

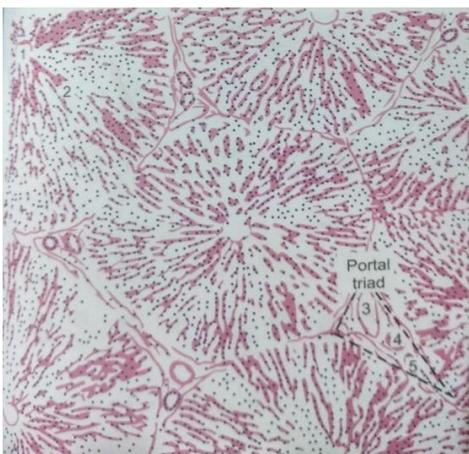
HISTOLOGY OF LIVER

The liver is a large, highly complex, essential organ of the body as it is the center of all metabolisms and crucial for other vital functions.

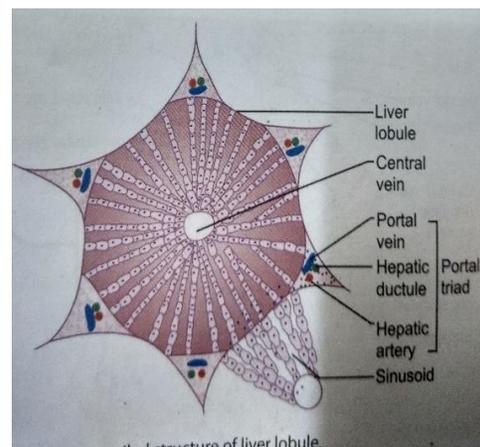
Therefore, liver dysfunctions result in major abnormalities of the body.

- Liver is protected by a thin but strong capsule, called Glisson's capsule.
- Liver is formed by large no. of **lobules**. Each lobule is delineated by a connective tissue sheath.
- Individual lobule (the plate of hepatic cells) is polygonal in shape with a **central vein** at the center.
- From the central vein, plates of liver cells (chords or rows of **hepatocytes**) radiate like spokes of bicycle wheel to the periphery of the lobule. Liver cells have the capacity to regenerate.
- The plates are one cell thick and are separated by liver **sinusoids** that carry blood. Hepatic arterial blood and portal venous blood get mixed together in the sinusoids and drain into the central vein from periphery of the lobule.
- Wall of the sinusoids are mostly made up of **endothelial cells** (80%), but at places **macrophage cells** called **Kupffer cell**, are occasionally present (9%).
- In the periphery of each lobule, there are **portal triads** consisting of -
 - i) one branch of **hepatic artery**
 - ii) one branch of **portal vein** and
 - iii) one tributary of **hepatic bile duct/ bile ductule**

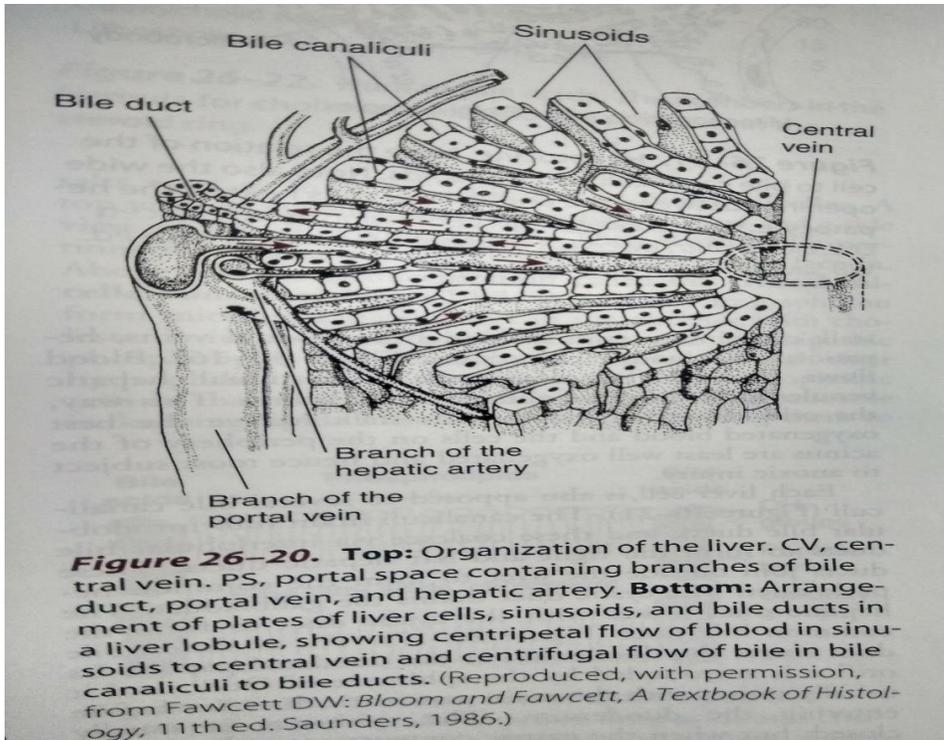
- The angular space that contains portal triad and its surrounding connective tissue is called **portal canal**.
- **Bile canaliculi** start as blind tubes near the central vein → opens into the tributary of hepatic bile duct → bile flows from center of the lobule to the periphery. Hepatocytes synthesize bile acids and transfer them into bile canaliculi.
- The space between the sinusoids and hepatocytes is the **space of Disse (perisinusoidal space)**. Hepatocytes remove certain substances from blood and discharge certain products into the blood through this route/space.
- A small space between the hepatocytes and portal canal is called **space of Mall**, the site of origin of lymph in liver.
- Region cells i) near the periphery of the lobule is called **Zone -I** which is best supplied by O_2 and nutrients, ii) near the central vein is **Zone-III** which is least supplied by O_2 and nutrients and iii) Zone -II lies in between Zone-I and Zone-III. Therefore Zone-III cells (hepatocytes) are worst affected by condition of hypoxia.



Liver lobules with central vein, portal triad (from GKP)



Single lobule with chords of hepatocytes, Central Vein, portal triad and sinusoids



From GANONG