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Reviewed by
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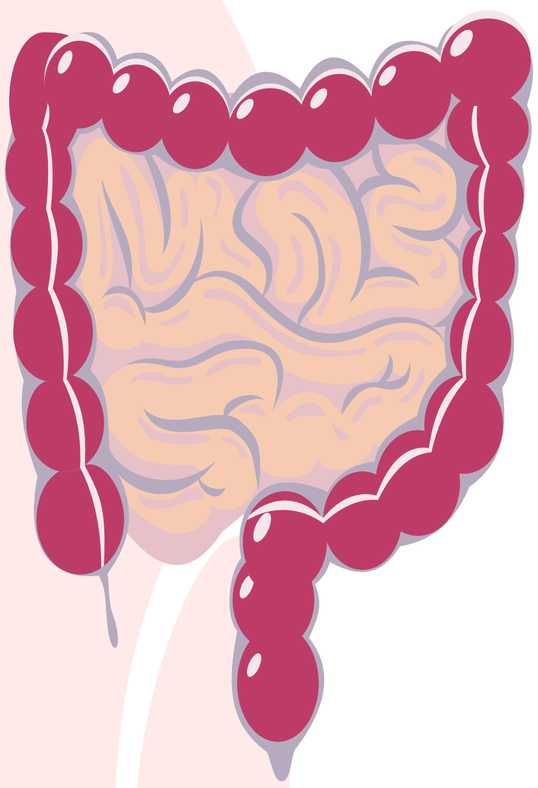
MED 443
King Saud University

HISTOLOGY 443

Biliary passage & Exocrine pancreas



Color index:
-Main text
-important
-female slides
-male slides
-Dr.note
-Extra

Editing File

[Gastrointestinal & Nutrition Block | Histology]

Objectives

At the end of this lecture, you should be able to answer the following (objectives):

identify & describe the histological features of

- **Intrahepatic biliary passages.**
- **Extrahepatic bile ducts.**
- **Gallbladder.**
- **Exocrine pancreas.**

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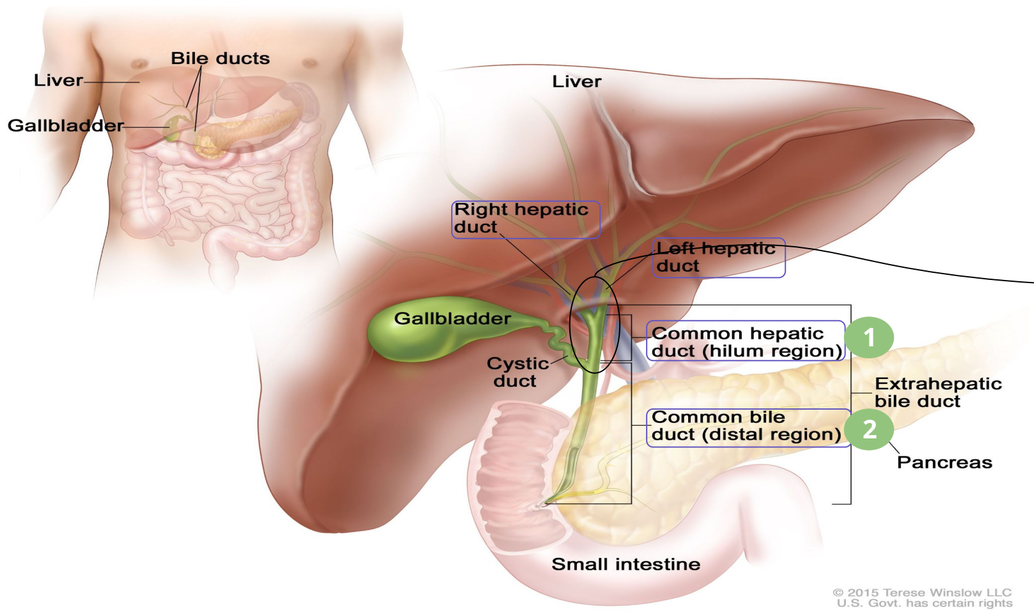
This lecture was presented by:

Dr. Mohammed Atteya **Prof. Raeesa Abdultawab**

Biliary passages

Outside Liver

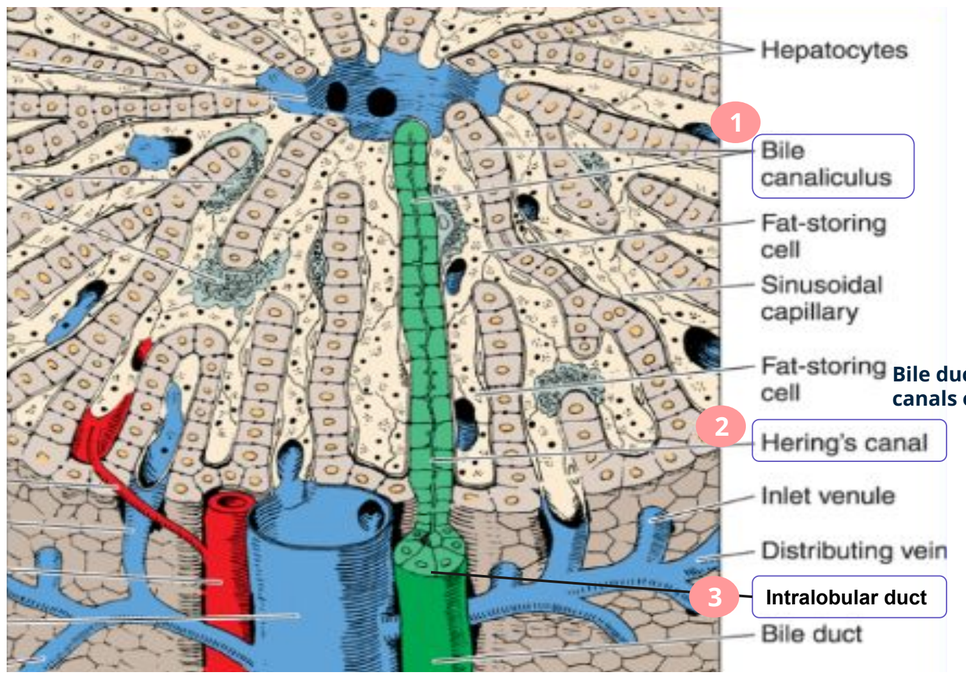
Extrahepatic passage



Zoomed!

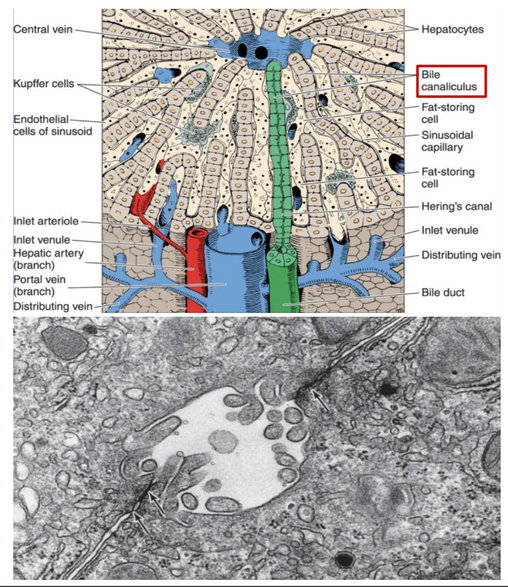
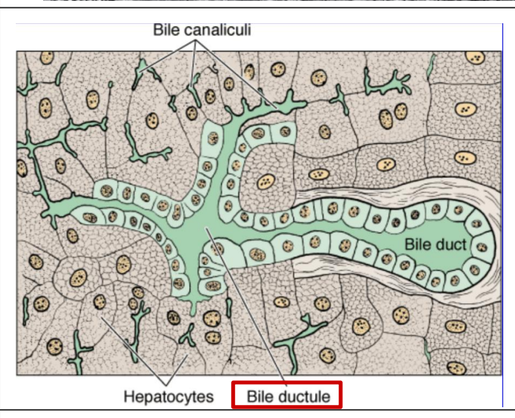
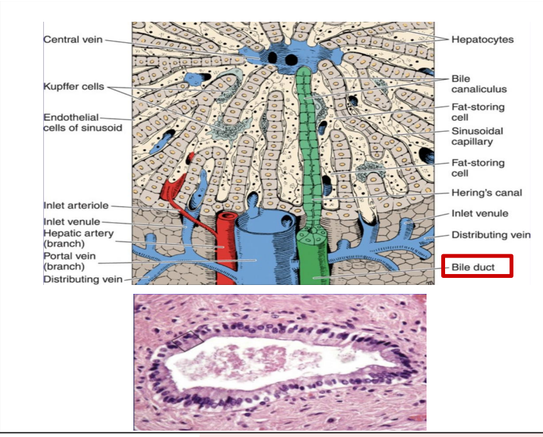
Within Liver

Intrahepatic passage



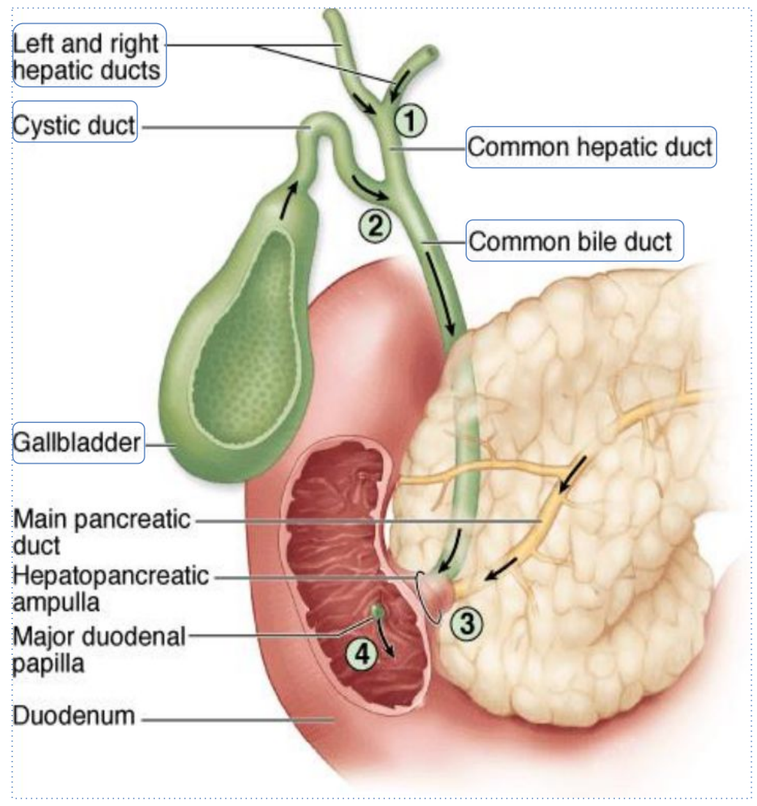
1. It's formed of the union of the right & left hepatic.
2. It's formed of the union of the cystic duct from gallbladder & common hepatic duct.

Biliary passages: intrahepatic

Structure / Features	***Epithelium***	***Description*** <u>(See previous slides' Pictures to understand the description)</u>	**Picture**
Bile canaliculi	**None** (No Epithelium) **- Limited only** by cell membranes of 2 <u>hepatocytes.</u> - Narrow channels between <u>hepatocytes.</u>	• They are the <u>**First portions of the bile duct system.**</u> • Microvilli project from the hepatocyte into the bile canaliculi → **increasing the surface area.** • Tight junctions between the cell membranes of the 2 hepatocytes **prevent leakage of bile.**	
Bile ductules (Canals of Hering) Might asked about the structure name	Composed of <u>**Cuboidal**</u> epithelial cells called <u>**Cholangiocytes.**</u>	**First:** Bile canaliculi empty into bile ductules (Near peripheral portal areas). **Then:** After a short distance, these ductules Collect and end in <u>the interlobular bile ducts</u> in the portal areas.	
Interlobular bile ducts	- Are in portal areas - Lined by Simple <u>**cuboidal**</u> epithelium (Cholangiocytes) then become Simple <u>**columnar**</u> epithelium (Near the <u>porta hepatis)</u>	**First:** Merge to form larger ducts (In the portal areas). **Then:** eventually unite to form the right & left hepatic ducts.	

Common Hepatic duct

Structures	*Contents*	*Description*
Mucosa	●**Epithelium:** Simple **columnar.** ●**Lamina propria.**	● Formed by union of **right & left hepatic ducts.** ● Joins the **cystic duct** (arising from the gallbladder) forming the **common bile duct.** ● Similar in structure to the wall of (**Gallbladder** & other extrahepatic bile ducts).
Muscularis	**Bundles of smooth muscle fibers** (In all directions).	
Adventitia	● Loose areolar C.T. ● NOT covered by Mesothelium → Peritoneum.	

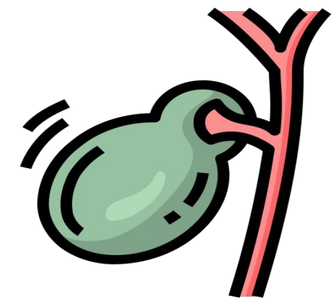


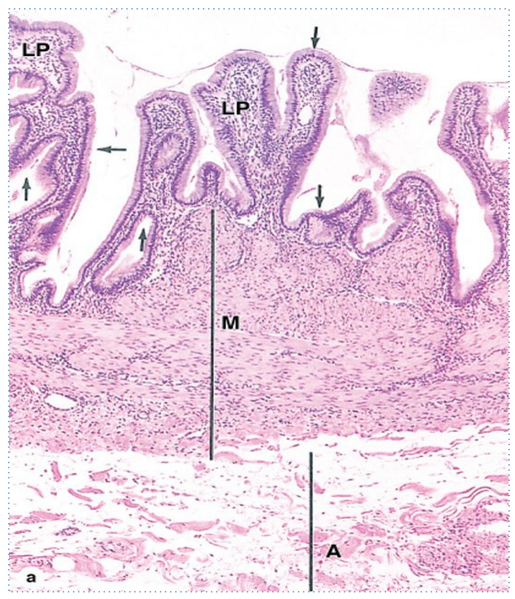
Gallbladder

A Saclike structure that <u>stores</u>, <u>concentrates</u> and <u>releases</u> **Bile**

The wall of gallbladder is formed of :

Structures	*Contents*
Mucosa (Highly folded)	**Epithelium : Simple <u>columnar</u> epithelium.** **Lamina propria:** contains **<u>Mucous glands</u>** in the neck of gallbladder.
Muscularis	**Bundles of smooth muscle fibers** (In all directions).
Serosa or Adventitia	(Fundus= serosa and other section Adventitia) - Gallbladder is dilated to store the bile because it's not secreted immediately to the duodenum until there's fat because the bile contain enzymes for emulsification (تفكيك) not digestion. - Gallstones developed when there is imbalance between concentrates and release of bile **<u>Thanks 439</u>**





Pancreas

Parenchyma
Pancreas is a mixed gland:

Exocrine part/glands

Produce digestive pancreatic enzymes
Eg: Acini & Ducts

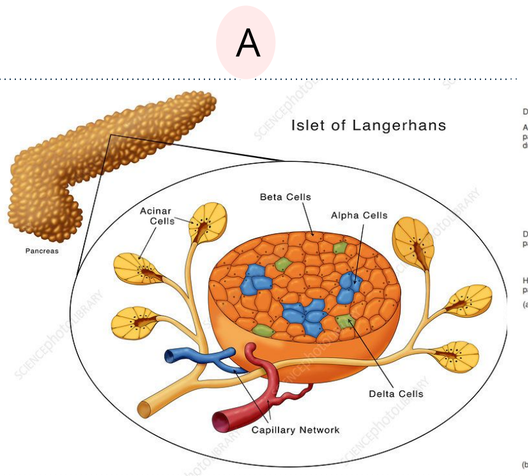
Endocrine part/glands

Produce Hormones
Eg: Islets of Langerhans

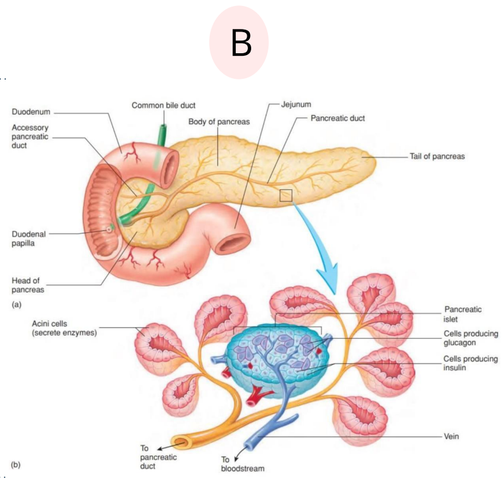
stroma

Capsule, Septa & Reticular fibers

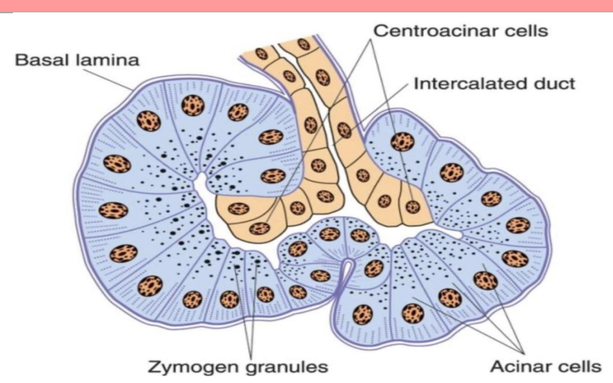
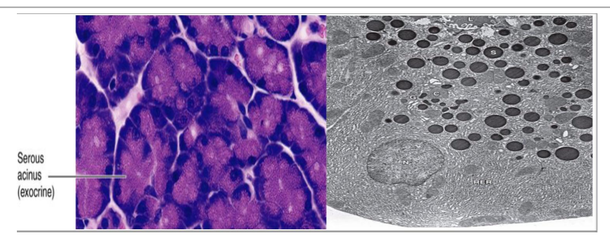
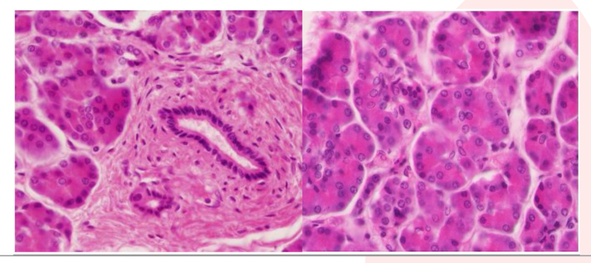
A



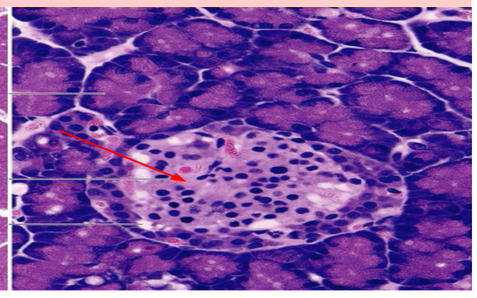
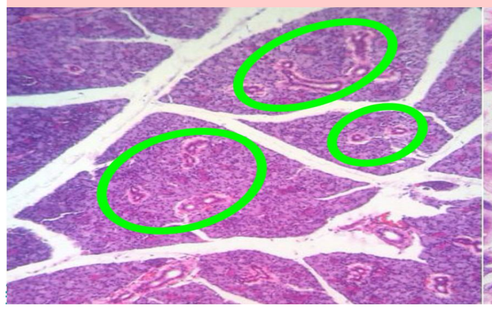
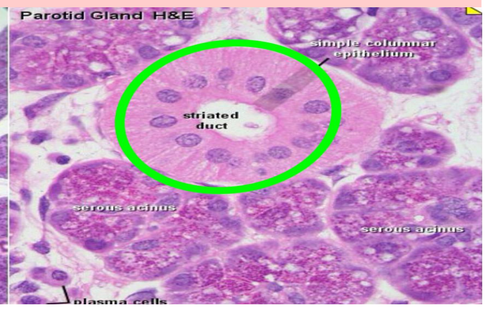
B

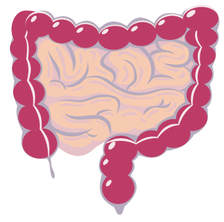


Exocrine Pancreas

Structure / Features	Description	Picture
Pancreatic Acini (serous acini)	**<u>Secretion</u>: Thin fluid rich in digestive pancreatic enzymes** **<u>Centroacinar</u> cells:** **•Nuclei in the center of the acini** **•Represent the beginning of the ducts** **No myoepithelial cells around the acini** The pancreatic duct shoved into lumen of acini looks like the parotid gland but differ in the secreted enzymes and have centroacinar cells with not prominent intralobular ducts	
Pancreatic Acinar Cells	**• Pyramidal in shape** **• Nuclei are basal & rounded & vesicular** **• Cytoplasm :** **<u>B</u>asal part <u>B</u>asophilic (due to abundant rER).** **<u>A</u>pical part <u>A</u>cidophilic (due to secretory granules)**	
Duct System	**• Centroacinar cells: Low cuboidal** **• Intercalated ducts: Low cuboidal** **• <u>Intra</u>lobular ducts (Not prominent)*: Low columnar** **• <u>Inter</u>lobular ducts: Simple columnar** **• Main pancreatic duct: simple columnar** That's how you differentiate between the Pancreas and the Parotid gland *	

Pancreas VS Parotid Gland

pancreas	Parotid Gland
Low Power Magnification	High Power Magnification
	
Most Prominent Structure Islets of langerhans (Red Arrows): Pale spherical collection of cells inside acini (Red circle) Interlobular ducts (Green circle)	
Low Power Magnification	High Power Magnification
	
Most Prominent Structure Intralobular ducts (Green circle): Red colored striated/Secretory ducts	

SUMMARY 

Biliary passages

<u>Intrahepatic passage:</u>
- Bile canaliculi: (No Epithelium), Limited by cell membranes of 2 hepatocytes
- Bile ductules: Cuboidal epithelial cells called Cholangiocytes
- Interlobular bile ducts: Simple cuboidal epithelium→Simple columnar epithelium

<u>Extrahepatic passage</u>

Gallbladder

<u>Mucosa</u>:
- Epithelium : Simple columnar epithelium.
- Lamina propria: contains Mucous glands in the neck of gallbladder

<u>Muscularis</u>: Bundles of smooth muscle fibers

Common Hepatic duct

<u>Mucosa</u>:
- Epithelium: Simple columnar
- Lamina propria

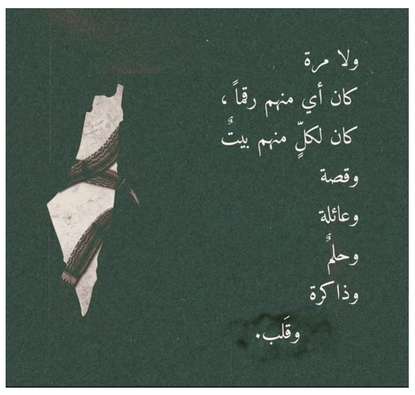
<u>Muscularis</u>: Bundles of smooth muscle fibers

<u>Adventitia</u>:
- Loose areolar C.T
- NOT covered by Mesothelium → Peritoneum

Pancreas

<u>Stroma</u>: Capsule, Septa & Reticular fibers

<u>Parenchyma</u>:
- Exocrine part: Produce digestive pancreatic enzymes
- Endocrine part: Produce Hormones



MCQs

01 Which of the following project from the hepatocyte into the bile Canaliculi?

A- Flagella	B-Simple cuboidal epithelium	C- Simple columnar epithelium	D-Microvilli

02 Canals of Hering are composed of?

A- cholangiocytes	B- simple columnar epithelium	C-simple squamous epithelium	D-stratified columnar epithelium

03 Which of the following is intrahepatic passages?

A- Common bile duct	B- Common hepatic duct	C-Bile ductules	D-Right & left hepatic ducts

04 Which of the following is a feature of Pancreatic Acinar Cells?

A- Cells are pyramidal in shape	B- Cells are tubular in shape	C-Nuclei are central	D-The cytoplasm is completely basophilic

05 The basal part of Pancreatic acinar cells is basophilic due to?

A- Myoepithelial cells	B- Abundant sER	C-Secretory granules	D- Abundant rER

Answer key:

1. D
2. A
3. C
4. A
5. D

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