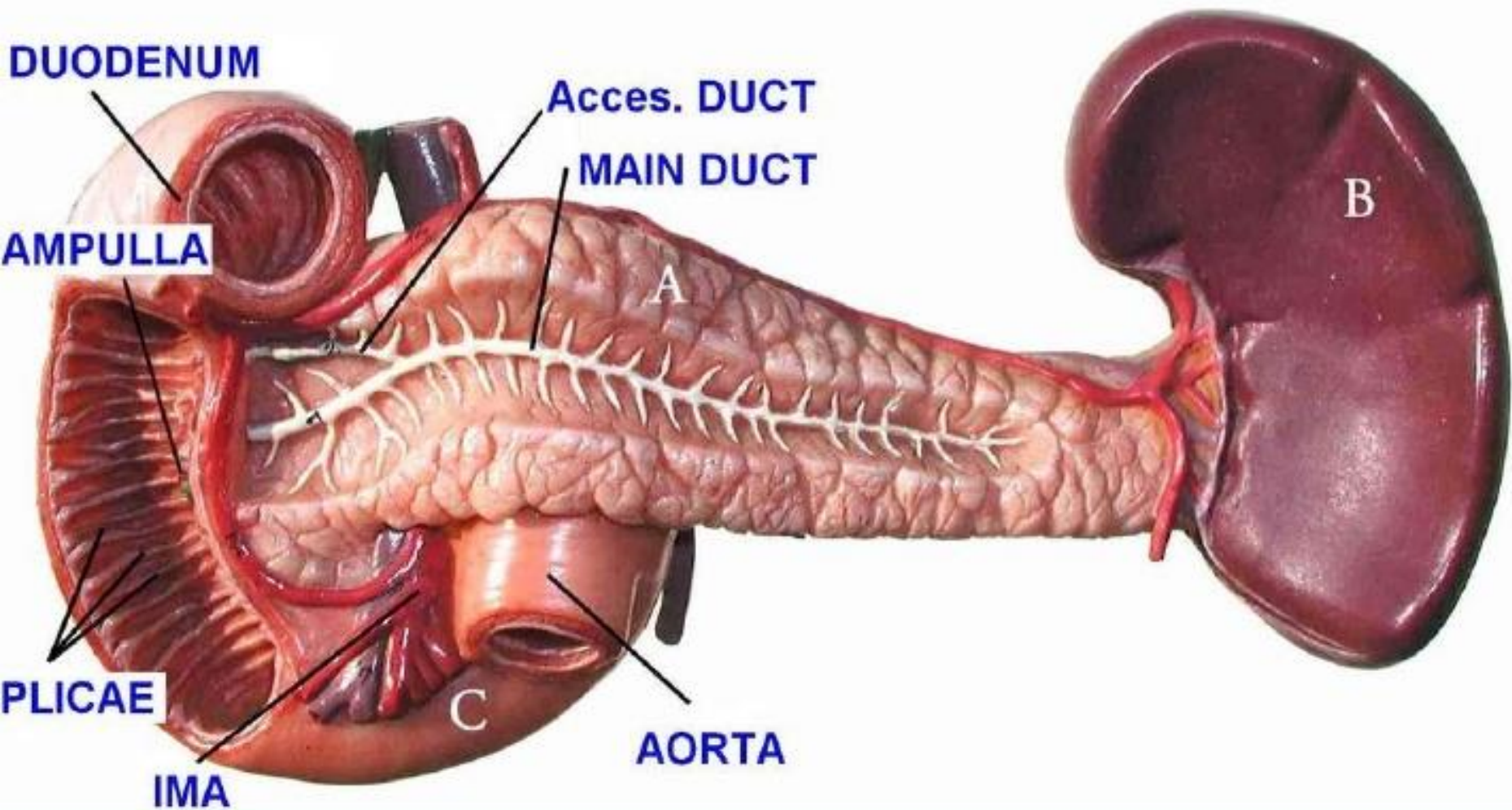


Pancreas (histology)

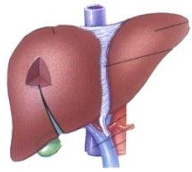
Dr .zahid sarfaraz khan

Assist prof Kgmc





PANCREAS



ACCESSORY DIGESTIVE GLANDS

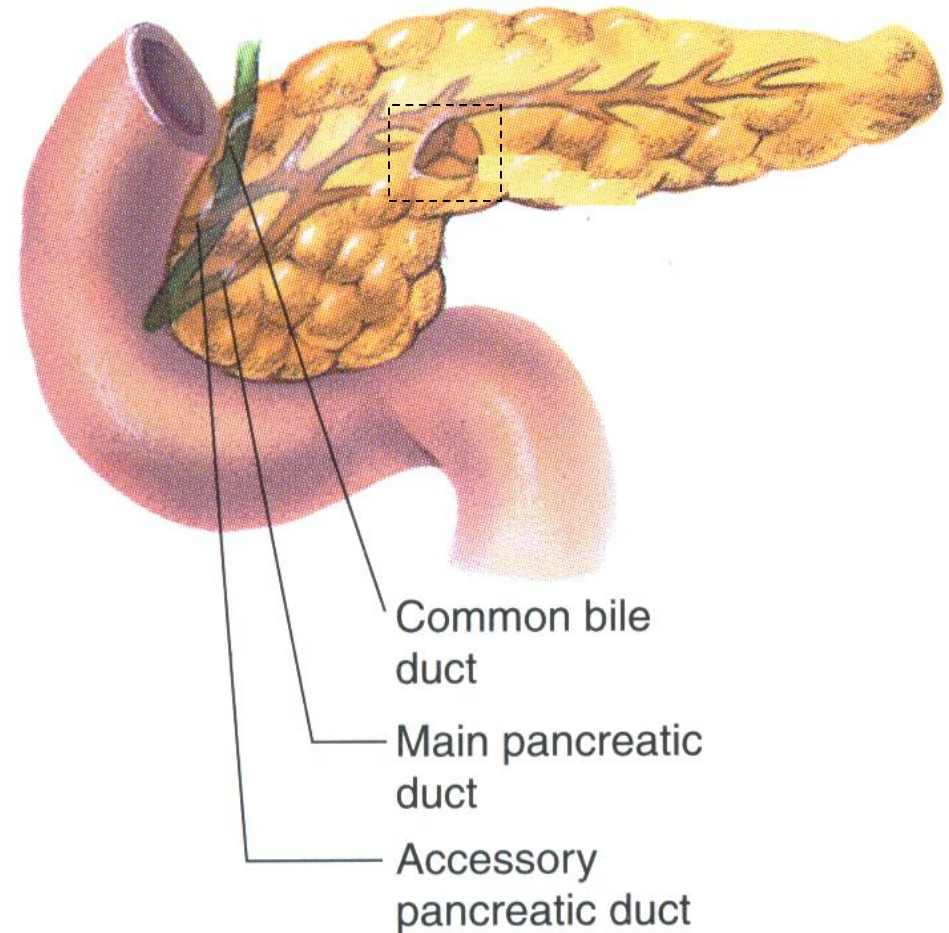
- PANCREAS

1) EXOCRINE PORTION

- synthesizes and secretes enzymes via a system of ducts that are essential for digestion in the intestine

2) ENDOCRINE PORTION

- synthesizes and secretes hormones into the bloodstream to regulate glucose, lipid, and protein metabolism



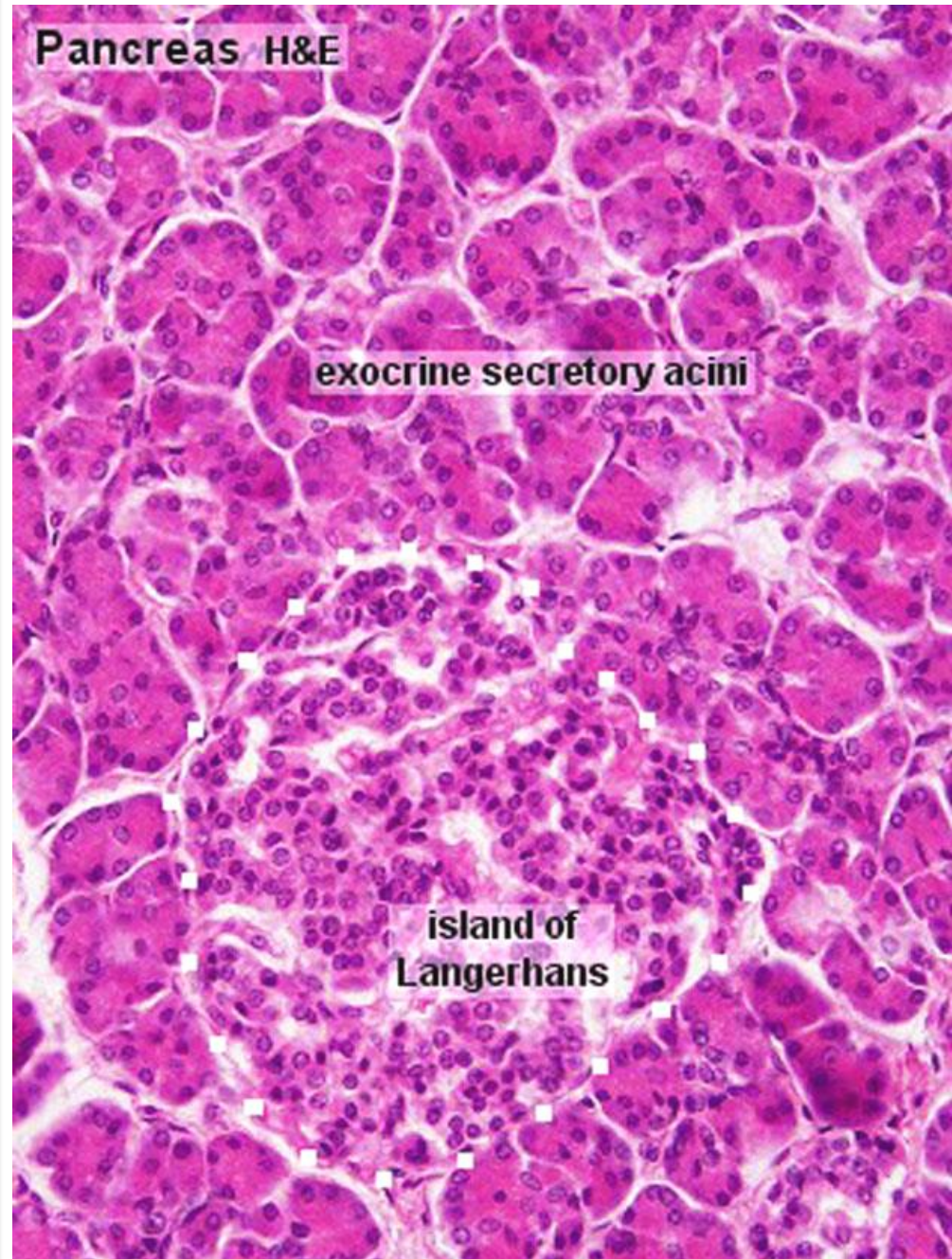
Under a microscope, stained sections of the pancreas reveal two different types of parenchymal tissue.

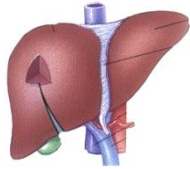
➤ Lightly-staining clusters of cells are called islets of Langerhans.

These produce hormones that underlie the endocrine functions of the pancreas.

➤ Darker-staining cells form acini connected to ducts.

Acinar cells belong to the exocrine pancreas and secrete digestive enzymes into the gut via a system of ducts.





ACCESSORY DIGESTIVE GLANDS

- PANCREAS

1) EXOCRINE PORTION

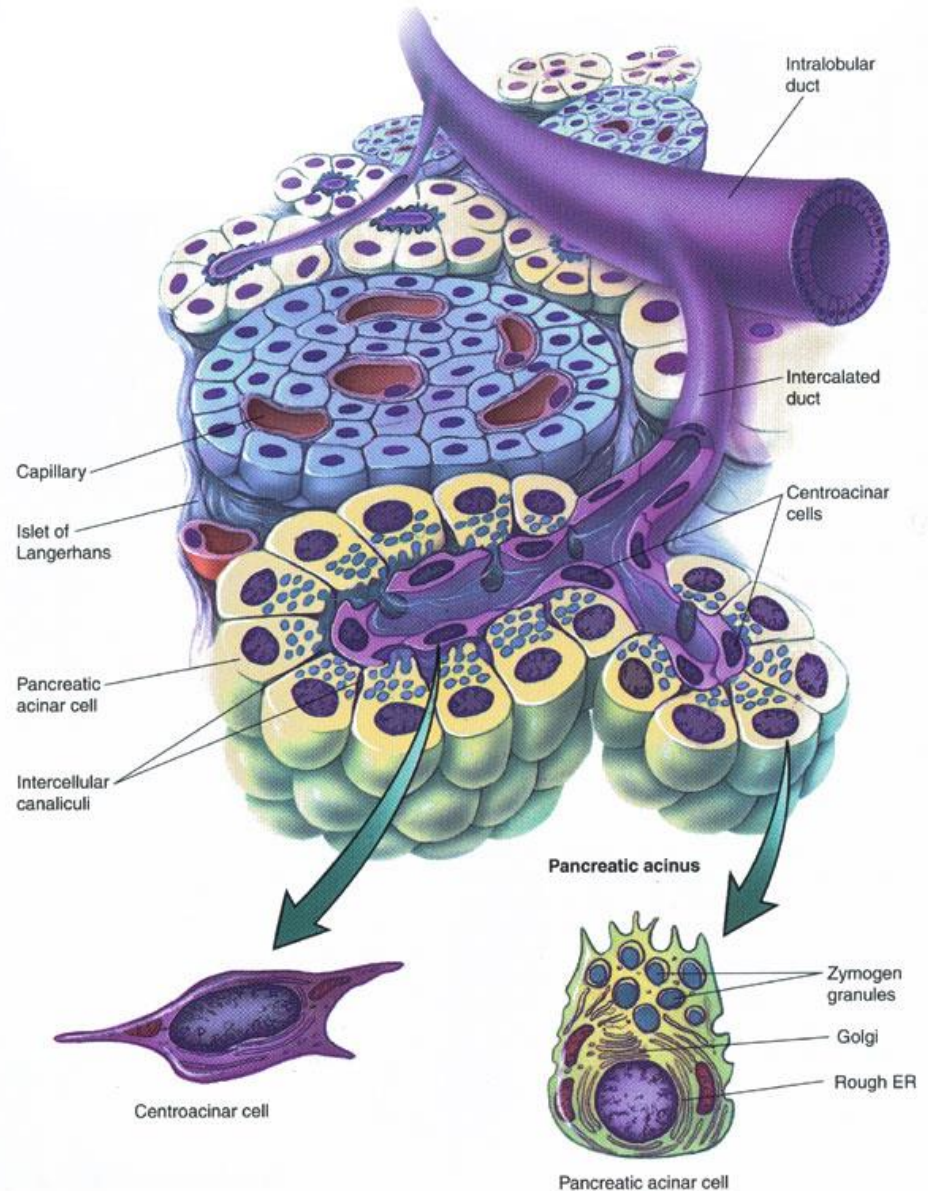
- EACH ACINI CONSIST OF 5-8 PYRAMIDAL CELLS THAT SIT ON A BASAL LAMINA AND SURROUND A CENTRAL LUMEN

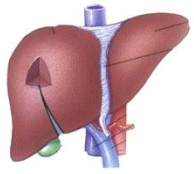
ACINAR CELLS

- BASALLY LOCATED NUCLEI & RER
- SUPRANUCLEAR GOLGI ZONE
- ZYMOGENIC GRANULES CONTAINING DIGESTIVE ENZYMES IN APICAL REGION

CENTROACINAR CELLS

- LINE LUMEN OF ACINUS
- SECRETE LARGE AMOUNTS OF BICARBONATE





ACCESSORY DIGESTIVE GLANDS

- PANCREAS

1) EXOCRINE PORTION

INTERCALATED DUCTS



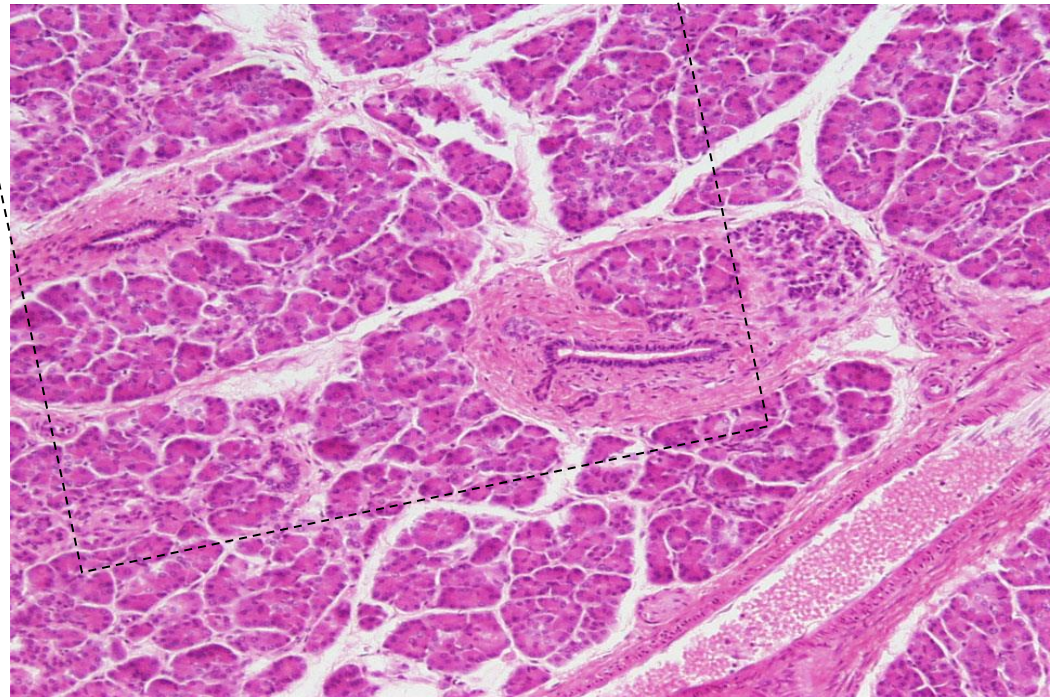
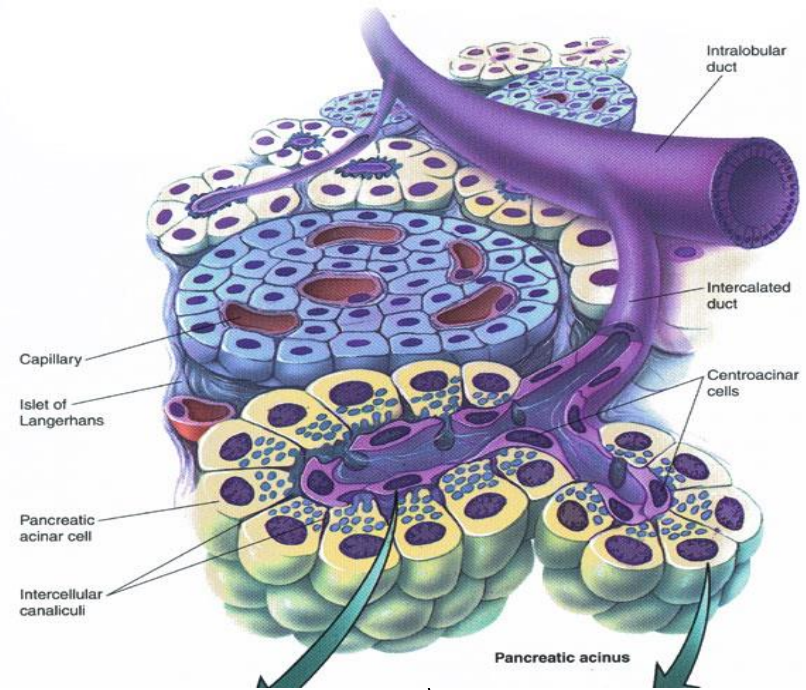
INTRALOBULAR DUCTS

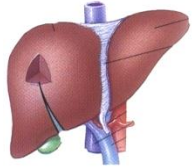


INTERLOBULAR DUCTS



MAIN DUCTS





ACCESSORY DIGESTIVE GLANDS

- PANCREAS

1) EXOCRINE PORTION

INTERCALATED DUCTS

- lined with *simple squamous epithelium*

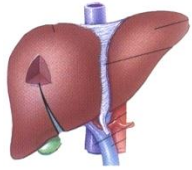
INTRALOBULAR DUCTS

- lined with *simple cuboidal epithelium*
- size on the order of magnitude of acini

INTERLOBULAR DUCTS

- lined with *simple columnar epithelium*
- found in fibroconnective tissue septa





ACCESSORY DIGESTIVE GLANDS

- PANCREAS

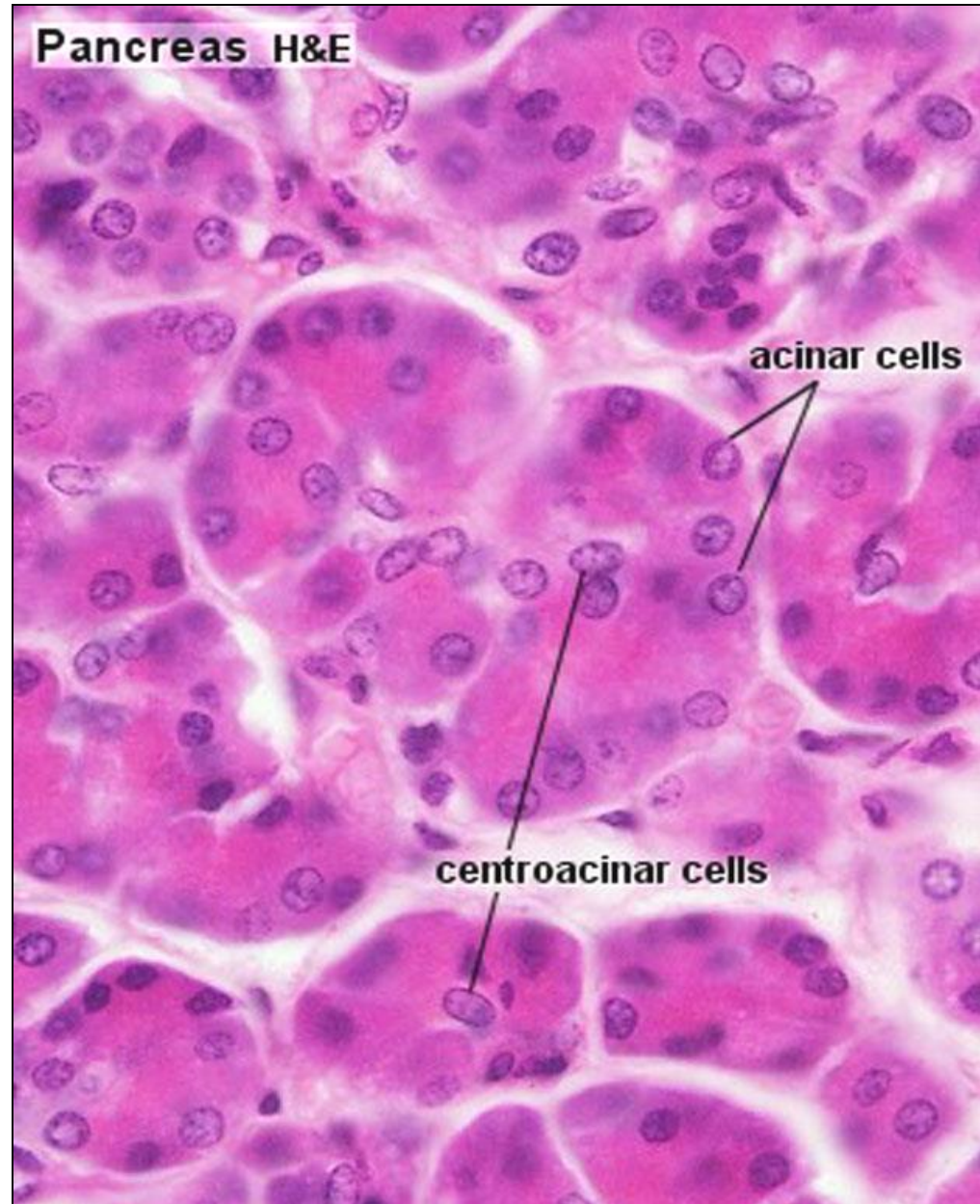
1) EXOCRINE PORTION

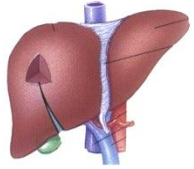
ACINAR CELLS

- BASALLY LOCATED NUCLEI & RER
- SUPRANUCLEAR GOLGI ZONE
- ZYMOGENIC GRANULES CONTAINING DIGESTIVE ENZYMES IN APICAL REGION
trypsinogen, amylase, lipase

CENTROACINAR CELLS

- LINE LUMEN OF ACINUS
- SECRETE LARGE AMOUNTS OF BICARBONATE



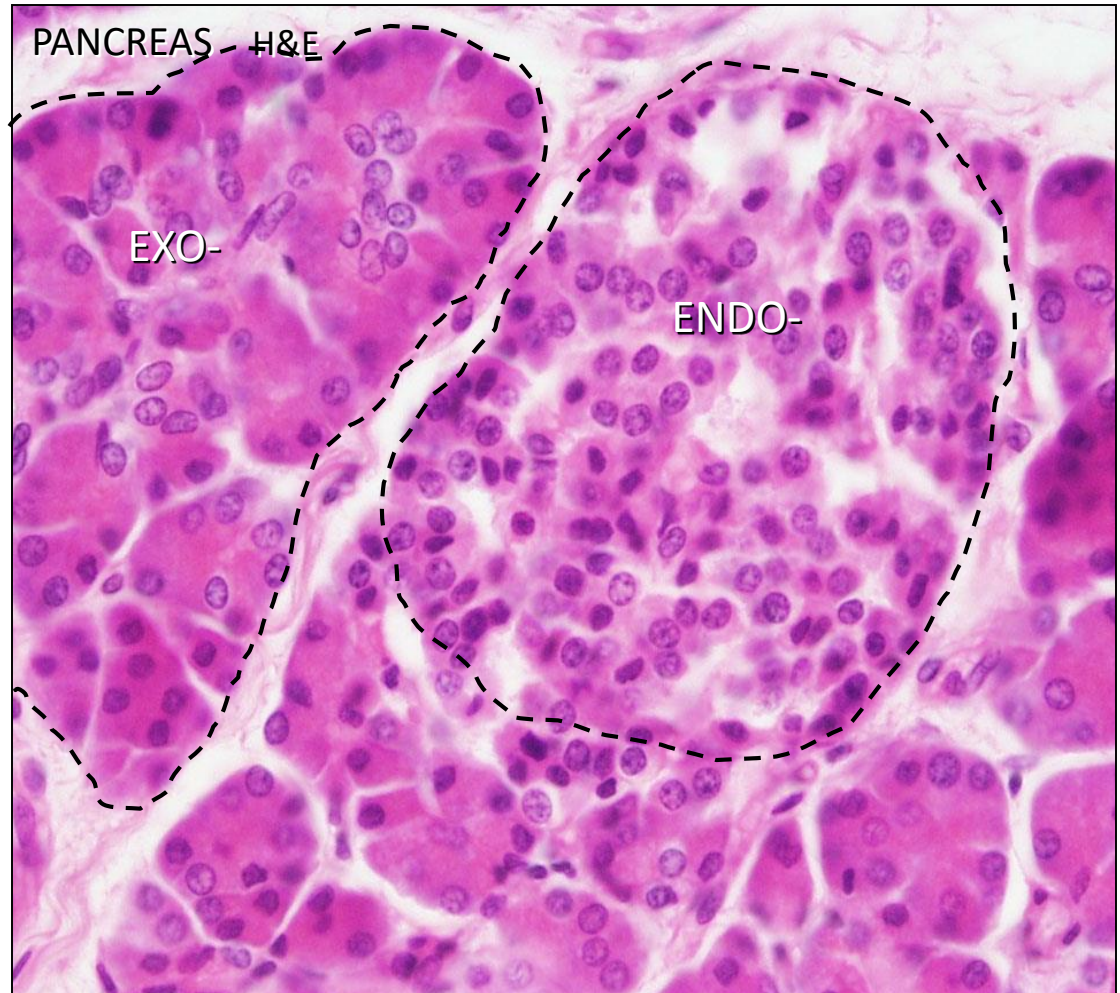


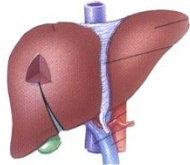
ACCESSORY DIGESTIVE GLANDS

- PANCREAS

1) EXOCRINE PORTION

2) ENDOCRINE PORTION





ACCESSORY DIGESTIVE GLANDS

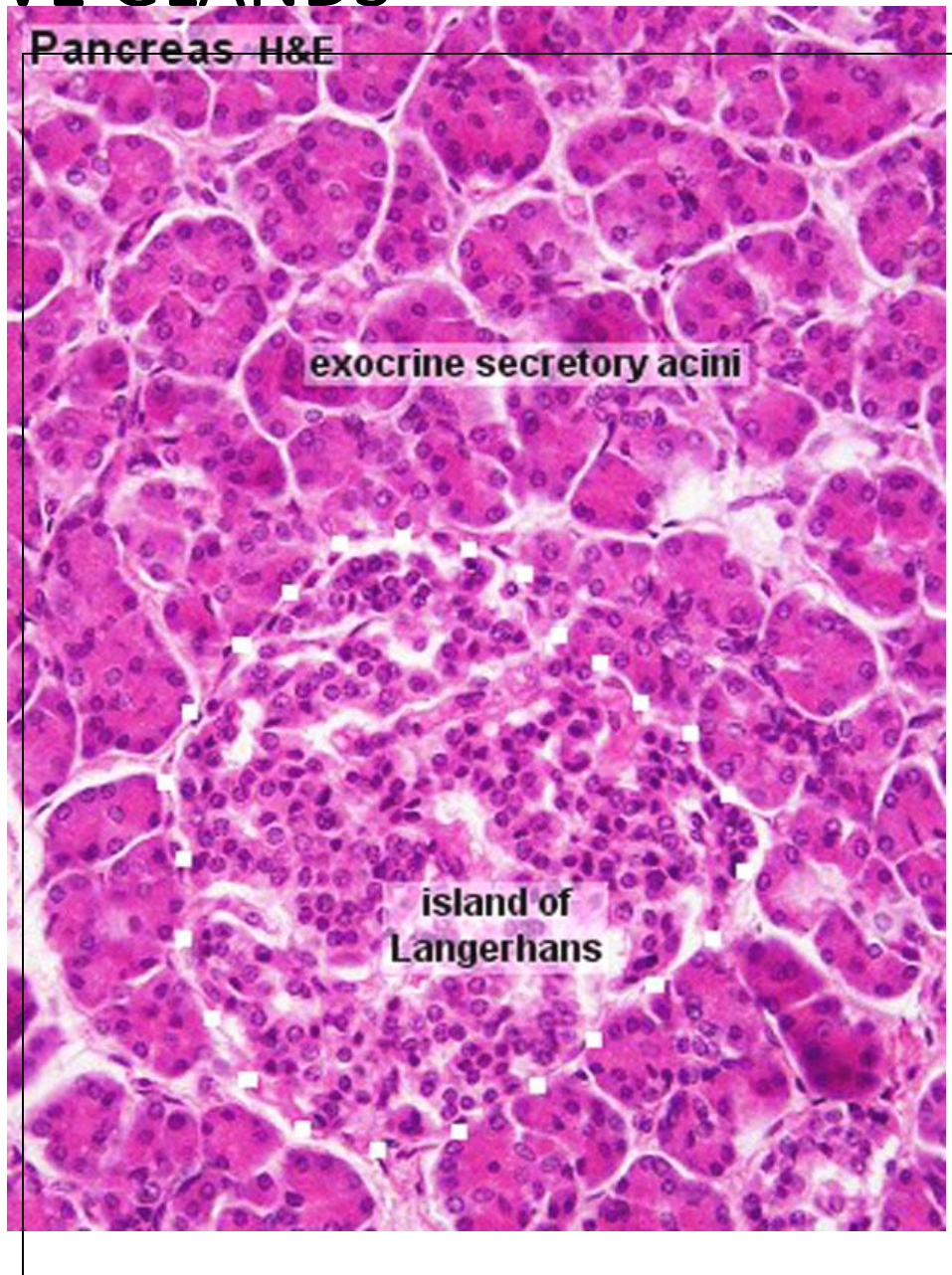
- PANCREAS

2) ENDOCRINE PORTION

- PRINCIPLE FUNCTION IS TO SECRETE HORMONES THAT REGULATE BLOOD GLUCOSE LEVELS

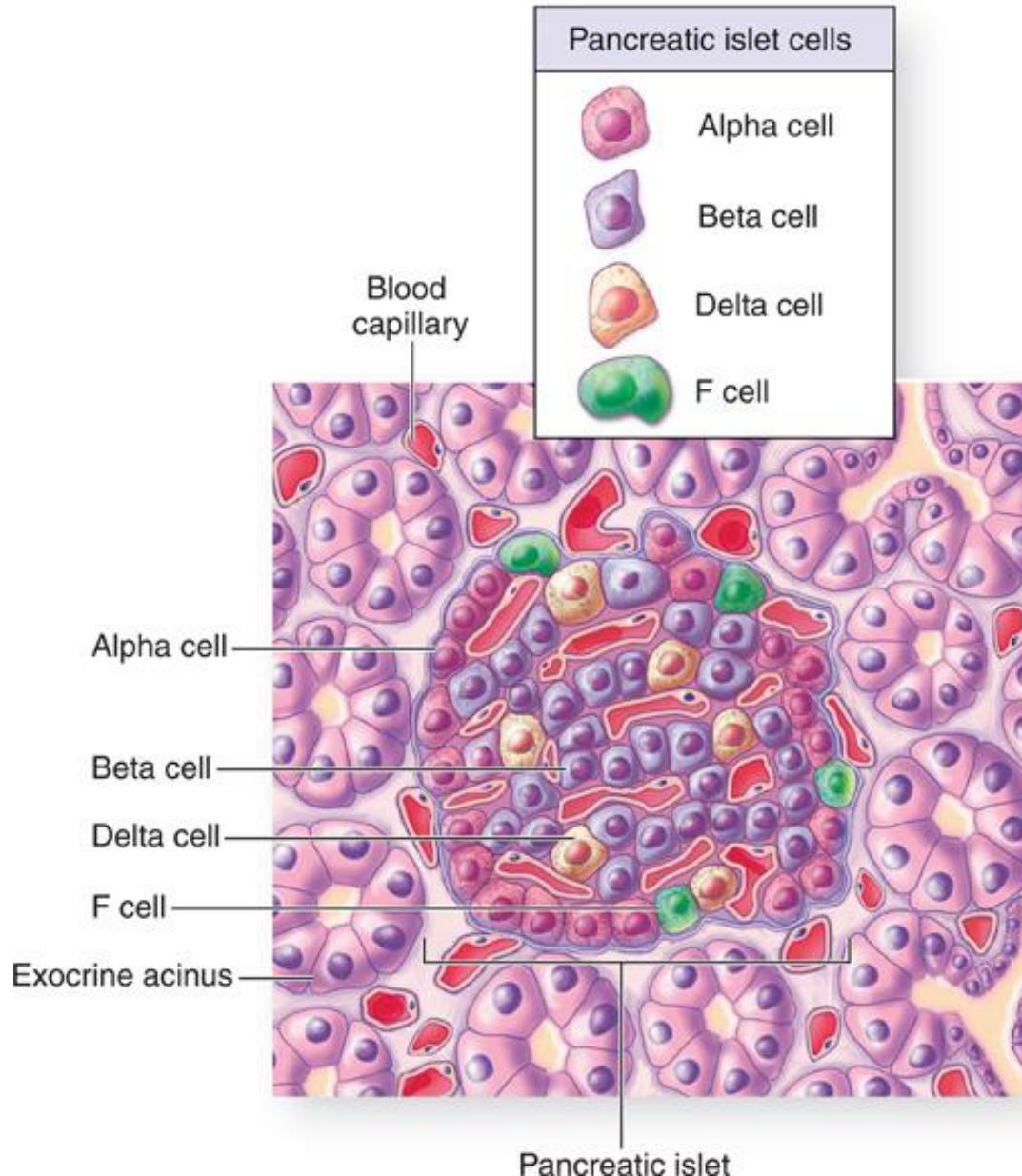
ISLETS OF LANGERHANS

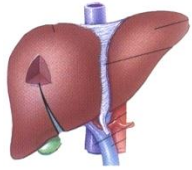
- MASSES OF RICHLY VASCULARIZED ENDOCRINE CELLS SCATTERED THROUGHOUT THE PANCREAS
- SEPARATED FROM SURROUNDING ACINAR CELLS BY THIN CAPSULE OF RETICULAR FIBERS
- 3 CELL TYPES IN ISLET DISTINGUISHED ONLY VIA SPECIAL STAINS



Pancreas Histology

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ACCESSORY DIGESTIVE GLANDS

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• PANCREAS

2) ENDOCRINE PORTION

CELL TYPES:

1) ALPHA CELLS (20%)

- SECRETE GLUCAGON;
BLOOD GLUCOSE LEVELS

RAISES

2) BETA CELLS (75%)

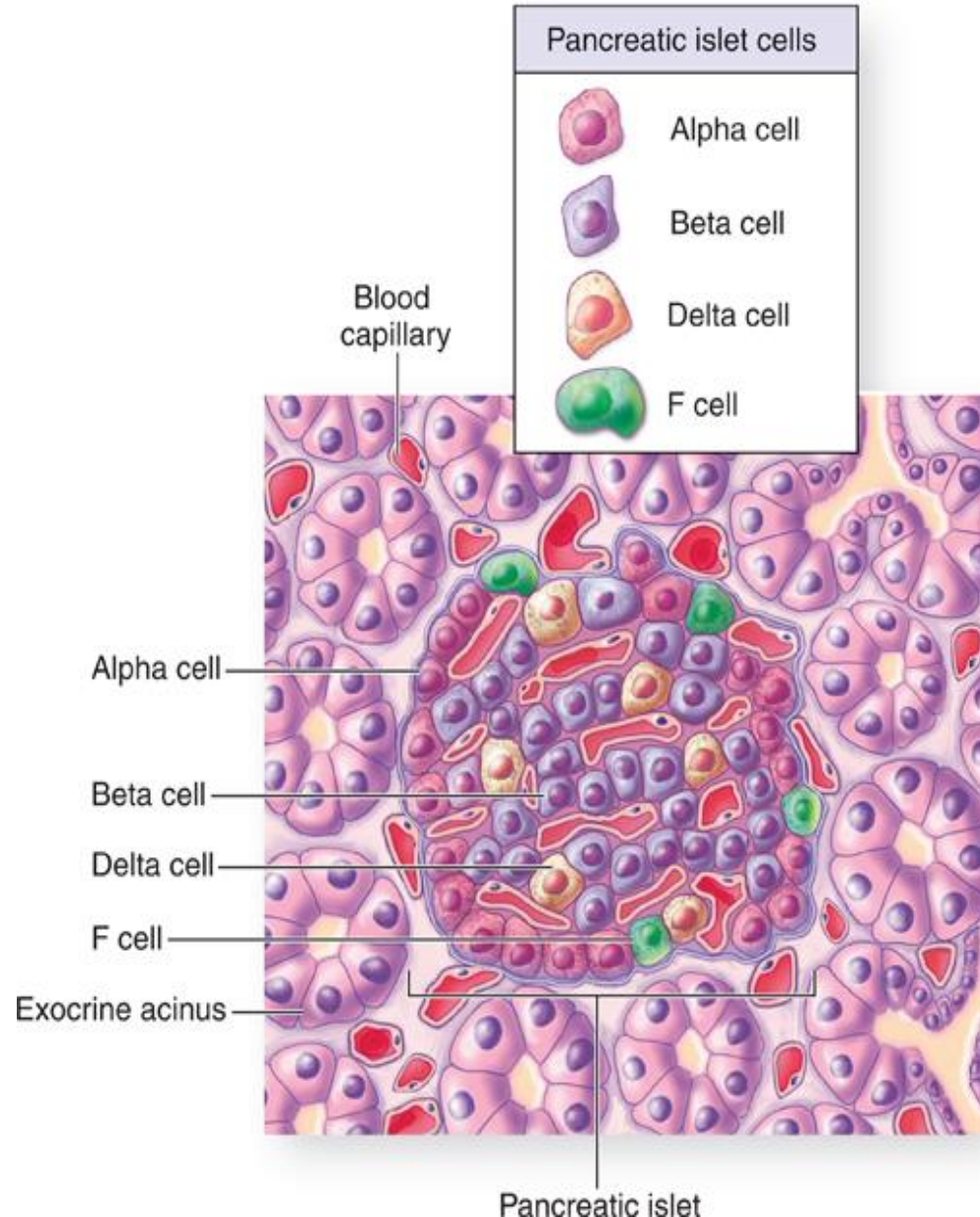
- SECRETE INSULIN;
BLOOD GLUCOSE LEVELS

LOWERS

3) DELTA CELLS (5%)

- SECRETE SOMATOSTATIN;
GLUCAGON AND INSULIN SECRETION

INHIBITS



Type I Diabetes (10% of cases)

- Develops suddenly, usually before age 15
- Caused by inadequate production of insulin because T cell-mediated autoimmune response destroys beta cells
- Controlled by insulin injections

Type II diabetes (90% of cases)

- Usually occurs after age 40 and in obese individuals
- Insulin levels are normal or elevated but there is either a decrease in number of insulin receptors or the cells cannot take it up.
- Controlled by dietary changes and regular exercise or combine with medicine.

MEDICAL APPLICATION

In acute pancreatitis

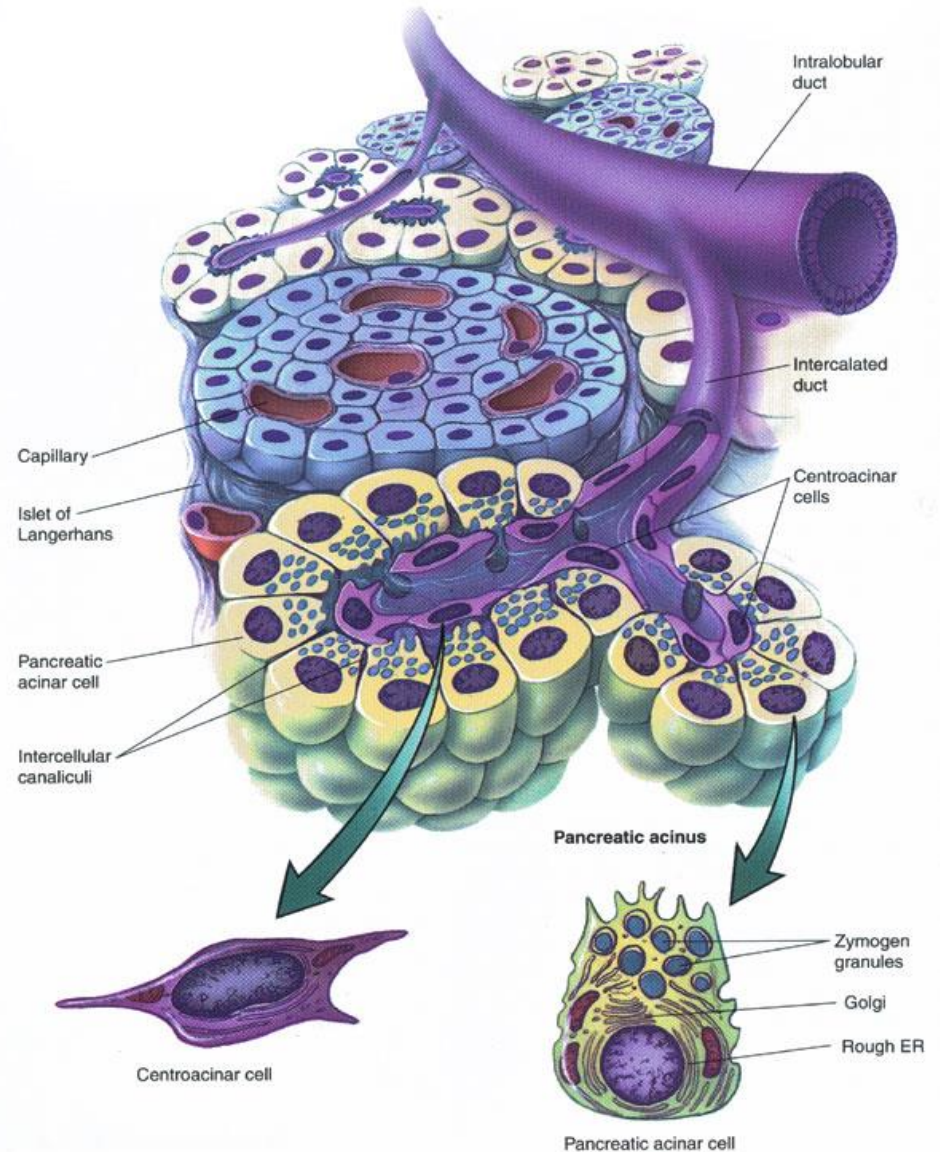
❑ The proenzymes may be activated and digest pancreatic tissues, leading to very serious complications.

❑ Possible causes include

Infection, gallstones, alcoholism, drugs, and trauma.

Chronic pancreatitis

❑ Can produce progressive fibrosis and loss of pancreatic function.



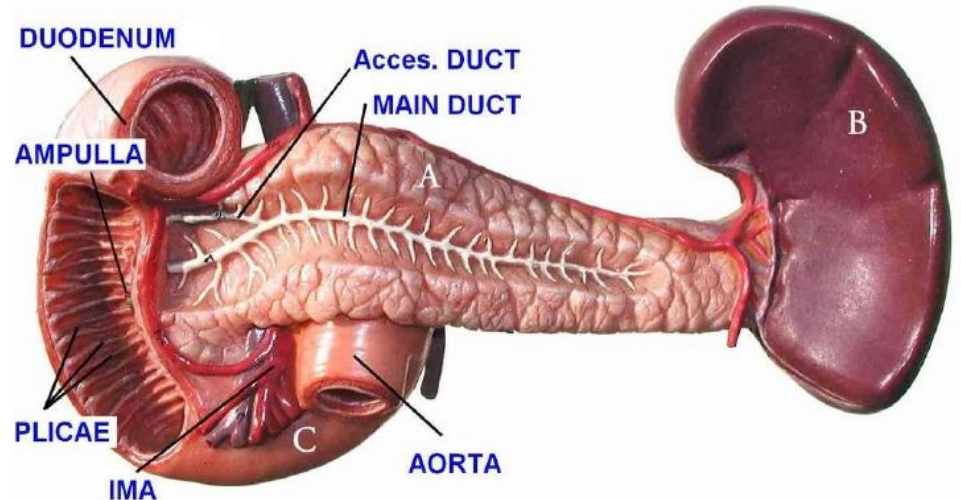
MEDICAL APPLICATION

Pancreatic cancer:

□ which is usually a carcinoma of duct cells, can arise anywhere in the gland but occurs most often in the head of the organ near the duodenum.

□ The tumor is usually asymptomatic until growth and metastasis are well advanced, leading to the low rate of early Detection and subsequent high rate of mortality.

□ Metastasis may be facilitated by the relatively sparse connective tissue around the ducts and vasculature of the pancreas.

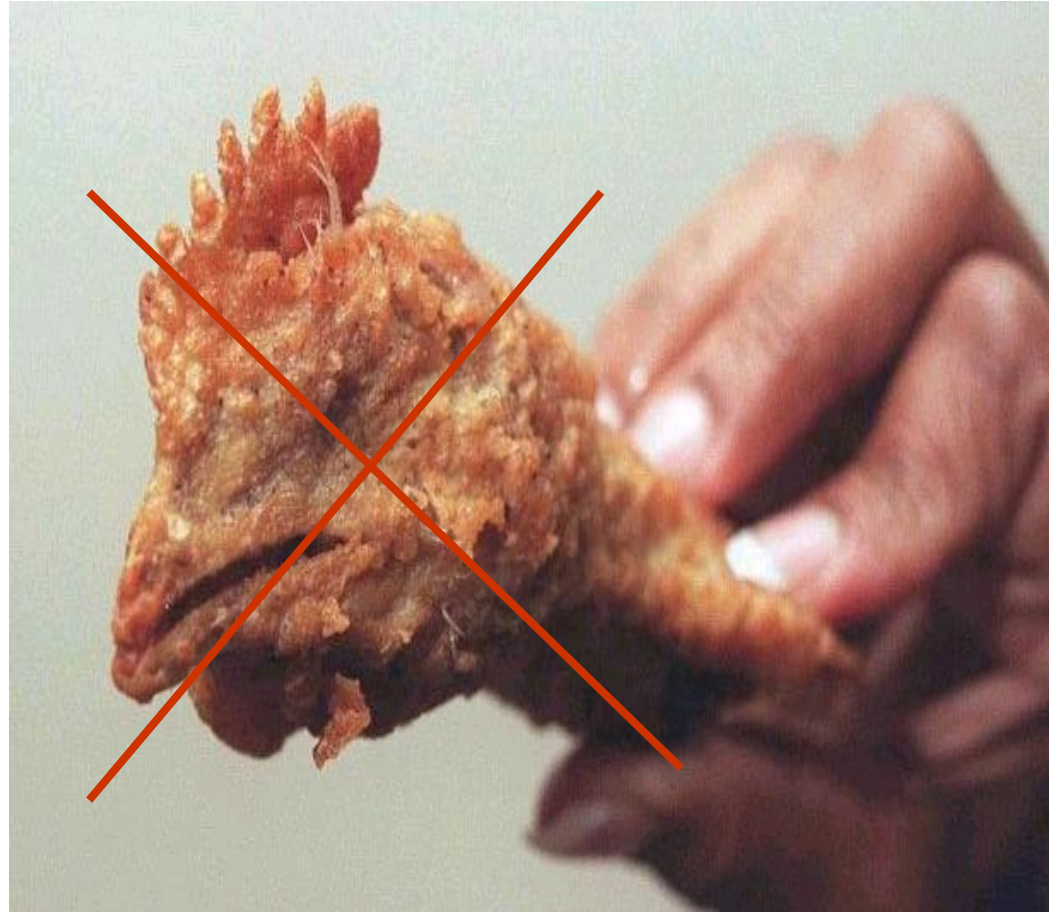


PANCREAS

www.freelivedoctor.com

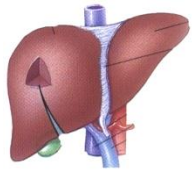
Prevention of obesity

قال صلى الله عليه وسلم (ما ملأ آدمي وعاء شراً من بطنه، بحسب ابن آدم لقيمات يقمن صلبه، فان كان لا بد فاعلا فتلت لطعامه وثلث لشرابه وثلث لنفسه). رواه أحمد والترمذي





thank you!

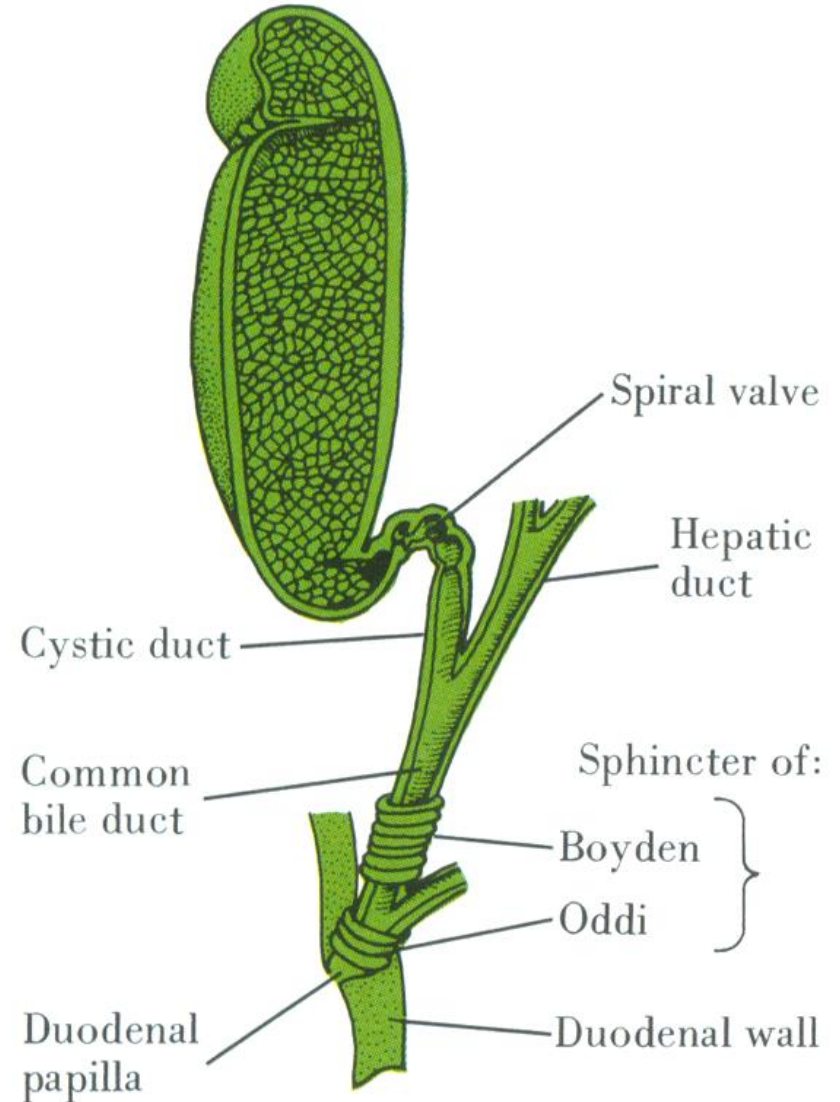
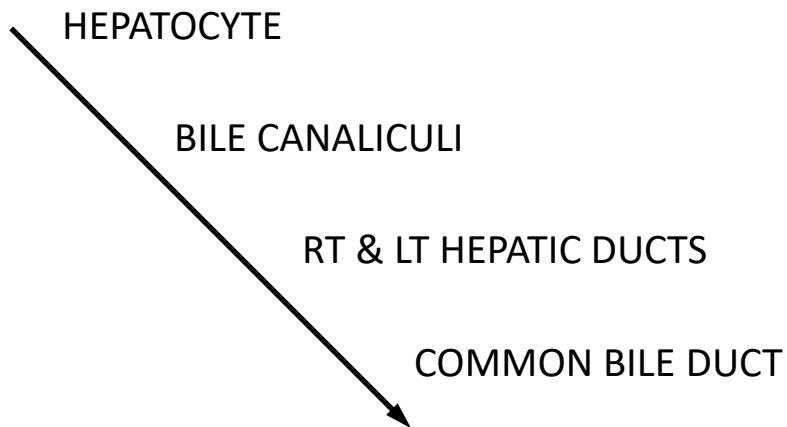


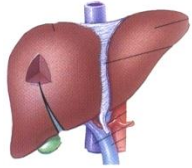
ACCESSORY DIGESTIVE GLANDS

GALLBLADDER

- CONCENTRATION AND STORAGE OF BILE

ROUTE OF BILE





ACCESSORY DIGESTIVE GLANDS

- GALLBLADDER

THREE LAYERS:

1) MUCOSA

- lined with *tall columnar epithelium* and underlying basal lamina & lamina propria

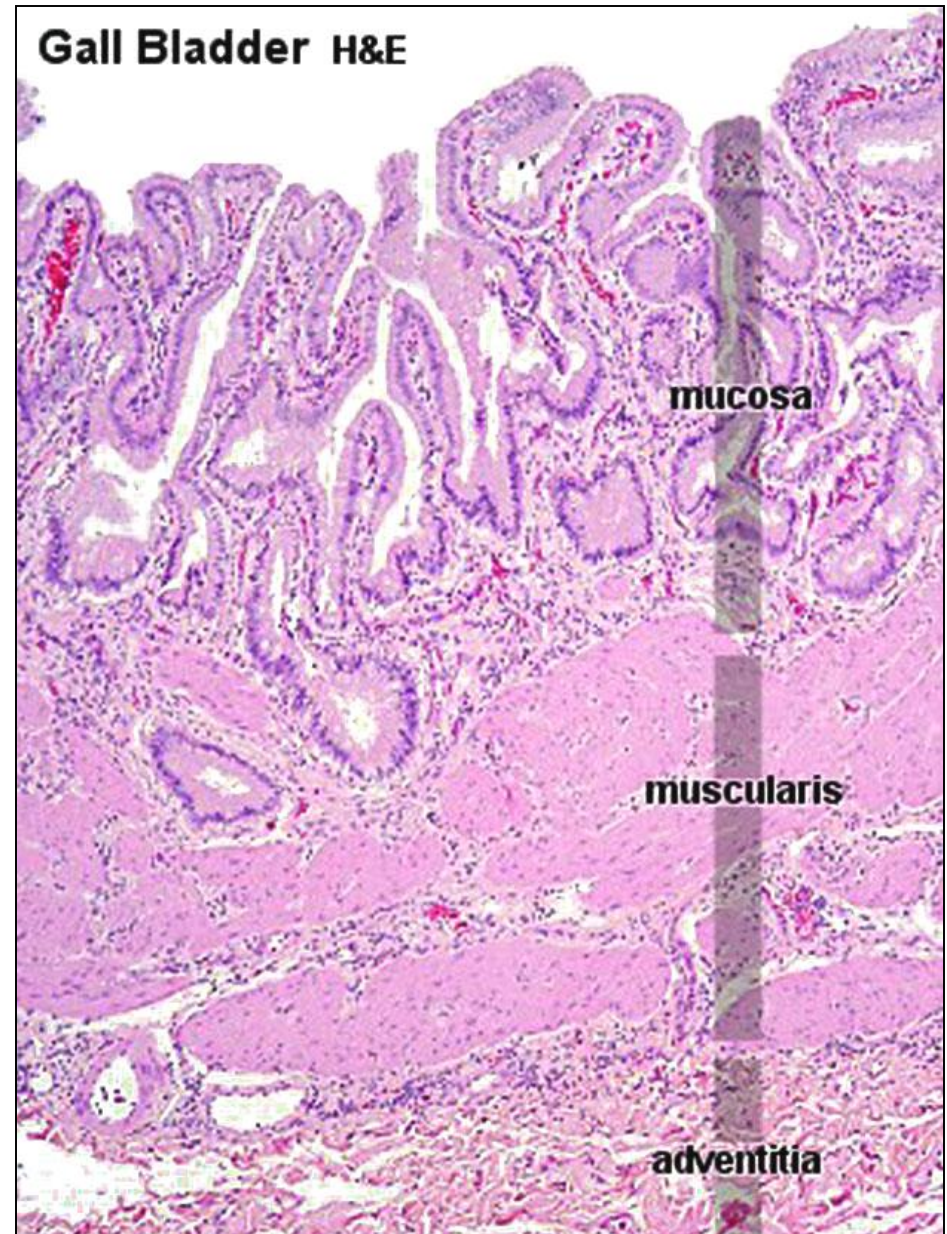
mucosa highly folded and irregular

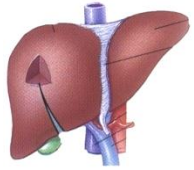
- NO MUSCULARIS MUCOSA OR SUBMUCOSA -

2) MUSCULARIS EXTERNA

- layers of smooth muscle with irregular orientation

3) ADVENTITIA or SEROSA





ACCESSORY DIGESTIVE GLANDS

- GALLBLADDER

EPITHELIUM:

- *tall columnar epithelium* and underlying basal lamina & lamina propria
- *basally located nuclei*
- *fine microvilli border*

