



Jewish General Hospital
Lady Davis Institute for Medical Research



***"Imaging Brain Function with Improved
Physiological and Spatial Specificity
using MRI"***

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Abstract:

Functional magnetic resonance imaging (fMRI) based on the Blood Oxygenation Level-Dependent (BOLD) signal has revolutionized human neurosciences by providing a non-invasive tool for dynamically mapping brain activity without ionizing radiation or exogenous contrast agents. A wide range of biophysical and physiological factors influences BOLD fMRI. This makes the BOLD signal challenging to relate to both the underlying neuronal activity and brain physiology. In this talk, I will overview my efforts to make *calibrated fMRI* – a quantitative technique that can tease apart the metabolic and hemodynamic contributions to the BOLD signal – more widely accessible through improved biophysical signal modelling and image acquisition. I will then describe my contributions to pulse sequence development for performing high spatial resolution fMRI at 7 T, where I demonstrated functional activation at 0.6-mm isotropic voxel size – the highest published spatial resolution for human fMRI using a whole-head receiver coil.