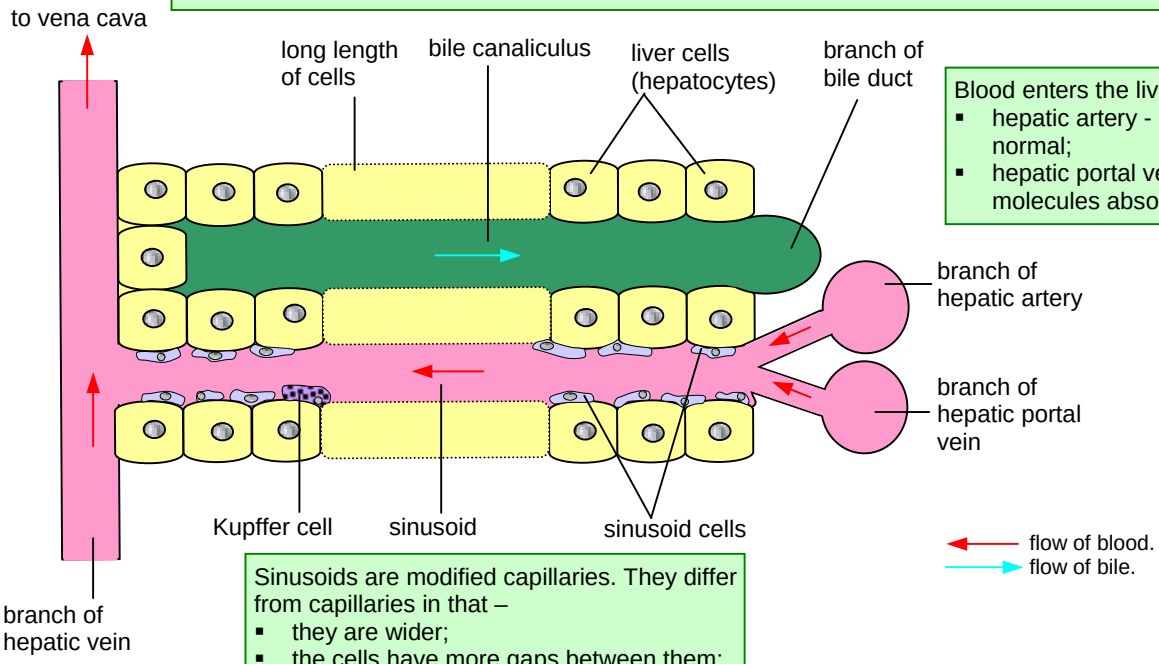
❖ Functions of the Liver

Circulation within the Liver Tissue

Bile secretion

Key points

- Bile is synthesised by the hepatocytes and secreted into the bile canaliculi.
- These drain into small ducts which join together to form the bile duct.
- This carries the bile to be stored temporally in the gall bladder.
- Water is absorbed by the wall of the gall bladder to concentrate the bile.
- Bile enters the small intestine through the bile duct.
- Bile contains -
  - hydrogen carbonate ions (HCO^{3-}) to neutralise the acidic chyme from the stomach;
  - bile salts made from cholesterol and which emulsify lipids;
  - bile pigments which are formed from the haem of haemoglobin and are excreted.



Blood enters the liver from two sources –

- hepatic artery - oxygenated blood as normal;
- hepatic portal vein - blood rich in food molecules absorbed from the gut.

Sinusoids are modified capillaries. They differ from capillaries in that –

- they are wider;
- the cells have more gaps between them;
- there is no basement membrane.

Kupffer cells are fixed phagocytic cells in the sinusoids.

Regulation of Nutrients

Key points

- Nutrient levels in the blood rise sharply as they are absorbed after eating;
- Nutrient levels in the blood fall as they are assimilated by body cells;
- The liver maintains a balance in the blood by storing nutrients when they are in excess and releasing them when they are needed elsewhere.

Storage in the Liver

Carbohydrate – (see also page 87 in the Core Guide).

High blood sugar level → insulin from pancreas → **Glycogen stored in hepatocytes** → glucagon from pancreas → Low blood sugar level

Iron

- Stored in specific protein called ferritin.

Vitamins

- Retinol;
- Calciferol.
- These are both fat soluble vitamins and are stored in large quantities.