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Research Summary:
The main focus of the Sussel laboratory is to understand the complex transcriptional networks that regulate development, differentiation and function of the pancreas. The pancreas is comprised of two major functional compartments derived from a common progenitor pool: the exocrine pancreas produces enzymes for digestion and the endocrine pancreas is required to maintain energy homeostasis. The endocrine pancreas is further organized into clusters of cells called the islets of Langerhans, which are comprised of four well-defined hormone-producing cell types: alpha (α), beta (β) cells, delta (δ) and pancreatic polypeptide (PP) cells. Our lab also identified a fifth cell type in the developing islet, the epsilon (ε) cell that produces the hormone ghrelin. The β cells represent the largest population of islet cells and produce insulin, a hormone critical for life. While all the cells of the endocrine pancreas are thought to arise from a common precursor, the early process of lineage determination and cell-type differentiation within the pancreas is unclear. To date, only a handful of regulatory factors involved in pancreas development have been identified and many of the molecular pathways that specify islet cell differentiation are poorly understood. For this reason, we are using molecular biology and mouse genetics to identify the coding and non-coding genes that are involved in the development of the pancreas and in the regulation of islet cell differentiation and function. In particular, we are exploring the following areas of research:

Pancreas induction during embryonic development
Pancreatic islet cell fate specification
Beta cell maturation and function
The role of non-coding RNAs and epigenetic modifications in regulating islet development and functions

Selected Publications:


**More about Lori Sussel can be found:**

Website: [sussellab.org](http://sussellab.org)