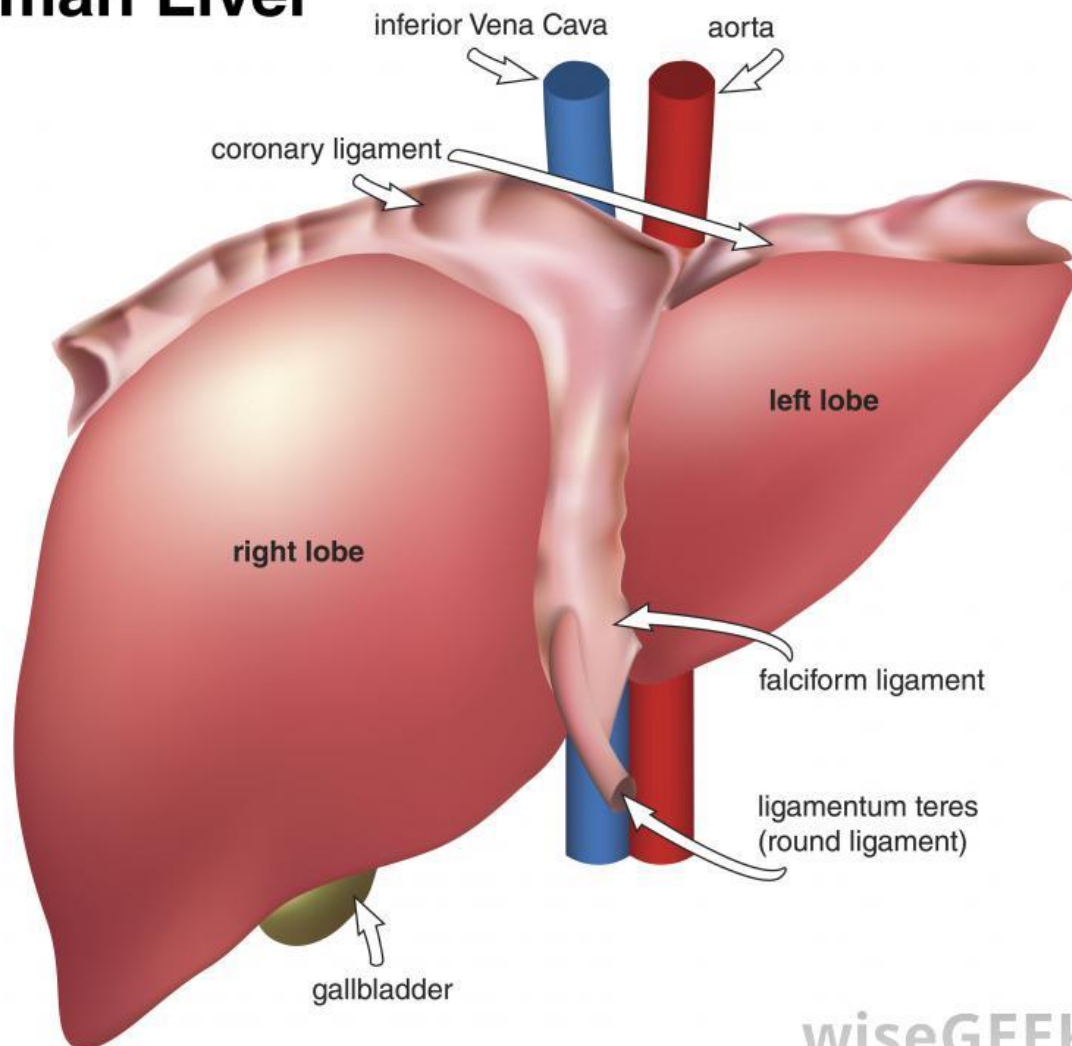


6. Liver

- The liver is a large, meaty organ that sits on the right side of the belly.
- Weighing about 3 pounds,
- The liver is reddish-brown in color and feels rubbery to the touch.
- It's protected by the rib cage.
- The liver has two large sections, called the right and the left lobes.
- The gallbladder sits under the liver, along with parts of the pancreas and intestines.
- The liver and these organs work together to digest, absorb, and process food.
- The liver's main job is to filter the blood coming from the digestive tract, before passing it to the rest of the body.
- The liver also detoxifies chemicals and metabolizes drugs.
- The liver also makes proteins important for blood clotting and other functions.

Human Liver



7. Bile

Bile is a digestive juice that is secreted by the liver and stored in the gallbladder. It has important functions:

1. It is a means for the body to **excrete waste** products from the **blood**.
2. **Emulsify fats** and break it down into small particles. This is a detergent-like action of bile.
3. Helps the body **absorb** the breakdown products of fat in the gut.
4. Bile salts bind with **lipids** to form micelles. This is then absorbed through the intestinal **mucosa**.
5. The other important function of bile is that it contains waste products from **hemoglobin** break down. This is known as **bilirubin**.
6. Bile also carries **excess cholesterol** out of the body and ‘dumps’ it into the gastrointestinal tract where it can be passed out with other waste matter.

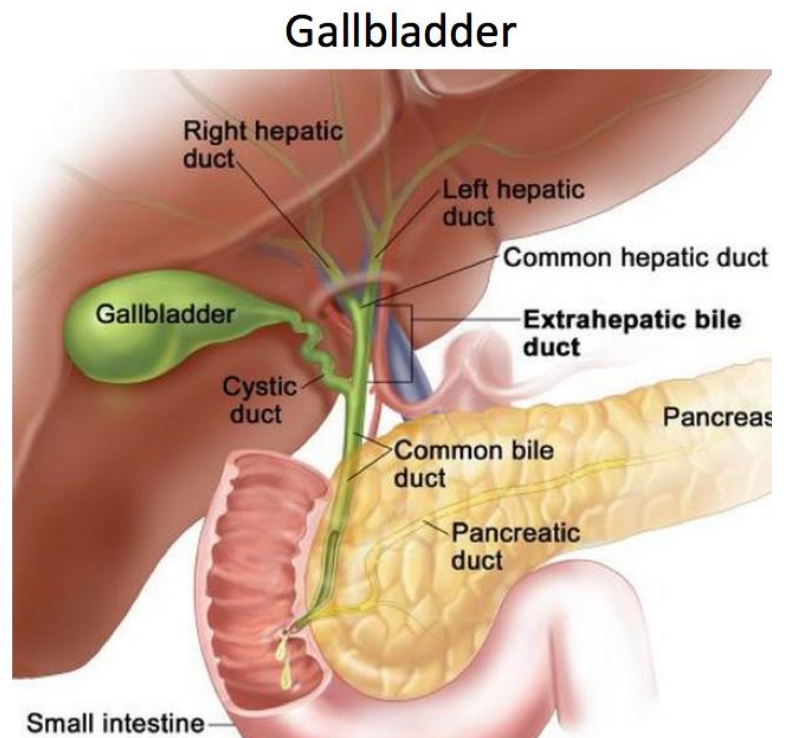
Bile Production

- The liver cells (**hepatocytes**) produce bile which collects and drains into the **hepatic duct**.
- From here it enters into the **small intestine** to act on **fats** by traveling down the **common bile duct**
- Or it can enter the **gallbladder** through the **cystic duct**, where it is stored.
- The liver manufactures between **600ml to 1 liter** of bile in a **day**.
- As bile travels down the ducts, the **lining** of these passages, secrete **water, sodium** and **bicarbonate** ions into the bile, thereby diluting it.

Bile Salts

Bile, whether from the liver or gallbladder, contains the following substances:

- water
- bile salts
- bilirubin
- cholesterol
- fatty acids
- lecithin
- sodium
- potassium
- calcium
- chlorine
- bicarbonate ions



8. GALLBLADDER

- The gallbladder is a small pouch that sits just under the liver.
- The gallbladder stores bile produced by the liver.
- After meals, the gallbladder is empty and flat, like a deflated balloon.
- Before a meal, the gallbladder may be full of bile and about the size of a small pear.
- In response to signals, the gallbladder squeezes stored bile into the small intestine through a series of tubes called ducts.

Gallstone

- Gallstones are small stones, usually made of cholesterol, that form in the gallbladder.
- These deposits may be as small as a grain of sand or as large as a golf ball; they may be hard or soft, smooth.
- However, if a gallstone becomes trapped in an opening (duct) inside the gallbladder, it can trigger a sudden, intense abdominal pain that usually lasts between one and five hours. This type of abdominal pain is known as biliary colic.

Some people with gallstones can also develop complications, such as inflammation of the gallbladder (cholecystitis), which can cause:

- persistent pain
- jaundice
- a fever

When gallstones cause symptoms or complications, it's known as gallstone disease or cholelithiasis.