

Title: A personalized approach for assessing pancreatic function in diabetes using novel islet biomarkers

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Pancreatic islets play a critical role in diabetes development. Their status is approximated through measurements of basal and stimulated blood glucose, C-peptide, and insulin. These tests are either insufficient, or impractical in a clinical setting. An important unmet need remains for biomarkers that can accurately monitor pancreatic islet status. Such biomarkers may help predict disease progression, guide drug selection, monitor therapeutic efficacy and accelerate development of disease-modifying therapies.

We have identified candidate blood biomarkers associated with pancreatic islet function by proteomic analysis of secretory vesicles isolated from primary human islets under steady state and following induced dysfunction. Candidate specificity was evaluated by comparing the islet datasets to a library of secreted proteins produced by major organs.

Biomarker performance was assessed using MRM-MS or ELISA in plasma from patients that were normoglycemic (n = 47), had impaired glucose tolerance (n = 17), or were Type 2 diabetics diagnosed <1.5 years (n = 19) or >5 years (n = 28). A pool of 14 candidates was able to accurately classify patients into the disease progression groups when used in combinations of 3-5 biomarkers. This performance was independent and superior to the standard of care (SOC), and especially important for prediabetic patients where about 50% can be currently be correctly identified by the SOC. Most candidate biomarkers had functions related to metabolic homeostasis or regulation of islet secretion, tissue remodelling, and inflammation. We have thus identified candidate biomarkers derived from human pancreatic islets that appear able to distinguish between disease progression groups.

Biography

Eustache completed a PhD in immunology from McGill University and did post-doctoral research at the Howard Hughes Medical Institute at the University of Alabama at Birmingham with an award from the Irvington Institute for Immunological Research. He has extensive experience in large scale biology and translational medicine, in particular biomarker discovery and validation, and has led several privately or publically funded multi-year projects. He is currently the Caprion's Vice President of Biomarker discovery and Diagnostics, responsible for the advancement of Caprion's diagnostics development pipeline and and for discovery of biomarkers with diagnostic application potential.

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