

## An Overview on Morphology and Histology of Pancreas

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### DESCRIPTION

The pancreas is a vital organ located deep within the abdominal cavity, behind the stomach. It plays a crucial role in the digestive system as well as the endocrine system, producing enzymes and hormones essential for proper bodily function. Understanding the anatomy of the pancreas is key to appreciating its complex structure and diverse functions. In this article, we will explore the anatomy of the pancreas in detail, highlighting its various components and their significance.

#### Overall structure

The pancreas can be divided into three main regions: the head, the body, and the tail. It has a long, narrow shape, resembling a flattened fish. On average, the pancreas measures around 15 centimeters in length and weighs approximately 70 to 100 grams. It is situated in close proximity to neighboring organs, such as the liver, spleen, and intestines.

#### Exocrine pancreas

The exocrine pancreas constitutes the majority of the pancreatic tissue and is responsible for producing and secreting digestive enzymes. These enzymes aid in the breakdown of carbohydrates, proteins, and fats in the small intestine, facilitating their absorption. The exocrine pancreas is composed of clusters of cells called acini, which are responsible for enzyme production.

#### Pancreatic duct system

The exocrine pancreas contains a network of ducts that transport digestive enzymes from the acini to the small intestine. The primary duct, known as the main pancreatic duct or the duct of Wirsung, extends through the entire length of the pancreas, merging with the common bile duct just before emptying into the duodenum (the first part of the small intestine). The common bile duct carries bile from the liver and gallbladder, and the shared opening of the bile duct and pancreatic duct into the duodenum is called the ampulla of Vater.

#### Accessory pancreatic duct

In addition to the main pancreatic duct, the pancreas may have an accessory duct, known as the duct of Santorini. This smaller duct, present in about 30% of individuals, connects with the duodenum independently of the main pancreatic duct. The presence of the accessory duct adds variability to the anatomy and function of the pancreas.

#### Islets of langerhans

Scattered throughout the exocrine tissue are small, rounded clusters of endocrine cells called the islets of langerhans. These islets produce hormones that are essential for regulating blood sugar levels. The primary hormone secreted by the islets is insulin, which helps lower blood sugar levels by facilitating the uptake of glucose by cells. The other main hormone produced by the islets is glucagon, which raises blood sugar levels by stimulating the breakdown of stored glycogen in the liver.

#### Blood supply

The pancreas receives its blood supply from several arteries and veins. The main arterial supply comes from the superior and inferior pancreaticoduodenal arteries, branches of the celiac trunk and the superior mesenteric artery, respectively. These arteries provide oxygenated blood to the pancreas to support its metabolic needs. The venous drainage occurs through the pancreatic veins, which join the superior mesenteric vein or the splenic vein and eventually drain into the portal vein.

#### Nerve supply

The pancreas is innervated by both the sympathetic and parasympathetic divisions of the autonomic nervous system. The sympathetic nerves originate from the thoracic and lumbar segments of the spinal cord, while the parasympathetic fibers come from the vagus nerve. These nerve fibers regulate pancreatic blood flow, enzyme secretion, and hormone release, ensuring proper coordination of pancreatic function with the rest of the digestive system with chronic pancreatitis to work closely with their healthcare team to manage their symptoms and prevent further damage to the pancreas.

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