomedical engineering or related fields. You have a proven publication record in at least one of the skills outlined above.

The Institution

You will join a vibrant community of graduate students, postdoctoral fellows, engineers, basic scientists, and clinicians, in one of the most dynamic medical centers in the world, with ample opportunities to pursue your own research or contribute to other projects. The Center for Biomedical Imaging (CBI) at the Department of Radiology is home to about 130 basic researchers covering all areas of MRI, from RF coil design to parallel imaging to biophysical modeling of diffusion, perfusion and relaxation. We believe that the best science requires intense collaboration. At CBI, basic researchers and clinicians occupy the same building and interact frequently through labs, forums, lectures, coffee breaks and happy hours.

Our Facilities

We have access to 12 MR systems: clinical 1.5T and 3T Siemens MRI scanners (including a 3T Prisma and a PET/MR system), as well as a micro PET and a 7T Bruker animal scanner. We are located in midtown Manhattan, at 660 First Avenue.

Fine Print

The postdoctoral positions are for two years with a possibility of extending for a longer term, and depending on your interests and performance. We will pay a salary commensurate with your experience, and you will get a generous benefits package.

To Apply

Email your cover letter, a statement of research interests, and a CV including a list of publications and contact information of three references (*all in PDF format*), to meso@diffusion-mri.com.