

TITLE:

Neuromodulation of pancreatic beta cell function by the autonomic nervous system.

FACULTY MENTOR NAME, EMAIL PHONE NUMBER

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Pathology, Immunology, and Laboratory Medicine

RESEARCH PROJECT DESCRIPTION (brief overview of background, hypothesis, methods, role of medical student, funding and relevant publications -- SHOULD NOT EXCEED ~ 250 WORDS)

Our studies aim to determine whether the autonomic innervation to pancreatic islets is altered in diabetes. We utilize research samples from human pancreas and a human beta cell line to study neural input and functional outcomes of neural stimulation. Methods include analysis of neural targets using RNAseq data from human islets isolated by laser microdissection, immunofluorescence for peripheral neural markers, computer-based image analysis, cell culture with immunocytochemistry and RNA and protein extraction, and other molecular biology assays. The student will select a project based on their area of interest then perform a literature review followed by suitable experiments. Previous training is beneficial but not required. Funding is provided from NIH-NIDDK (1-3).

1. Campbell-Thompson ML, Kaddis JS, Wasserfall C, Haller MJ, Pugliese A, Schatz DA, Shuster JJ, Atkinson MA: The influence of type 1 diabetes on pancreatic weight. *Diabetologia* 2016;59:217-221
2. Campbell-Thompson M, Fu A, Kaddis JS, Wasserfall C, Schatz DA, Pugliese A, Atkinson MA: Insulinitis and β -Cell Mass in the Natural History of Type 1 Diabetes. *Diabetes* 2015;
3. Campbell-Thompson M, Rodriguez-Calvo T, Battaglia M: Abnormalities of the Exocrine Pancreas in Type 1 Diabetes. *Curr Diab Rep* 2015;15:653