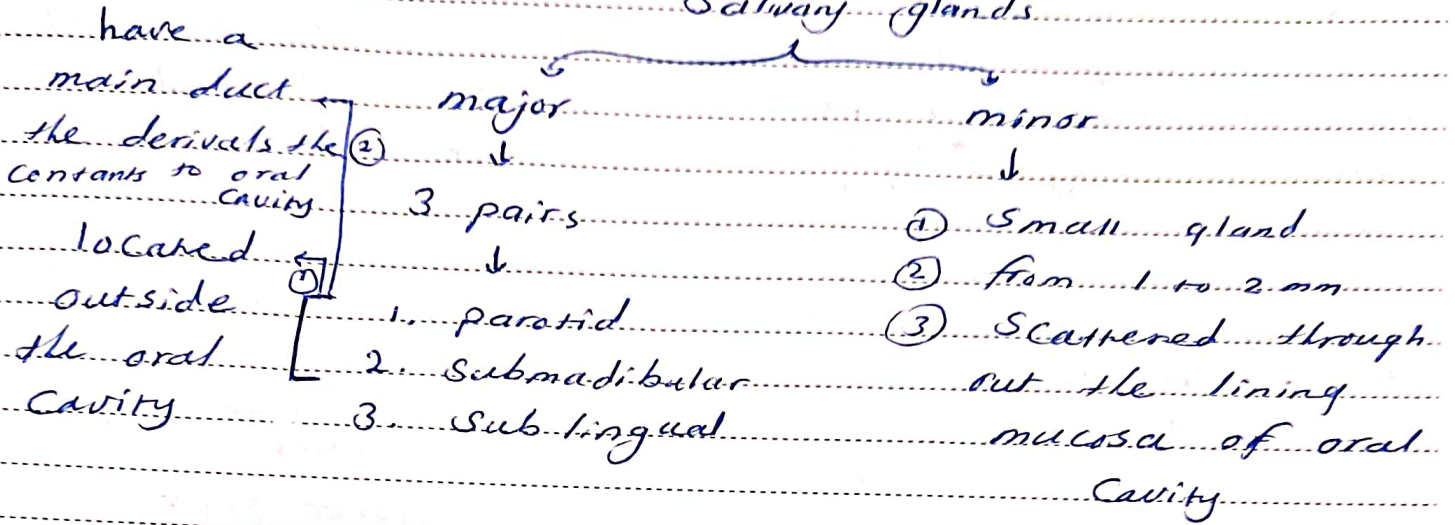




Salivary Glands:

Salivary glands



Parotid gland: Located Ant. and inf. to the external ear and inside the space between mandible angle and styloid process of the temporal bone

it's main duct open at the upper 2nd molar tooth.

Submandibular gland: it's main duct open in the floor of the mouth and it's located under the floor of the mouth

Sublingual: located in the floor of the oral cavity Ant. to submandibular

open in more than one duct and some of these ducts open directly

in submandibular duct





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baseophilic

Serous secreting cell:

Pyramidal shape + rounded

nucleus + Prominent nucleolus

Rich rER granules in apical part

mucin secreting cell

apical and middle part

filled by mucin + at

processing upper clear

Flattened to basal part nucleus

any salivary glands surrounded externally by fibrous C.T (capsule)

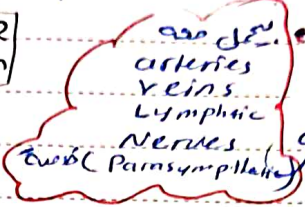
(septa)

send thin layer of

C.T divided the

parenchyma of the

gland into lobules



[C.T, blood, parenchyma] no size

Salivary glands may be serous or mucinous type

- Parotid gland → pure serous
- Submandibular → Mixed (Majority: serous)
- Sublingual → Mixed (Major: mucinous)

around the ductal system and acini. There's a cell called Myoepithelial cell [epithelial cells acquired some aspects of muscle cell]

function?

Contain Contractile protein and Can Contract.

- prevent extreme dilation
- move the ductal system contents or substances

Note: serous glands shape acinus
mucinous glands shape tubular, elongated shape

Mixed glands tubular structure of mucinous epithelium
Caped, called (Serous demilune) by electron microscope show that serous cells have extensions with 2 mucinous cell



but with time → Studies showed that this is an artifact of the routine Fixation Method and that the Mixed glands is: mucinous cells lining the tubular and serous cells scattered throughout the mucinous background

لكن مع الوقت أظهرت الدراسات أن هذا خطأ من طريقة التثبيت الروتينية وأن الغدد المختلطة هي: خلايا مخاطية تبطن القنوات وخلايا صخرية متناثرة في الخلفية المخاطية
(المسح)

Conduction system:-

[1] intercalated duct: beginning at acinus.
lined by flattened to acuboidal epithelial cells.
1st part of conduction system of Saliva.

• pump amounts of bicarbonate to Saliva.

[2] Striated duct: its lining epithelial cell: basal part has folding and the (regularly elongated) cytoplasmic parts between the folding are occupied by the Mitochondria elongated

function/ reabsorption of Na^+



3. excretory duct: Conduction

all of ducts converge to form the main duct of the salivary glands.

* C.T around the lobules rich in immune system elements (B, T lymphocyte + Macrophage.)

Minor salivary glands: mainly mucinous

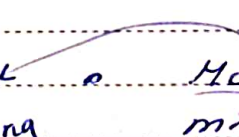
Pancreas:

Most of it is located in the C shaped structure of the duodenum.

Can be divided into → head part
Cyrpus (body)
Tail

- Running along the organ is the main pancreatic duct that open in the duodenum at ampulla of Vater surrounding by prominent muscularis propria (act as sphincter.)

in the duodenum main pancreatic duct and common bile duct converge together

duct of 
Wirsung • Main pancreatic duct branch called minor papillary (Santorini) [Duct of Santorini]



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C.T. surrounding the pancreas and act as septa to divide the organ to lobules.

Pancreatic acinus parts:-

1st: intercalated duct: called centroacinar cells (unique to pancreas)

add bicarbonate to the secretion of pancreas.

2nd: intra lobular duct:

3rd: inter lobular ducts between C.T.

• interlobular ducts with some other duct converge together to make the main pancreatic duct.

مواد و إنزيمات
خارجة من
البنكرياس

Pancreatic enzymes

proteases

α-amylase

lipases

Nucleases

DNAse

RNAse

من قبل البنكرياس

precursors: as

Trypsinogen is an inactive form in right site there's an enteropeptidase that activated it into Trypsin.

and other enzymes activated by Trypsin.



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* Cholecystokinin (CCK) : Control the pancreatic secretion

* parasympathetic system : Control the secretion

Liver :

• located in the most upper part of the abdomen in the right side mainly and partially in left side

• it's anatomically divided by 1 ^{deep} groove into 2 large (left and right) lobes and 2 small (quadrate and caudate) lobes and this divisions has only a topographic importance.

* Liver Lobules :-

A. classic lobule : ① Polyhedral shape is a hexagonal mass of tissue

② At the center it contain a terminal hepatic venule (central vein)

and the angle of hexagonal mass are portal tracks (triade)

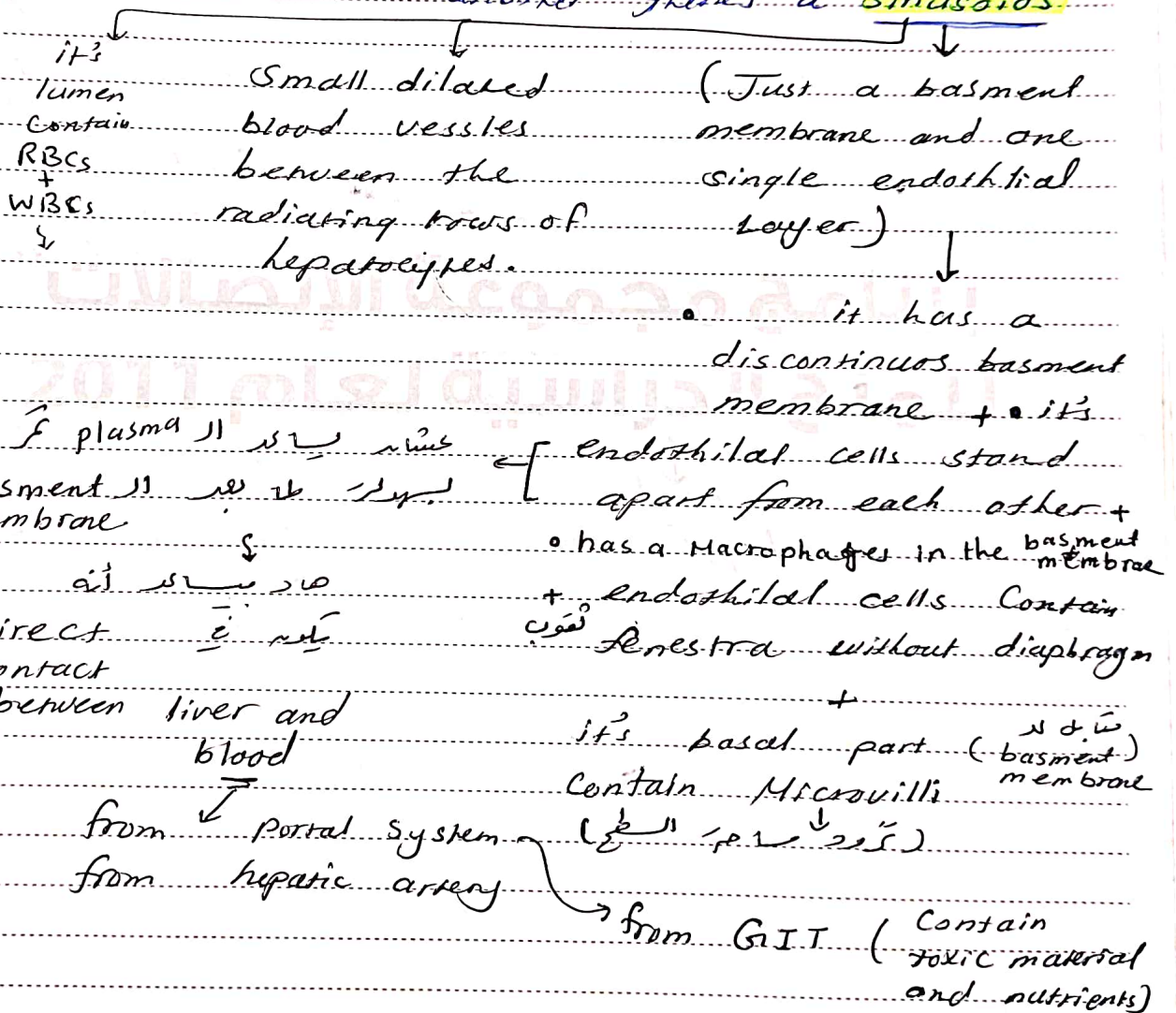
✓ في الكبد توجد 3 عناصر هي خلايا كبدية
الشعيرات الدموية
الشعيرات الوريدية



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(3) Liver hepatocytes arranged in (one single cell thickness plates) and radial from central vein to the periphery of the lobule.

(4) between each plate and another there's a sinusoids.



+ Space of Disse = perisinusoidal spaces lies between the sinusoids of hepatocyte.



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The classical lobule Macrophage Functions:-

First it has a cellular extensions that may close the way of sinusoidal blood. (The blood come from GIT and pancrease and spleen)

↓
which has a connection with blood system

↓
lead that spleen degenerate the aged RBCs

So Macrophages → take the regenerated RBCs that come from the spleen and recycle it.
↓
called Kupffer cell

31



The other cell type in the perisinusoidal space is the non-hepatic stellate cell called Ito cell, that help in storage of vitamin A. In pathological conditions it modified into thing resemble the fibroblast (C.T substances producing cell.)

↓
has a role in liver cirrhosis (extensive fibrosis and nodality of the parenchyma)

- ① hepatocyte size from 20 to 30 μm
- ② hepatocyte plate have sinusoid and discontinuous basement membrane (as the lobule) and contain Kupffer cells + Microvilli + Space of Disse

③ hepatocyte is hexagonal (six surfaces)

↓
2 surfaces

↓
Space of Disse

↓
4 surfaces

on its plasma membrane there's a groove

(2nd surface no groove)
(1st surface no groove)
بسطة 2nd سطح 1st سطح

Canaliculus

↓
honey comb



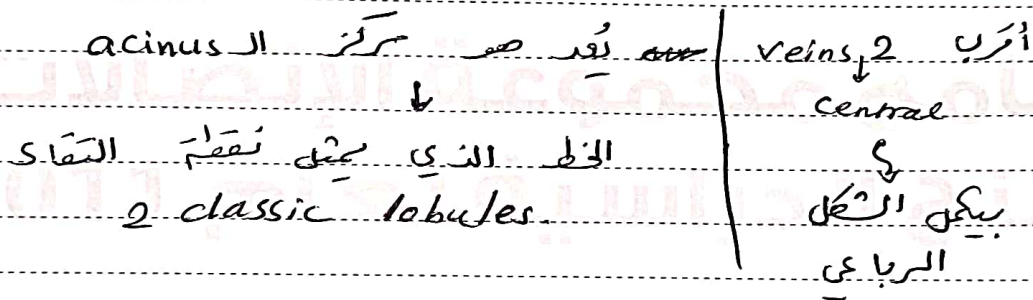
B- Portal lobule:-

• its center is bile duct in the portal tract and surround by 3 central veins → Portal Lobule.

• emphasizes that liver is a secretory gland

C- liver acinus:-

• lozenge-shaped



Oxygenated blood من ال hepatic artery
25% from (75% of) Portal vein liver blood

الدم من ال portal و ال hepatic ينخلط
مع بعض



مجموعة ال hepatocytes التي في ال center
2 classic lobules هي الأكثر عرضة أنه تصاب

ال O₂ من الدم المنزوع



المراد بـ O_2

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Zone 1 هو مكانه يوصله الدم هو

Zone 3 هو الأقرب لـ Central Vein
الأبعد عن الخط

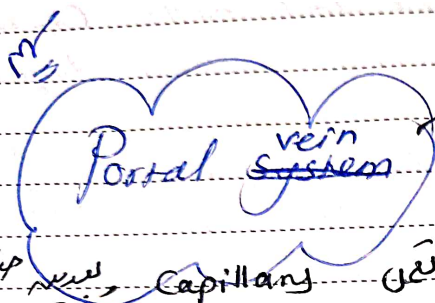
Zone 2 هو ما بينهم
في نسبة جدره
على O_2

Zone 1 هو الأقرب لـ O_2
ولكنه الأكثر عرضة
لـ toxic material

• in Ischemic conditions Zone 3 is the most damaged

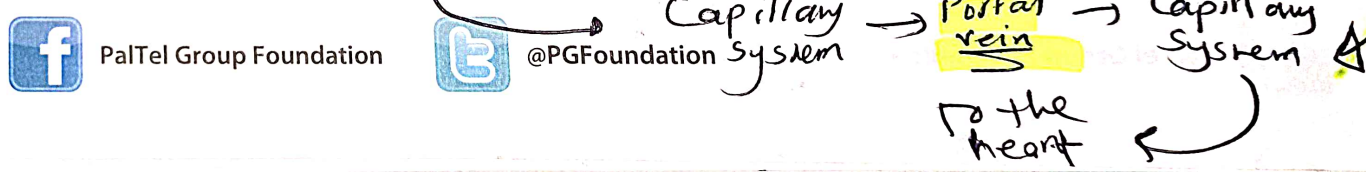
• in Toxic condition Zone 1 is the most damaged

المجلة الحراسية لعام 2011



vein between to capillary system

السريان الى حوصلة GIT يستفزع رفق
 رفق venous system و يترك ما يدخل الى liver
 حرق single vein ← portal vein
 حرق lobule في كل lobule
 حرق + branch of portal vein
 حرق + branch of hepatic artery
 حرق portal tract
 حرق liver و يدخل الى portal vein
 حرق sinusoid (يفتح الى capillary system)
 حرق So (to capillary system)



Biliary system

- one of the liver function is bile secretion
- biliary system is lined by cholangiocyte

• Bile flow is centrifugal from the Regir of Central vein toward the portal canal (against ^{blood} ~~flow~~ ^{flow}) Near the portal canal but still within the lobule the bile canaliculi transform in the Canals of Hering

↓ lining by 2 Cell types
rich in 1- hepatocytes
hepatocyte or 2- cholangiocyte
cholangiocyte stem cells



- Canal of heping when cross the boundary of the classic lobule Peripheral part and Portal tract

↓ it become called

bile ductule

- The main distinction between the Canal of heping and the bile ductule is not its location within the lobule but whether the structure is partially or completely lined by cholangiocyte



if partially

→ Canal of heping

if completely

→ Bile ductule

all Bile ductule converge together to make Bile duct (one of the triad)

- Interlobular ducts Join to form the right and left hepatic ducts which turn to join at the hilum & form the Common hepatic duct.

Cholangiocyte the lined the bile duct system that it is contain a chemoreceptor (that detect the change in environment). So the bile duct is active and can detect the composition of the bile and modified it.



Gall bladder

- * has a duct called cystic duct bind to the common hepatic duct and form the Common bile duct.

Note

- liver secretes bile and extra bile store in the gallbladder.
 - ~~bile duct~~ } has a lining epithelium
• gall bladder } with lamina propria and
No Muscularis ~~propria~~ ^{mucosa} and
No Submucosa +
it has adventitia and it is continuous with liver tissue.
 - gall bladder has a deep diverticula of the mucosa called Rokitsansky - Aschoff Sinuses and sometimes extends through the muscularis externa.
- Cholangio cyte is a one single layer of columnar cells.

3/10/2022 histology
1:10 Am Done