Pancreas

The pancreas is an organ located near the stomach and duodenum that has both endocrine and exocrine functions. The exocrine cells are called acinar cells, and they release digestive enzymes through a duct into the duodenum of the small intestine. Ductal epithelial cells release bicarbonate to help neutralize the acidic chyme leaving the stomach. The endocrine cells are called the islets of Langerhans. Within them, beta cells release insulin, which helps absorb glucose from the bloodstream and reduce blood sugar levels. Alpha cells release glucagon, which promotes the conversion of glycogen to glucose and releases into the bloodstream to increase blood sugar levels. Finally, delta cells release somatostatin, which inhibits both alpha and beta cells and plays a large role in enzyme regulation pathways.



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Characteristics

Acinar Cells Release Digestive Enzymes
Acai-berry releasing Digestive Fish-enzymes
The pancreatic acini are the exocrine part of the pancreas. They produce and secrete digestive enzymes into the duodenum of the small intestine.

Ductal Epithelial Cells Release Bicarbonate
Duck releasing Bi-car-bombs
The ductal epithelial cells in the exocrine pancreas release bicarbonate ions into the duodenum to neutralize the acidic chyme entering the duodenum from the stomach.

Islets of Langerhans
Island of Long-horn-palms
The endocrine section of the pancreas is made up of islets of Langerhans. The section constitutes only 1-2% of the mass of the pancreas, and is responsible for regulating blood sugar levels.

Beta Cells Release Insulin
Beta-fish with Insect-syringe
Insulin is synthesized in the beta cells of the islets of Langerhans. Beta cells are about 65-80% of cells in the endocrine area of the pancreas. Insulin activates beta cells and inhibits alpha cells. It also causes liver cells, skeletal muscles, and fat tissue to absorb glucose and decrease blood sugar levels.

Alpha Cells Release Glucagon
Afro Glue-King-Kong
Glucagon is secreted by alpha cells of the islets of Langerhans, which are located in a specific endocrine portion of the pancreas. Glucagon activates alpha cells and inhibits beta cells. Glucagon stimulates the liver to convert glycogen to glucose and release it into the blood.

Delta Cells Release Somatostatin
Delta-triangle Releases Sumo-Santa
Somatostatin is secreted by the delta cells of the pancreas, but is also found in the stomach and intestine.

Somatostatin Inhibits Alpha and Beta Cells
Sumo-Santa landing on Afro and Beta-fish
Somatostatin is an inhibitory hormone, and prevents the release of insulin and glucagon. It also inhibits growth hormone (GH) and thyroid-stimulating hormone (TSH).

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