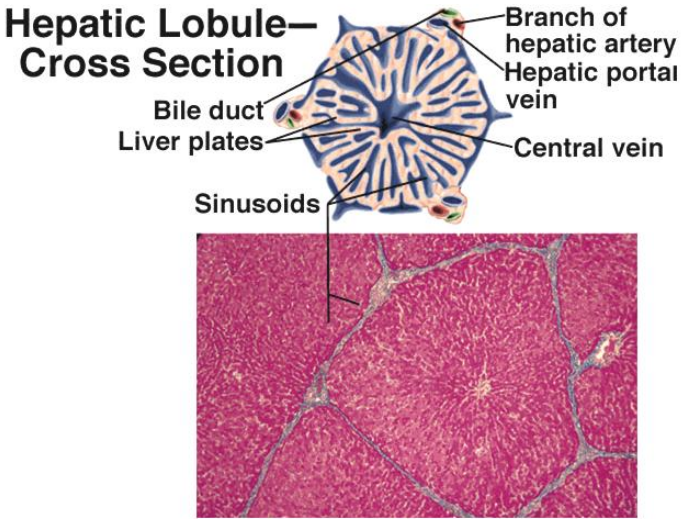
Unit V – Problem 1 – Histology: Liver and Gallbladder

- **Liver:**
  - It is located outside the digestive tube (therefore considered as an accessory organ of the GI system).
  - Notice that all nutrients which are absorbed from small intestine will pass through the liver via the **portal vein** and **hepatic sinusoids**. These sinusoids are lined with fenestrated endothelium (containing pores).
  - **Liver has blood supply from two sources:**
    - ✓ Portal vein.
    - ✓ Hepatic artery (which is branching from the celiac trunk).

      Venous and arterial blood mix in sinusoids and flow toward the central vein.
  - Liver is organized into **lobules** (with a **central vein** in the center of each lobule). Notice that liver cells (hepatocytes) radiate to the lobule periphery from the central vein.
  - **The lobule periphery has a portal area which contains:**
    - ✓ Hepatic artery.
    - ✓ Portal vein.
    - ✓ Bile duct.
  - Substances in blood contact hepatocytes via subendothelial perisinusoidal **space of Disse.**
  - White blood in cell in the liver are known as **Kupffer cells** and they are associated with sinusoids.
  - In fetus, the liver is the site of blood cell formation (this function is taken by the bone marrow in adults).
  - Individual liver cells perform both exocrine and endocrine functions.



- **Gallbladder:**
  - It is a hollow organ found inferior to the liver. It is designed to store and concentrate bile.
  - **The mucosa is lined with simple columnar epithelium.**
  - Bile produced by liver hepatocytes is delivered by major excretory ducts.
  - Sodium is actively transported out, water and chloride follow, and bile is concentrated.
  - Bile is released in response to fats in the duodenum due to the action of cholecystokinin (CCK).
  - Sphincter muscles relax and gallbladder contraction forces bile into the duodenum.