

Function of pancreas essay sample



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The pancreas is a dual-function gland, having features of both endocrine and exocrine glands. The part of the pancreas with endocrine function is made up of approximately a million[3] cell clusters called islets of Langerhans. Four main cell types exist in the islets. They are relatively difficult to distinguish using standard staining techniques, but they can be classified by their secretion: α cells secrete glucagon (increase glucose in blood), β cells secrete insulin (decrease glucose in blood), delta cells secrete somatostatin (regulates/stops α and β cells), and PP cells or gamma cells, secrete pancreatic polypeptide.[4] The islets are a compact collection of endocrine cells arranged in clusters and cords and are crisscrossed by a dense network of capillaries. The capillaries of the islets are lined by layers of endocrine cells in direct contact with vessels, and most endocrine cells are in direct contact with blood vessels, either by cytoplasmic processes or by direct apposition.

According to the volume *The Body*, by Alan E. Nourse,[5] the islets are “busily manufacturing their hormone and generally disregarding the pancreatic cells all around them, as though they were located in some completely different part of the body.” The islet of Langerhans plays an imperative role in glucose metabolism and regulation of blood glucose concentration. The pancreas as an exocrine gland helps out the digestive system. It secretes pancreatic fluid that contains digestive enzymes that pass to the small intestine. These enzymes help to further break down the carbohydrates, proteins, and lipids (fats) in the chyme. In humans, the secretory activity of the pancreas is regulated directly via the effect of hormones in the blood on the islets of Langerhans and indirectly through the

effect of the autonomic nervous system on the blood flow.[6] Sympathetic (adrenergic)

α 2: decreases secretion from beta cells, increases secretion from alpha cells,

β 2: increases secretion from beta cells Parasympathetic (muscarinic) M3:

increases stimulation of alpha cells and beta cells[7]