Position Type: Postdoctoral Positions at the NIH
Position Title: Imaging of microscopic and mesoscopic processes in neurodegeneration

Position description:
The Multiscale Imaging and Integrative Biophysics (MiiB) Unit within the National Institute on Aging’s (NIA’s) Laboratory of Behavioral Neuroscience is offering two (2) postdoctoral positions to develop novel approaches for imaging microscopic and mesoscopic neuropathologic processes. These are full-time primary research fellowships for postdoctoral scholars, which will be mentored by Dr. Dan Benjamini. The MiiB Unit combines diffusion-relaxation multidimensional MRI with complementary histological methods to investigate cellular processes that relate to function, microstructure, and chemical composition in normative aging, mild cognitive impairment, and dementia.

- Develop novel imaging markers based on advanced yet clinically usable MRI methods and biophysical modeling, as well as their validation and translation into clinical applications.
- Acquisition strategies with a focus on multidimensional (e.g., combined diffusion-relaxation) MRI.
- Develop quantitative MRI methods targeting specific pathological microscopic processes in neurodegenerative diseases ex- and in-vivo, and their clinical translation.
- Use machine learning approaches to integrate novel MRI data with complementary quantitative modalities.
- Correlate and integrate histology and MRI data: segmenting, clustering, and classifying low-resolution, high-dimensional MRI data and high-resolution, low-dimensional histology data obtained in the brain.
- Improve our understanding of the biological origins of MRI signal in complex environments.

Environment: MiiB is part of the larger MRI research community at NIA, which has active programs in clinical and preclinical research. Among the available resources are preclinical 7T and 9.4T animal scanners, preclinical 9.4T tissue scanner, and clinical 3T and soon-to-be-installed 7T scanners. Additionally, two major ongoing research initiatives at the NIA, the Baltimore Longitudinal Study on Aging (BLSA) and the Genetic and Epigenetic Signatures of Translational Aging Laboratory Testing (GESTALT), present unique opportunities for multimodal integrated research.

Qualifications:
- Ph.D. in a relevant engineering, physical science, computer science or mathematics discipline.
- Evidence of excellent written and oral communication skills.
- Solid programming skills: including MATLAB, Python, and C/C++.
- Background in MRI physics and image processing – advantage.
- Experience with high performance computing is preferred.
- First-hand experience with the acquisition and/or analysis of MRI data is highly desired.

Compensation: Salary is consistent with NIH guidelines and benefits include health, dental and vision insurances, paid time-off, and conference time. The duration of postdoctoral fellowship appointments can be for up to five years. International applicants are welcomed.

How to Apply: Interested applicants should contact Dr. Dan Benjamini (dan.benjamini@nih.gov) and submit: (1) a curriculum vitae (CV), (2) a bibliography, (3) a cover letter with a brief description of his/her research interests and experiences, and (4) a list of at least three references, which includes their mailing addresses, telephone numbers, and e-mail addresses.

Employer Name: National Institute on Aging (NIA)
Position Location: Baltimore, Maryland
Application Deadline Date: March 31, 2022 or until filled.

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