



**438
HISTOLOGY TEAM
KING SAUD UNIVERSITY**



Pancreas

Exocrine & Endocrine

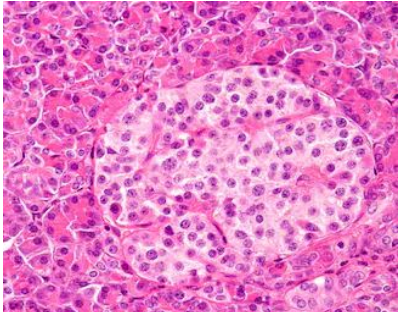
Objectives:

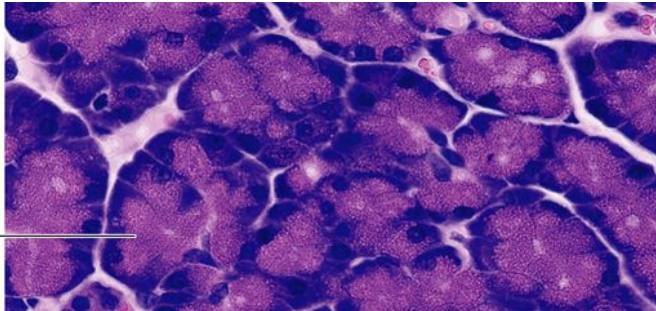
- Describe the endocrine part of the pancreas within the exocrine part.
- Describe the histological features of the cells of islet of Langerhans.
- Describe the function of different cells of islets of Langerhans.

- ▣ **Editing file**
- ▣ **Important**
- ▣ **Doctor notes / Extra**

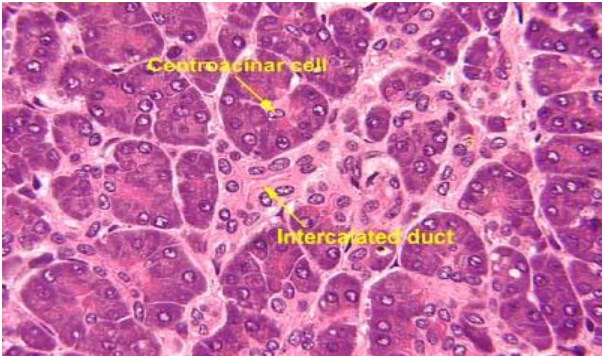
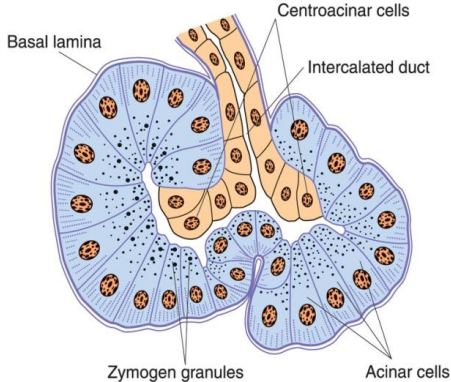


PANCREAS

Stroma	Parenchyma Pancreas is a mixed gland: (exocrine and endocrine)			
capsule, septa & reticular fibers.	Exocrine part (acini & ducts): produces digestive pancreatic enzymes.			Endocrine part (islets of Langerhans): produces hormones.
	Pancreatic Acini	Pancreatic Acinar Cells	Duct System	
	<ul style="list-style-type: none"> ● They are serous acini: secreting a thin fluid rich in digestive pancreatic enzymes. ● Centroacinar cells: Their nuclei appear in the center of the acini. They represent the beginning of the ducts. ● No myoepithelial cells around the acini. 	<ul style="list-style-type: none"> ● Pyramidal in shape. ● Nuclei are basal.(rounded and vascular) ● Cytoplasm: <ul style="list-style-type: none"> ○ Basal part Basophilic ○ (due to abundant rER). ○ Apical part Acidophilic ○ (due to secretory granules). 	<ul style="list-style-type: none"> ● Centroacinar cells. ● Intercalated ducts (low cuboidal). ● Intralobular ducts (NOT prominent). ● Interlobular ducts. ● Main pancreatic duct. 	

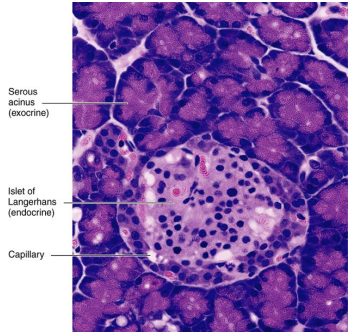


Serous acinus (exocrine)

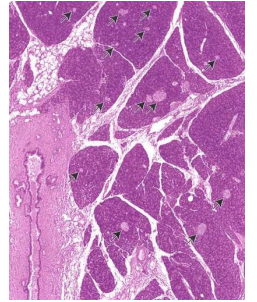


Endocrine Pancreas

Islets of Langerhans:



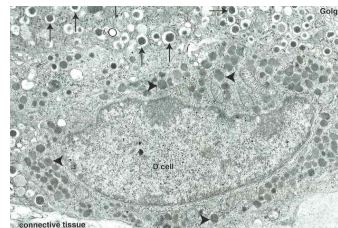
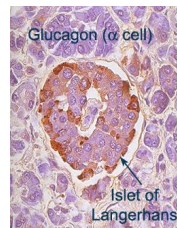
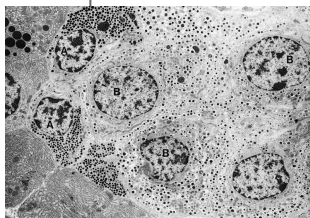
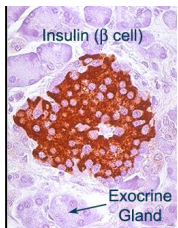
- **Pale-staining** spherical collections of endocrine cells, scattered among the acini.
- **Richly vascularized** by fenestrated capillaries. (without diaphragm)
- Each islet is surrounded and supported by reticular fibers.
- 1 million islets in human pancreas.
- **Most numerous in the tail of pancreas.**



Cells of the Islets:

- 5 types of cells in each islet.
- Cannot be differentiated from one another by routine stains. (we can by immunohistochemistry or EM)

β (B) cells	α (A) cells	δ (D) cells	G cells	PP cells
<ul style="list-style-type: none"> ● Constitute 70% of islet cells. ● Concentrated in islet center. ● Function: secrete insulin which \downarrow blood sugar. 	<ul style="list-style-type: none"> ● Constitute 15-20%. ● Concentrated in islet periphery. ● Granules are much more numerous, more tightly packed, smaller, and denser than those of β cells. ● Function: secrete glucagon which \uparrow blood sugar. 	<ul style="list-style-type: none"> ● Constitute 5-10% ● Scattered throughout the islet. ● Granules are less dense than those of β and α cells. ● Function: secrete somatostatin which \downarrow release of hormones from endocrine pancreas and enzymes from exocrine pancreas. 	<ul style="list-style-type: none"> ● Constitute 1% of islet cells. ● Scattered throughout the islet. ● Function: secrete gastrin which \uparrow production of HCl by parietal cells of the stomach. 	<ul style="list-style-type: none"> ● Constitute 1% of islet cells. ● Scattered throughout the islet. ● Function: secrete pancreatic polypeptide which \downarrow exocrine secretions of pancreas.



Quiz

Q1 : Pancreatic acini is acini

- A. serous
- B. mucous
- C. mixed

Q2: Which of the following is correct?

- A. Endocrine part produces hormones.
- B. Exocrine part contain islets of Langerhans.
- C. Endocrine part contain acini & ducts.
- D. islets of Langerhans produce digestive pancreatic enzymes.

Q3: There is islets of langerhans in the human pancreas.

- A. 80,000
- B. 100,000
- C. 200,000
- D.1,000,000

Q4: Which of the following cells its secretion decrease exocrine secretions of pancreas.?

- A. PP cells
- B. G cells
- C. D cells
- D. A cells

Q5 : Which of the following is NOT a feature of islets of langerhans?

- A. Pale-staining
- B. spherical
- C. scattered
- D. most numerous in the head of pancreas

Q6 : which of the following is true regarding beta cells?

- A. constitute 15-20%
- B. concentrate in the centre of the islet
- C. secretes glucagon
- D. numerous small granules

Q7: Which of the following cells secretes somatostatin?

- A. PP cells
- B. G cells
- C. D cells
- D. A cells

Q8: We can differentiate between cells in the pancreas by ?

- A. H & E stain
- B. Immunofluorescence
- C. immunohistochemistry
- D. routine stains



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Team Leaders

- ▣ Abdullah shadid
- ▣ Sarah Alflaij

Good luck 