

Two Industry-Sponsored Postdoctoral Research Fellowships

The imaging program at the Lawson Health Research Institute includes state of the art research imaging platforms (whole body and small animal PET/MRI, PET/CT, 3TMRI and 256 slice CT systems), onsite medical cyclotron, animal and prototype facilities. There are 20 plus PhDs (medical physicists, molecular biologists and radiochemists) and MD imaging researchers along with more than 100 plus trainees (PDFs and graduate students):

Motion and Attenuation Correction for PET/MRI	Cardiac MRI and Hybrid PET/MRI
<ul style="list-style-type: none">• Assess the impact of motion correction (BrainCompass), partial volume correction, and improved attenuation correction techniques (RESOLUTE) in brain PET/MRI.• Assess the impact of motion correction (BodyCompass) and attenuation correction techniques (HUGE and SEGBONE) in cardiac and whole-body PET/MRI.• Develop a cardiac and whole-body PET/MRI motion correction strategy based on the eXtra-Dimensional GRASP (XD-GRASP) MRI method from NYU (Feng et al. 2016).• Data will be acquired on both PET/CT and PET/MRI, allowing a comprehensive comparison. Study cohorts will include patients with epilepsy, myocardial infarction, and prostate cancer.• Postdoctoral fellow's time will be directed 50% by academic supervisors (Prato/Thiessen) and 50% by Siemens Canada (Moran), providing valuable academic and industrial experience in hybrid PET/MRI.	<p>The post doc will contribute to the development of PET/MRI methods for studying biological changes in cardiac tissue following myocardial infarction in animal models. Such studies will provide insight for determining the optimal timing of pharmacological interventions aimed at preventing heart failure. This project will focus initially on the cardiac MRI component of the methods, but will provide an opportunity for the applicant to gain knowledge and skills in cardiac PET and PET/MRI. The major components of this work include the following:</p> <ol style="list-style-type: none">(1) Performance evaluation of a 32 channel cardiac PET/MRI coil to establish key characteristics of the coil that will inform its optimal use for this work.(2) Further development and optimization of a method for acquiring multi-slice maps of the T1 relaxation time in the heart. This is required for pharmacokinetic analysis of multi-slice dynamic contrast enhanced MRI to align with 3D PET acquisition.(3) Further development of an integrated PET/MRI pharmacokinetic model analysis method.
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Preferred Qualifications:

- Ph.D. in Physics, Mathematics, Computer Science, Medical Biophysics, Biomedical Engineering, or equivalent with a focus on MRI and/or PET.
- Experience with MRI and/or PET data acquisition, image analysis, statistics, and programming (MATLAB, C/C++, or Python).
- Experience with pulse programming and image reconstruction.
- Peer-reviewed publication record

Fellow will work closely with imaging scientists, clinicians, industry sponsors, and collaborating PET/MRI sites. Results will be disseminated in peer-reviewed scientific journals and conferences.

These positions are supported through a two-year Mitacs postdoctoral fellowship (www.mitacs.ca).

Position is available immediately and will remain open until an appropriate candidate is recruited.