

Title: Regulation of the Epigenome in Human Pancreatic Islet Cells

Authors: Lorenzo Pasquali, Ignasi Moran, Santiago Rordiguez, Ildem Akerman, **Jorge Ferrer**

Institutes: Programming Beta Cells Lab; Imperial College London and Institut d'Investigacions Biomèdiques August Pi i Sunyer.

Abstract

Understanding the epigenetic basis of pancreatic islet cell differentiation and function has significant implications for human diabetes. It is crucial for efforts to generate beta cells for replacement therapies in Type 1 diabetes, as well as to understand how environmental and noncoding genetic elements influence the development of Type 2 diabetes (T2D). We have defined >1100 human beta-cell long non-coding RNAs, many of which are highly cell-type specific. A subset of these transcripts are dynamically regulated in response to glucose, while others map to genomic regions that impact T2D susceptibility or they are abnormally expressed in islets from donors with T2D. Our studies have also addressed how transcription factor networks interact functionally with the epigenome, and provide evidence to support that such interactions could mediate genetic effects on diabetes susceptibility.