UC San Diego
Bioengineering

The Kravets Lab – "Pancreatic Islet Physics and Physiology" lab at the Department of Bioengineering and Department of Pediatrics of the University of California San Diego - is looking for a creative and highly motivated Postdoctoral Fellow to lead experimental and computational research projects.

Pancreatic cells heterogeneity results in formation of the functional architecture if the pancreatic islet with small cell subpopulations controlling islet's response to glucose (Benninger, Kravets, Nature Reviews Endocrinology, 2022). Until recently, it was assumed that cells in the islet respond to glucose without any order. We have shown that there exists an order to response, and discovered cells leading this response during the 1st phase calcium response: "first responder beta-cells" (Kravets et.al, PLOS Biology, 2022). Hub cells are a subset of the beta cells coordinating islet's 2nd phase calcium response, and different from the first responder cells (Johnston et al, 2016). It is still unknown how stable these subpopulations are in time, and whether they are pre-determined by genetics, or are transient states.

Additionally, glucagon-secreting alpha cells, somatostatin-secreting delta cells, islet vasculature, and islet innervation release hormones, small molecules, electrical signals, and mechanical stress to control the function of the islet. *Our goal is to* understand the reasons behind the disproportionate control which β-cell subpopulations (first responder, hub cells) exert over islet function and to discover patterns of functional β-cell network plasticity in health and disease. We seek to discover to which degree paracrine, electrical, and other types of interaction aid in formation of the islet's functional network.

Successful candidate will have a PhD in Bioengineering, Biology, Biophysics, Mathematics, or related fields. The candidate should have experience in animal work (mouse or zebrafish) and tissue culture and be willing to perform surgical procedures. Knowledge of MATLAB, C and Signal analysis is desired, but not required.

This is a great opportunity to be a part of diverse, multidisciplinary laboratory at the University of California San Diego. We will provide training in the cutting-edge techniques such as: targeted 2-photon laser ablation, quantitative multi-photon and confocal microscopy, FRAP and FLIM, computational models of islet electrophysiology and optogenetic neuron stimulation *in vivo* in zebrafish, live pancreatic slice platform from diabetic and healthy human donors.

Please contact Dr. Vira Kravets at vkravets@ucsd.edu or @KravetsVira.