

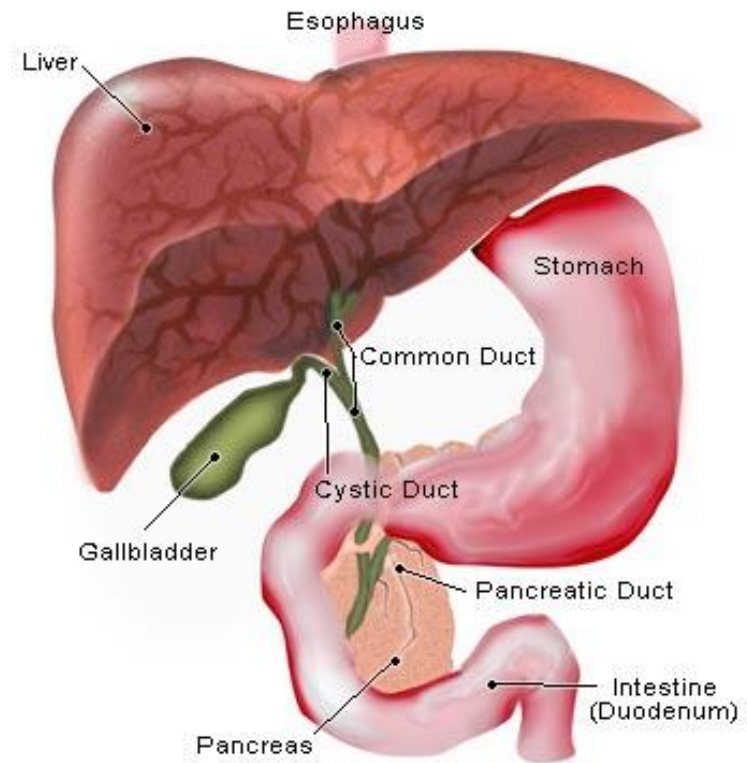


The Endocrine System

The Pancreas

The Pancreas

- The Pancreas lies between the stomach and the 1st part of the small intestine
- It is primarily a digestive organ but it has an important endocrine function



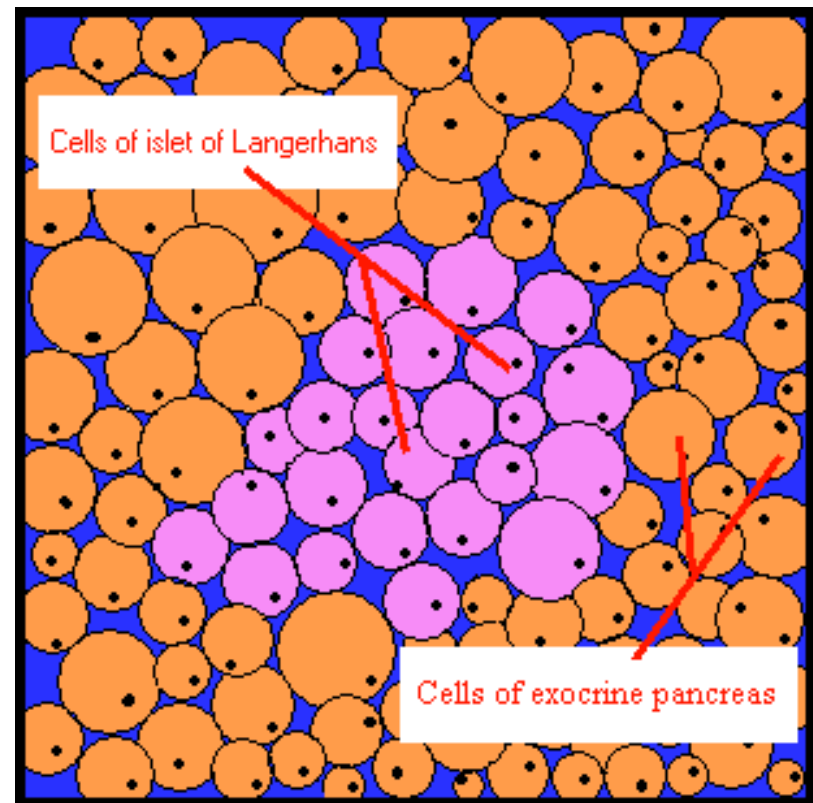


Two Parts of the Pancreas

- Exocrine Pancreas: 99% of the pancreas; secretes digestive enzymes into the small intestine through ducts
- Endocrine Pancreas: small clusters or islands of cells in the pancreas called the **islets of Langerhans**
- They produce hormones directly into the bloodstream

4 Kinds of Islet Cells

1. Alpha cells: produce the hormone glucagon
2. Beta cells: produce the hormone insulin
3. Delta cells: growth hormone-inhibiting hormone
4. F cells: pancreatic polypeptide hormone

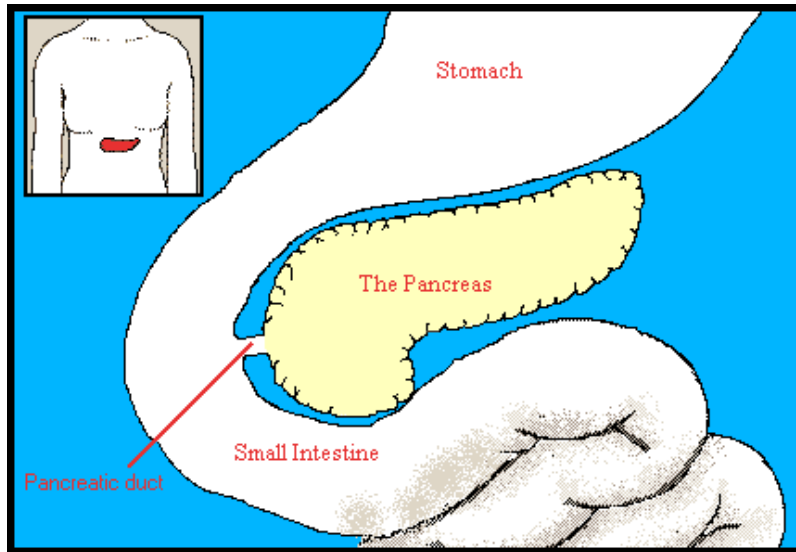
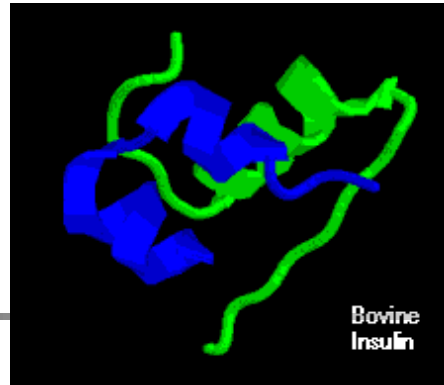




Insulin & Glucagon

- We'll focus on these two hormones
- They are responsible for maintaining blood-sugar (glucose) levels
- Failure of this system will cause death

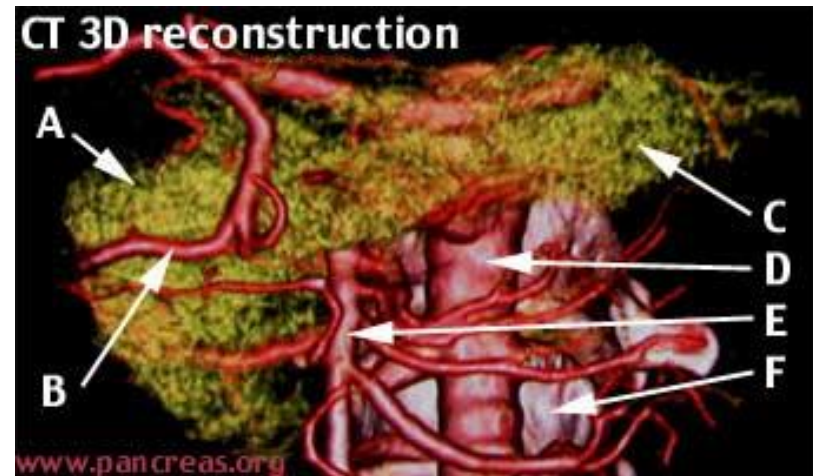
Insulin



- When blood sugar rises the pancreas releases insulin
- This stimulates the transport of glucose across cell membranes
- Glucose is pulled into the body's cells

Glucagon

- When blood sugar drops, glucagon is released
- This stimulates the liver to release glucose into the blood stream





Diabetes Mellitus

- In a normal person, glucose almost never leaves the body – any glucose that enters the urine gets reabsorbed back into the body
- A person with diabetes mellitus has glucose “spilling” into the urine
- Two types; insulin-dependent or type 1 and non-insulin-dependent or type 2