

M.Sc, Ph.D student position – Multi-Parametric Magnetic Resonance Imaging (MP-MRI) in Nonalcoholic Steatohepatitis (NASH)

Investigators:

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Description:

Nonalcoholic fatty liver disease (NAFLD) is the most prevalent liver disease in Western countries. The more advanced form, nonalcoholic steatohepatitis (NASH) may evolve to fibrosis, cirrhosis, liver failure and liver cancer. Liver biopsy is the current reference standard for diagnosis of NASH. However, its invasiveness prevents its use for large-scale screening and diagnosis. Our team is exploring multi-parametric magnetic resonance imaging (MP-MRI) as a noninvasive one-stop-shop imaging modality to provide quantitative information on liver inflammation, fat, iron, and fibrosis. To do so, we are assessing properties such as viscoelasticity by magnetic resonance elastography (MRE), intravoxel incoherent motion by diffusion-weighted imaging (IVIM-DWI), proton density fat fraction (PDFF) by MR, and R2* with relaxometry techniques. Our goal is to assess the diagnostic accuracy of multiparametric MRI for diagnosis of NASH and to develop noninvasive biomarkers of chronic liver disease and investigation strategies to reduce the need for liver biopsies in the future.

Qualifications:

- You have a B.Sc/M.Sc in biomedical engineering, physics or related field.
- Good scientific computing skills (MATLAB, Python).
- Good understanding of quantitative MRI principles, applications and standard sequences.
- Hands-on experience with MRI techniques (sequence design and acquisition).
- Background in image processing (image reconstruction, filtering, denoising).
- Good oral and written communication skills in English (required) and French (optional).

Offer:

- Exciting multidisciplinary research in a collaborative network of top academic and industrial partners.
- State-of-the-art computing and imaging infrastructure to support your research.
- Access to last generation MRI and ultrasound devices in a research context.
- Possibility to attend international scientific meetings to present your work.

Funding:

- This PhD position is funded by a Canadian Institutes of Health Research (CIHR #389385) Operating Grant.

References:

<https://www.ncbi.nlm.nih.gov/myncbi/browse/collection/41010522/?sort=date&direction=descending>

