

**Project Title:** Pilot Evaluation of <sup>11</sup>C-D-Deprenyl Uptake in Chronic Pancreatitis: A Potential Diagnostic PET-MRI Biomarker

**Abstract:** Definitive diagnosis of early-stage chronic pancreatitis (CP) remains elusive due to the inability of conventional imaging techniques to detect early inflammation, and the inability to safely obtain histologic biopsy. Secretin-stimulated endoscopic pancreatic function testing and ERCP are considered the “nonhistologic” gold standards for diagnosis of CP; however, they are invasive and require endoscopy. We propose a pilot study to evaluate [<sup>11</sup>C]-D-deprenyl PET-MRI as a non-invasive diagnostic tool for chronic pancreatitis.

MRI/MRCP has emerged as a valuable, non-invasive diagnostic tool in assessing changes in pancreas ductal and parenchymal architecture associated with both acute (AP) and chronic pancreatitis. [<sup>11</sup>C]-Ddeprenyl (DDE) tracer positron emission tomography (PET) provides highly accurate direct imaging of musculoskeletal inflammation. Simultaneous DDE-PET and MRI/MRCP may provide unprecedented spatial resolution of the morphological changes and early inflammatory response associated with CP.

In this pilot study we aim to compare qualitative and quantitative DDE-PET/MRI imaging findings in cohorts of patients with alcohol-induced acute and chronic pancreatitis to imaging findings in healthy control subjects. We expect to find a statistically significant increase in DDE uptake in the pancreas of AP and CP patients, reflecting the underlying acute and chronic inflammation. If proven, this pilot study will establish the proof of principle and preliminary data necessary to develop future studies, evaluating the accuracy and utility of DDE-PET/MRI in the diagnosis and management of early mild CP.

This proposed collaboration spans several Harvard teaching hospitals and discipline (Gastroenterology, Radiology, and Molecular Imaging), which we believe is ideal for funding from the Harvard Catalyst.