# BILIARY PASSAGES & PANCREAS

**OBJECTIVES:**

1. Intrahepatic biliary passages.
2. Extrahepatic bile ducts.
3. Gall bladder.
4. Exocrine pancreas.

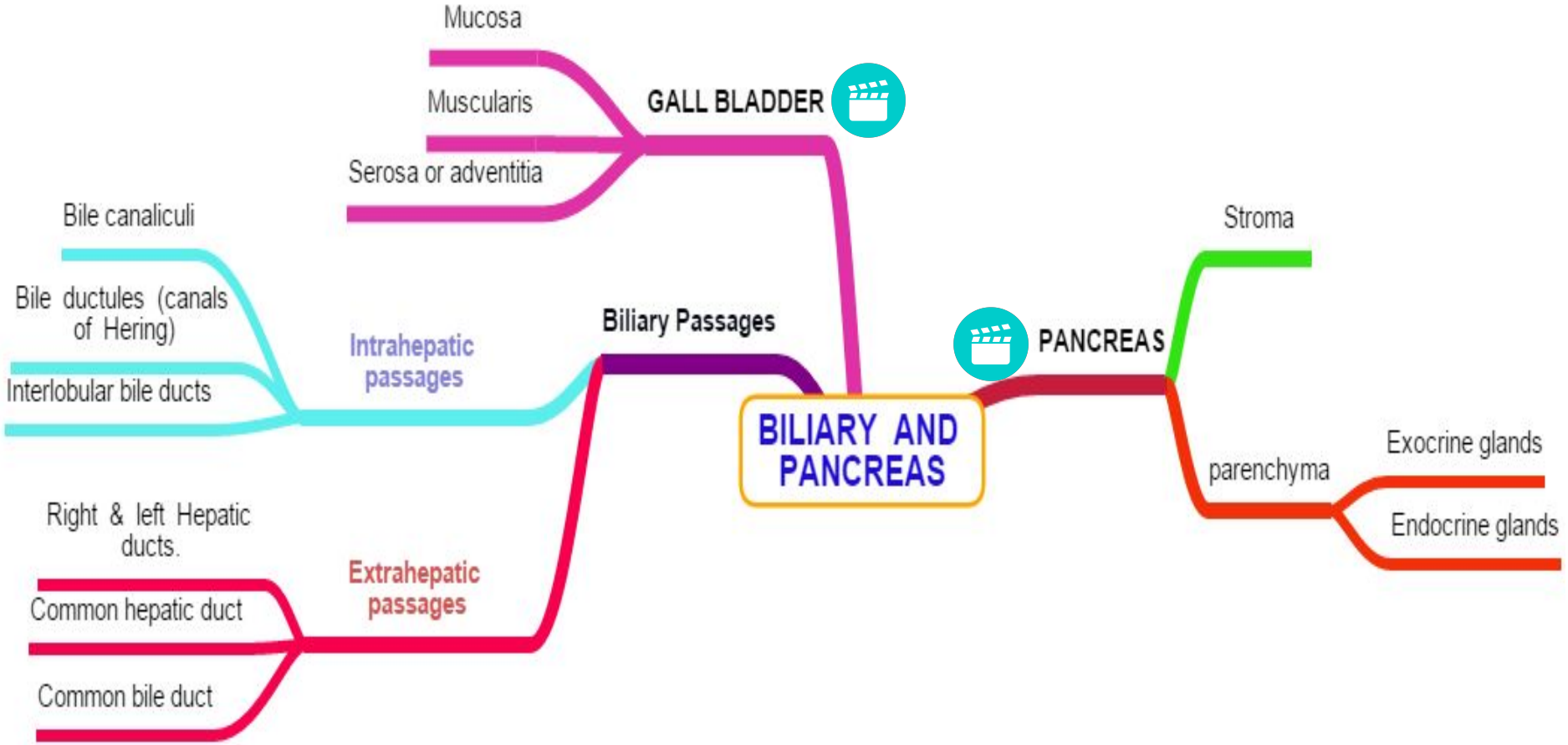

Please be sure to check **Histology Edits** before you start, to know about any additions/changes.

جامعة الملك سعود
King Saud University

MED 434 ICINE

HISTOLOGY 434

# Mind Map


BILIARY AND PANCREAS
GALL BLADDER
Mucosa
Muscularis
Serosa or adventitia
Biliary Passages
Intrahepatic passages
Bile canaliculi
Bile ductules (canals of Hering)
Interlobular bile ducts
Extrahepatic passages
Right & left Hepatic ducts.
Common hepatic duct
Common bile duct
PANCREAS
Stroma
parenchyma
Exocrine glands
Endocrine glands

# Biliary Passages

NOTE: Remember:the bile is synthesized in the liver (hepatocytes) however the actual secretion happens in the bile as it functions as a storage sac.So we need to transport (by a duct) the bile to the gall bladder and another duct to transport it to the duodenum once it is needed.

## ❖ intrahepatic passages:

**Bile canaliculi** → **Bile Ductules (Canals of Hering)** → **Interlobular Bile Ducts**

- Narrow channels located between hepatocytes, limited **only** by the cell **membranes of 2 hepatocytes.**

-They are the **first portions** of the bile duct system.

-**Microvilli** project from the hepatocyte into the bile canaliculi, thus increasing the surface area.

-**Tight junctions** between the cell membranes of the 2 hepatocytes prevent leakage of bile.

Tight junction: To prevent leakage
The color of the bile is green
(Intrahepatic passage bile canaculi )
Any secretory cell has to have microvili > for more secretion or absorption

-Near the peripheral portal areas, bile canaliculi empty into **bile ductules** composed of cuboidal epithelial cells called **cholangiocytes**.

-After a short distance, these ductules collect and end in the **interlobular bile ducts** in the portal areas.(see the picture in the coming slide)

Portal: Any of the spaces between the lobes of the liver

-Are in the portal areas.

-Lined by **simple cuboidal** epithelium (becomes simple columnar epithelium near the porta hepatis).

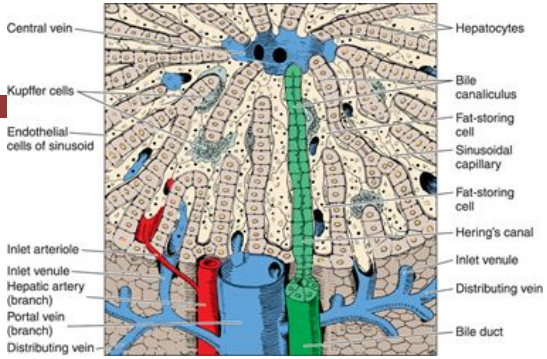
-Interlobular bile ducts merge to form larger ducts, which eventually unite to form the right and left hepatic ducts.(see the picture in the coming slide)

Inter = between lobules of liver

Intra = inside the liver
**Porta hepatis**: is a deep fissure in the inferior surface of the liver through which all the neurovascular structures (except **hepatic** veins) and **hepatic** ducts

enter or leave the liver

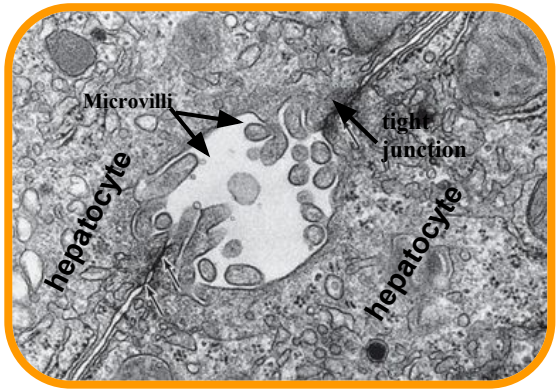
# Cont.Biliary Passages

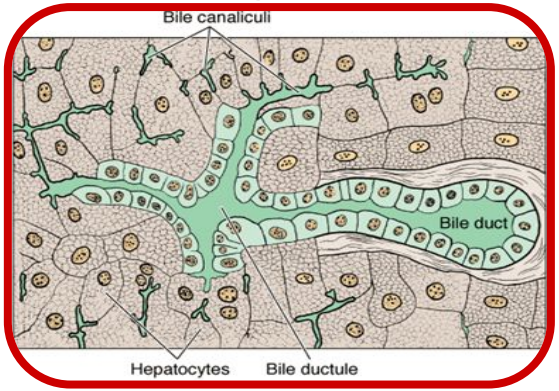


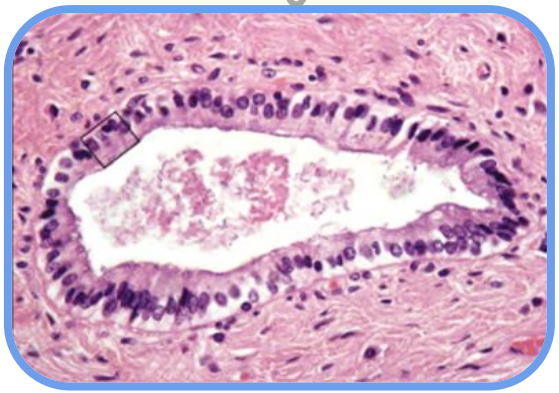

- **intrahepatic passages:**

Bile canaliculi → Bile Ductules (Canals of Hering) → Interlobular Bile Ducts

Note: there is no epithelium, the lumen is formed between the two hepatocytes.



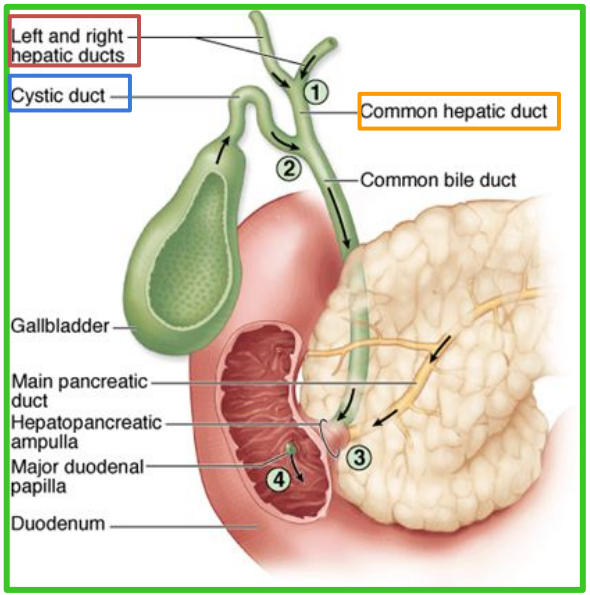



# Cont.Biliary Passages

## ❖ Extrahepatic passages:

### *Common Hepatic Duct*

| | | | |
|---|---|---|---|
| **Origin** | • Formed by union of the right & left hepatic ducts. | | |
| **Relations** | • It joins the cystic duct, arising from the gallbladder, forming the common bile duct. | | |
| **Structure** (3 layers) : | • Similar in structure to the wall of gall bladder and other extrahepatic bile ducts. | | |
| | **Mucosa** | **Muscularis** | **Adventitia** (only) |
| | • Epithelium: Simple columnar.<br>• Lamina propria. | • bundles of smooth muscle fibers in all directions. | C.T |



# Gall Bladder

**A saclike structure that stores, concentrates and releases bile. Its wall is formed of**

## Mucosa

**Highly folded.**

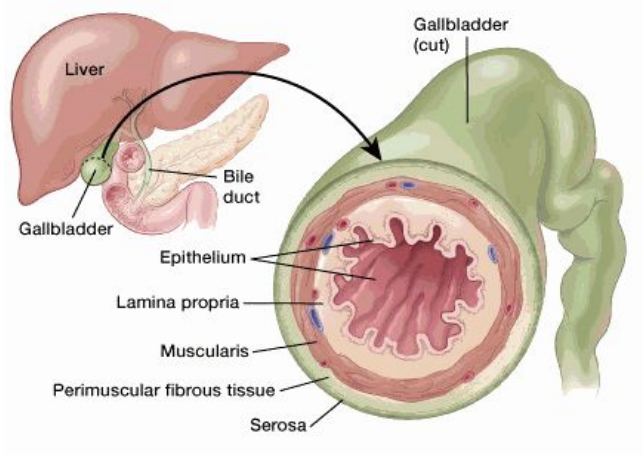
**–Simple columnar epithelium.**

**–Lamina propria: contains mucous glands in the neck of gall bladder.**

## Muscularis

**bundles of smooth muscle fibers oriented in all directions.**

## Serosa or Adventitia



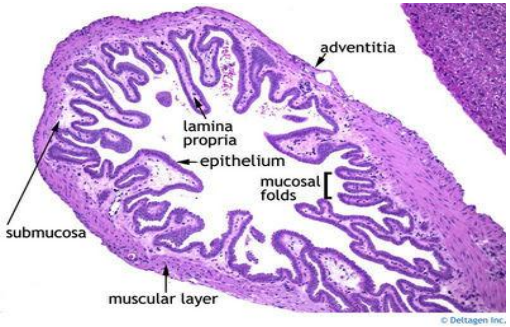

Lumen contains the bile

Fundus in gall bladder contains (peritonium (contains SEROSA

(IN BODY (ADVENTATIA

Without goblet cells and not ciliated ( except neck, the mucus is coming (from NECK of gallbladder

Highly folded: because its function is storage



# Pancreas

Centroacinar cells: like grape root
Pancreatic duct secrete into duodenum
No myoepithelium: because it's a hormonal control

## Stroma

**Capsule, septa and reticular fibers.**

## Parenchyma

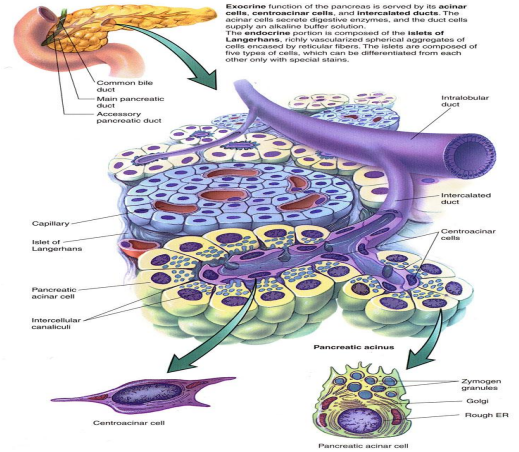
**Pancreas is a mixed gland** "endocrine & exocrine at the same time".

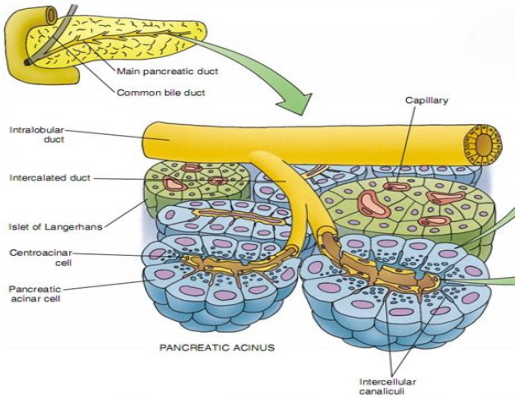
**Exocrine Part:**
***Acini's & ducts***

**Produce digestive pancreatic enzyme**

**Endocrine part:**
***iselts of langerhan's***

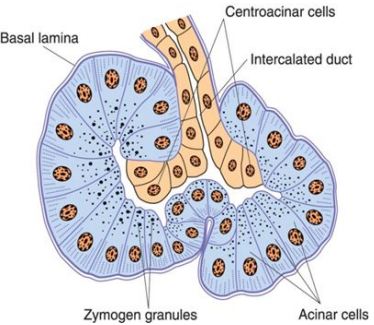
**Produces hormones**



# Exocrine Pancreas

## Pancreatic Acini




-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.

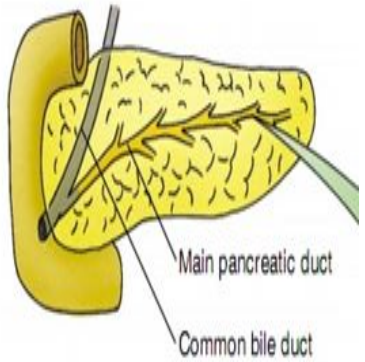
-No myoepithelial cells around the acini.

## Duct System

-Centroacinar cells.

-Intercalated ducts (low cuboidal).
-Intralobular ducts (NOT prominent). (عكس الparotid which was prominent )

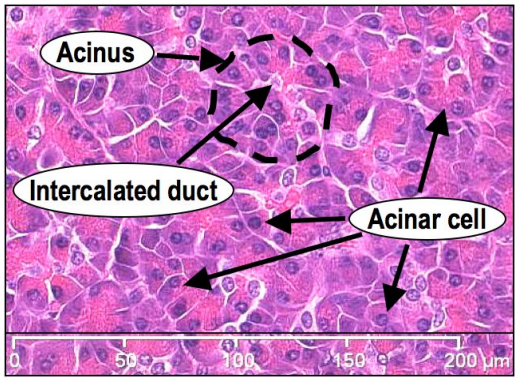
-Interlobular ducts.
-Main pancreatic duct.



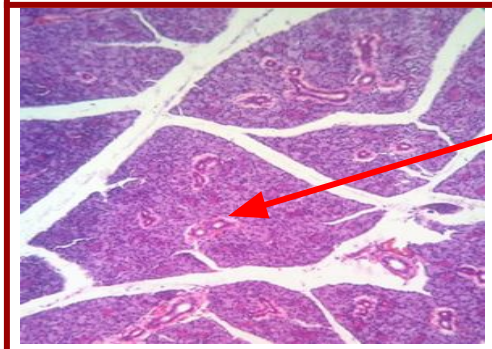
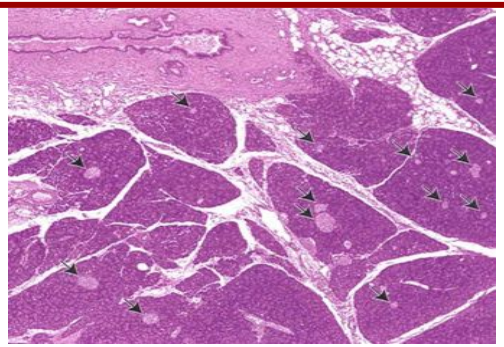
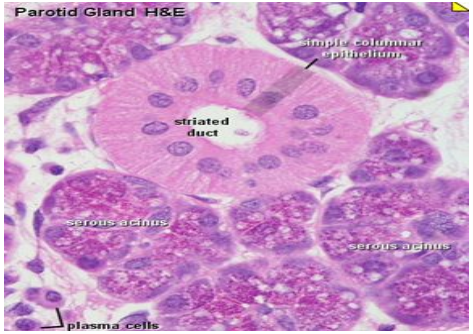
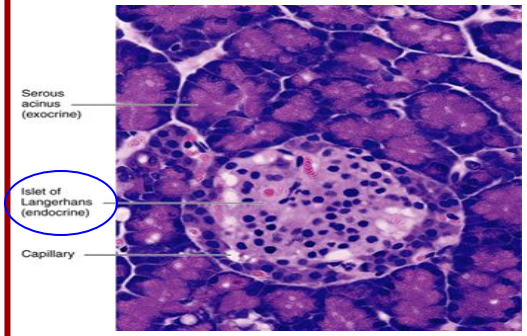

## Acinar Cells

- Pyramidal in shape
- Nuclei are basal
- Cytoplasm

1- Basal Part
Basophilic, due abundant rough ER
2- Apical part
Acidophilic, due to secretory granules



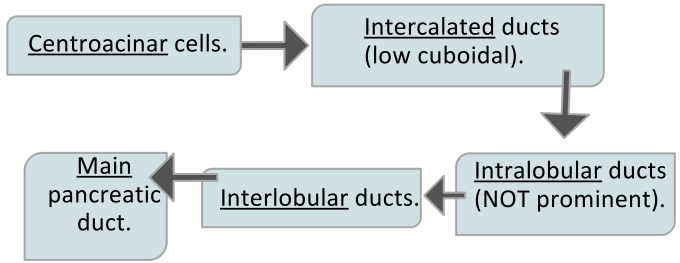
# Difference Between Parotid gland Pancreas

| Parotid gland | Pancreas |
| --- | --- |
|  Interlobular duct (prominent) |  <u>Intralobular</u> ducts (NOT prominent) |
|   There is No islets of Langerhans |   islets of Langerhans |

# Summary

| Biliary Passages: | Intrahepatic Passages: | | | Extrehepatic Passages: | | |
|---|---|---|---|---|---|---|
| | **1-Bile Canaliculi** | **2-Bile Ductules (Canals of Hering)** | **3-Interlobular Bile Ducts** | **4-RT & LT Hepatic ducts** | **5-common hepatic duct:** | **6-Common bile duct** |
| **Located:** | Narrow channels located beween hepatocytes | Near the peripheral portal areas. | Portal area | | | |
| **composed of:** | -Microvilli (increase surface area)<br>-Tight junctions between the cell membranes of the 2 hepatocytes prevent leakage of bile. | -composed of cuboidal epithelial cells called **cholangiocytes**. | -Lined by simple cuboidal epithelium (becomes simple columnar epithelium near the porta hepatis). | | -**Mucosa:**<br>–Epithelium: Simple columnar.<br>–Lamina propria.<br>-**Muscularis.**<br>-**Adventitia**. | |

# Summary

| | Exocrine Pancreas: | | |
|---|---|---|---|
| | **Pancreatic Acini:( serous acini)** | **Pancreatic Acinar Cells:** | **Duct System:** |
| | **Centroacinar cells** | Pyramidal in shape.<br>Nuclei are basal.. |  |
| | -No myoepithelial cells around the acini. | **Cytoplasm:**<br>–Basal part basophilic.<br>–Apical part acidophilic. | |

| | GALL BLADDER | PANCREAS |
|---|---|---|
| | A saclike structure that stores, concentrates and releases bile. | **-Stroma:** capsule, septa & reticular fibers.<br>**-Parenchyma:** Pancreas is a mixed gland |
| **composed of:** | **-Mucosa**: highly folded.<br>•Simple columnar.<br>•Lamina propria: mucous glands in the neck.<br>**-Muscularis.**<br>**-Serosa** or **adventitia**. | •**Exocrine part** (acini & ducts): produces digestive pancreatic enzymes.<br>•**Endocrine part** (islets of Langerhans): produces hormones. |

# MCQs & SAQs

1) All of the following are from the intrahepatic passages EXCEPT?

A-Interlobular bile ducts.
B-Bile canaliculi.
C-Common hepatic duct.
D-Canals of Hering.

2)After a short distance, the cholsngiocytes collect and end in the?

A-Common bile duct.
B-Interlobular bile ducts.
C-Right & left Hepatic ducts.
D-Common hepatic duct.

3)A saclike structure that stores, concentrates and releases bile is called?

A-Cystic duct.
B-Hepatic ducts.
C-Common bile duct.
D-Gallbladder.

4)Narrow channels located between hepatocytes & are limited only by the cellmembranes of 2 hepatocytes?

Bile Canaliculi.

5)What project from the hepatocyte into the bile canaliculi to increasing the surface area?

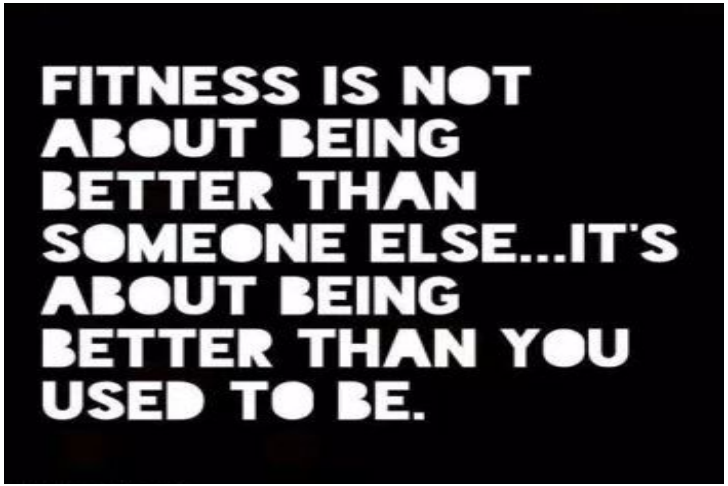
Microvilli.

6)Near the peripheral portal areas, bile canaliculi empty into bile ductules composed of cuboidal epithelial cells and these are called?

Cholangiocytes.

1-C
2-B
3-D

# Motivation Corner





## Done By:

Sara Mohammed Aljasser
Amal Afrah
Nora Alhelai
Fetoon Alnemari
Najd alomran
Mona Al-Qahtani

## Revised by:

Mona Al-Qahtani


Thank you for checking our work

For any correction, suggestion or any useful information do not hesitate to contact us: **Histology434@gmail.com**