438
HISTOLOGY TEAM
KING SAUD UNIVERSITY

MED438
KING SAUD UNIVERSITY

LIVER & SPLEEN

Objectives:

- The histological structure of liver and spleen
- Getting the academic to kick me out of the reviewing team

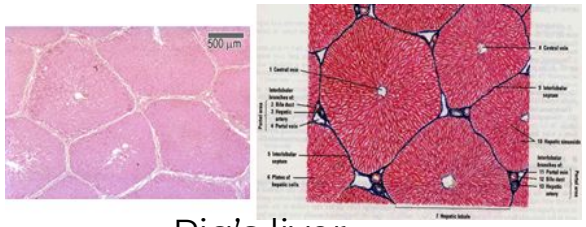
- **Editing file**
- **Important**
- **Doctor notes / Extra**
- **Random song lyrics**

jk there is none, but you fell for that lolololololol

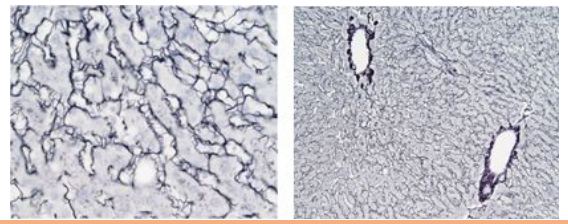
Liver

Stroma

a- Capsule:
Glisson's Capsule.
b- Septa (C.T.) (absent in human) & Portal areas (Portal tracts).
c- Network of reticular fibers. (also found in spleen & bone marrow & lymph nodes)
Reticular CT = collagen type 3



Pig's liver

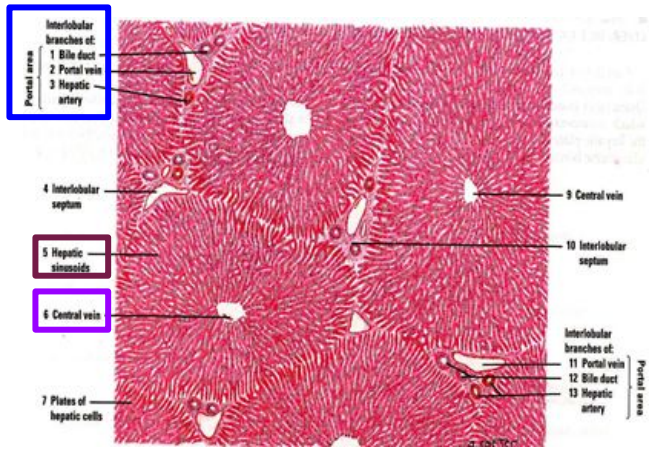


Parenchyma; Classical liver (hepatic) lobules:

It is formed of a polygonal mass of liver tissue, bounded by interlobular septa with portal areas at the periphery & central (centrolobular) vein in the center.

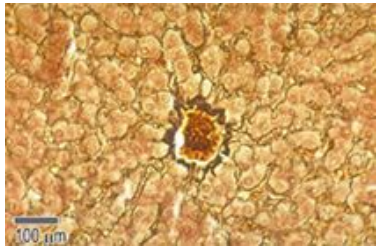
Contents of the Classic Liver Lobule:

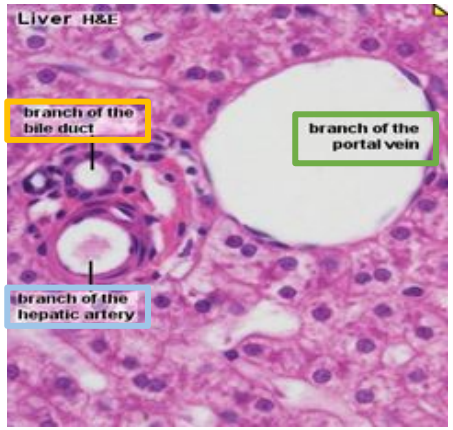
1- Anastomosing plates of hepatocytes.
2- Liver blood sinusoids (hepatic blood sinusoids): In between the plates.
3- Spaces of Disse (perisinusoidal spaces of Disse).
4- Central vein.
5- Bile canaliculi.



Borders of the Classical Liver Lobule:

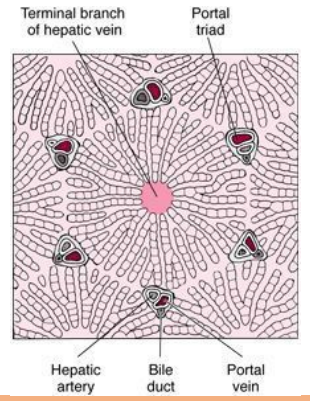
1- Septa: C.T. septa (e.g. in pigs).
2- Portal areas (Portal tracts) (Portal triads): Are located in the corners of the classical hepatic lobule (usually 3 in No.) it contains:
a- C.T.
b- Bile ducts (interlobular bile ducts).
c- Venule (Branch of portal vein).
d- Arteriole (Branch of hepatic artery).

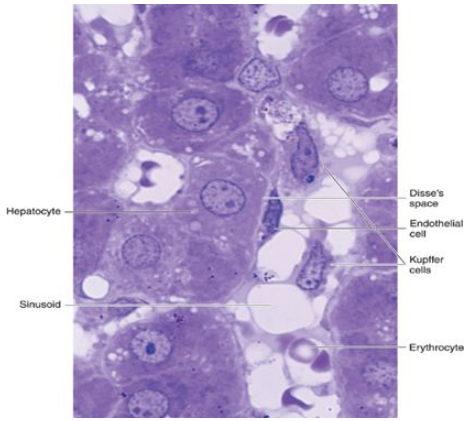


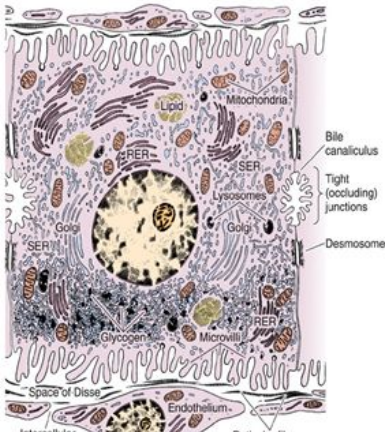


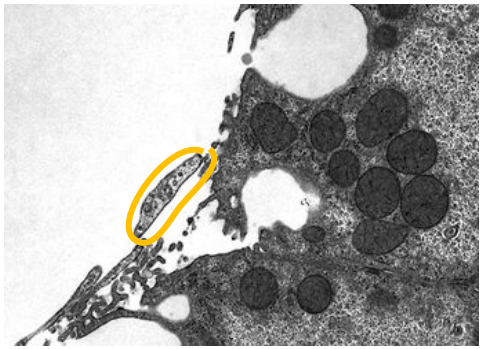
Contents of the Classic Liver Lobule:

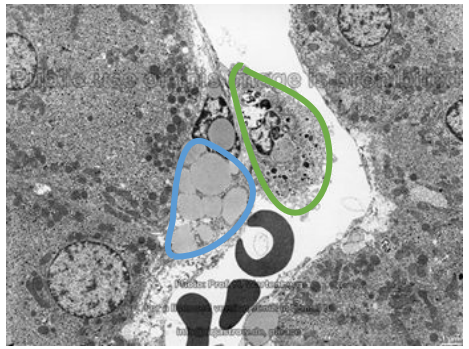
Anastomosing plates of hepatocytes		Liver blood sinusoids (In between the plates)	Spaces of Disse (perisinusoidal spaces of Disse)	Central vein	Bile canaliculi
Hepatocytes (LM) Are grouped in interconnected plates. ▪ Liver sinusoids are located in the spaces between these plates. ▪ Are polyhedral in shape. ▪ Nucleus: 1 or 2, vesicular (large & pale) with prominent nucleoli. ▪ Cytoplasm: acidophilic.	**Hepatocytes (EM)** Organelles: 1- Mitochondria: ++++ 2- ER (sER & rER): abundant. 3- Golgi complex. 4- Lysosomes. 5- Peroxisomes. Inclusions (Deposits): 1- Glycogen 2- Lipid (few droplets) 3- Lipofuscin (old age)	**(1) Endothelial Cells:** – Fenestrated & discontinuous → free passage of plasma. – Basal lamina is absent. **(2) Kupffer Cells:** – Are macrophages. – Are found on the luminal surface of the endothelial cells. – Function: phagocytosis.	**Contents:** 1- Microvilli of hepatocytes. 2- Plasma of blood. 3- Hepatic stellate cells (Ito cells) (Fat-storing cells): – contain vitamin A-rich lipid. – form reticulin (reticular fibers). 4- Reticular fibers: (type III collagen). 5-Natural Killer (NK) cells.	-	formed by the membranes of 2 adjacent hepatocytes for bile passage, and is secured by desmosomes to prevent leakage of bile into sinusoid. leakage → cause jaundice.











Spleen

ew foundation

Stroma

1- Capsule:
– is covered by visceral layer of peritoneum; mesothelium
– Is formed of fibromuscular C.T. (Dense fibrous C.T. + **SMCs** (smooth muscle cells).
2- Trabeculae: Are irregular, incomplete, divide the spleen into intercommunicating compartments (lobules).
3- Reticular C.T.

Parenchyma

No cortex, No medulla, No afferent lymphatic vessel.

White pulp

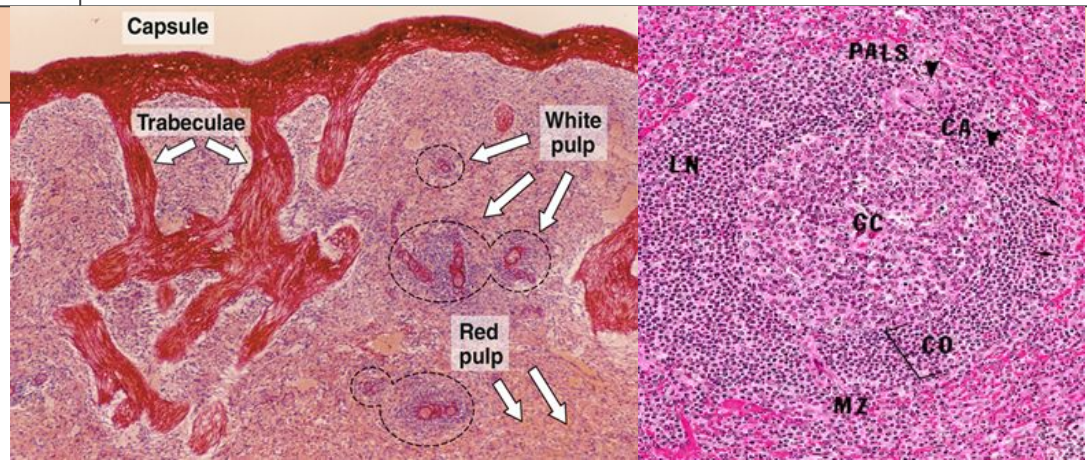
1- Periarterial lymphatic sheaths (PALS): housing (programmed) **T lymphocytes.**
2- Lymphoid follicles (with germinal centers): housing **B lymphocytes.**
N.B. Both 1&2 have the eccentrically located central artery (central arteriole) (follicular arteriole).

Red pulp

1- Splenic (pulp) cords: Extravasated blood cells, plasma cells, macrophages & reticular cells and fibers.
2- Splenic blood sinusoids: Are lined with elongated fusiform endothelial cells with large intercellular spaces & supported by discontinuous, circular basement membrane.

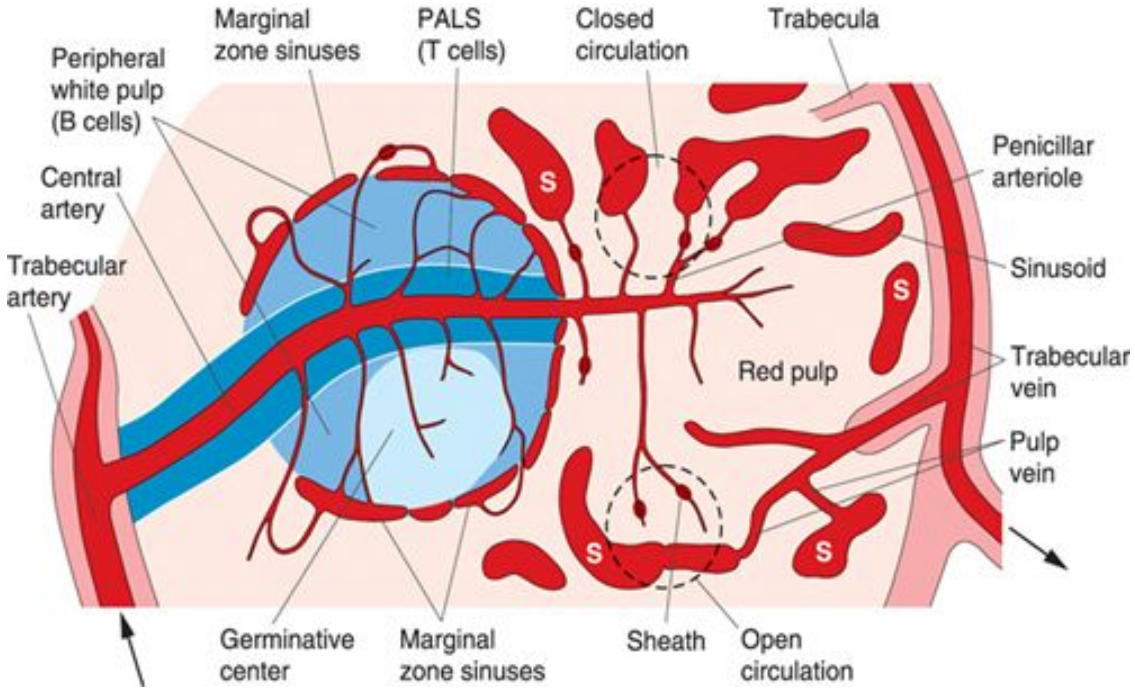
Cells of parenchyma of spleen

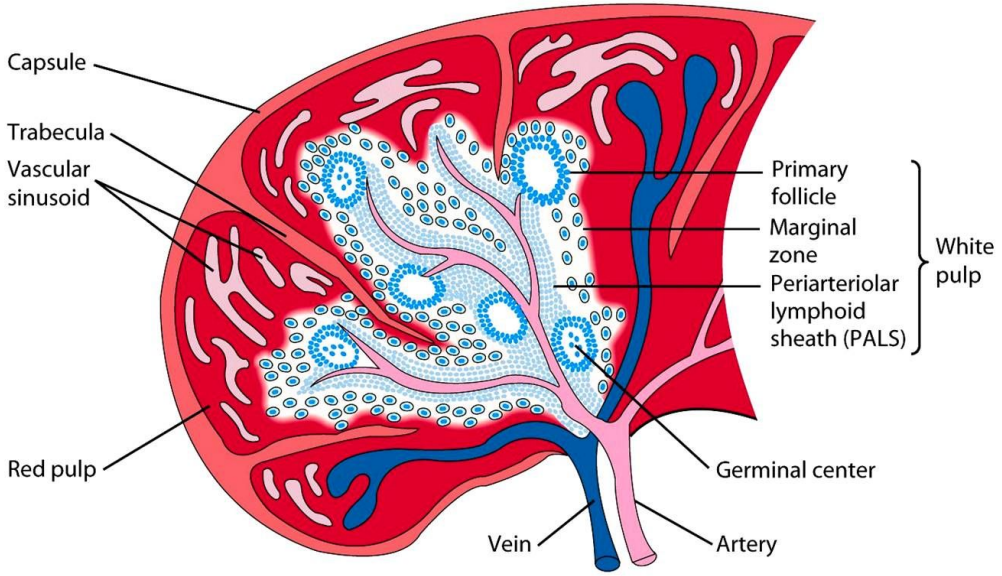
1. Lymphocytes.
2. Plasma cells.
3. Macrophages.
4. Blood elements (RBCs, leukocytes and blood platelets).

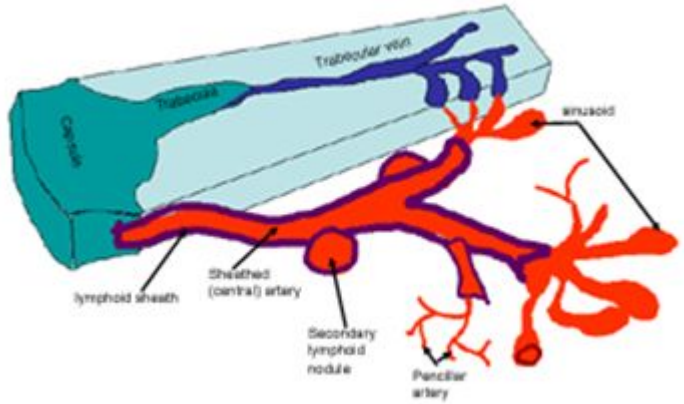


Splenic microcirculation

- open circulation → free blood
- close circulation → sinusoid







Quiz

1- What is the Function of kupffer cells?

A. fat storage
B. form reticulin (reticular fibers)
C. phagocytosis
D. bile passage

2- Which one of the following have SMCs in it's capsule?

A. liver
B. spleen
C. A&B
D. None

3- Endothelial cells of liver blood sinusoids are:

A. Basal lamina + fenestrated
B. Basal lamina + Not fenestrated
C. No basal lamina + fenestrated
D. No basal lamina + Not fenestrated

4- Which of the following is correct?

A. Periarterial lymphatic sheaths house T lymphocytes.
B. Periarterial lymphatic sheaths house B lymphocytes.
C. Lymphoid follicles house T lymphocytes.
D. A&C

5- Which of the following is true about Hepatocytes?

A. Acidophilic cytoplasm + polyhedral
B. basophilic cytoplasm + polyhedral
C. Acidophilic cytoplasm + few ER
D. A&C

6- The Portal triad contain:

A. Bile ducts + Venule + Arteriole + C.T.
B. Bile ducts + Nerves + Arteriole
C. Reticular fiber + Venule + Arteriole + C.T.
D. Bile ducts + Central vein + Arteriole

1.C 2.B 3.C 4.A 5.A 6.A

Team Leaders

- Abdullah shadid
- Sarah alflaij

Good luck
See you in the OSPE :)

“Life is too short to be sad, now show me that beautiful smile you nerd’ - Supposedly secret lec reviewer
but nah forreal tho go do something fun y’all really deserve it
and no I’m not writing these things cause I’m avoiding studying shut up

Help.