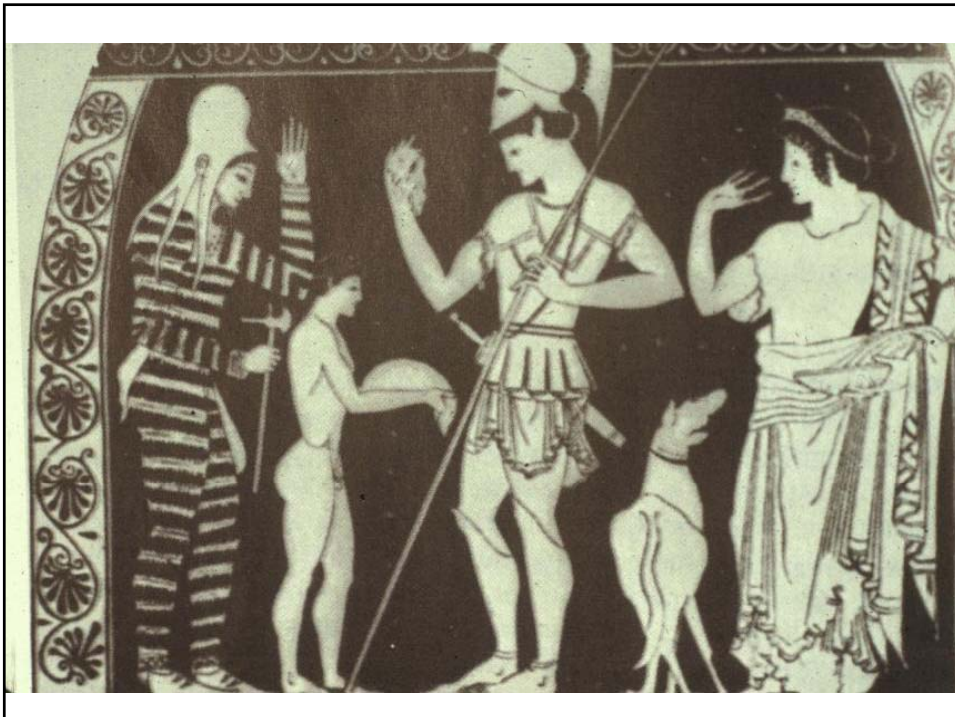


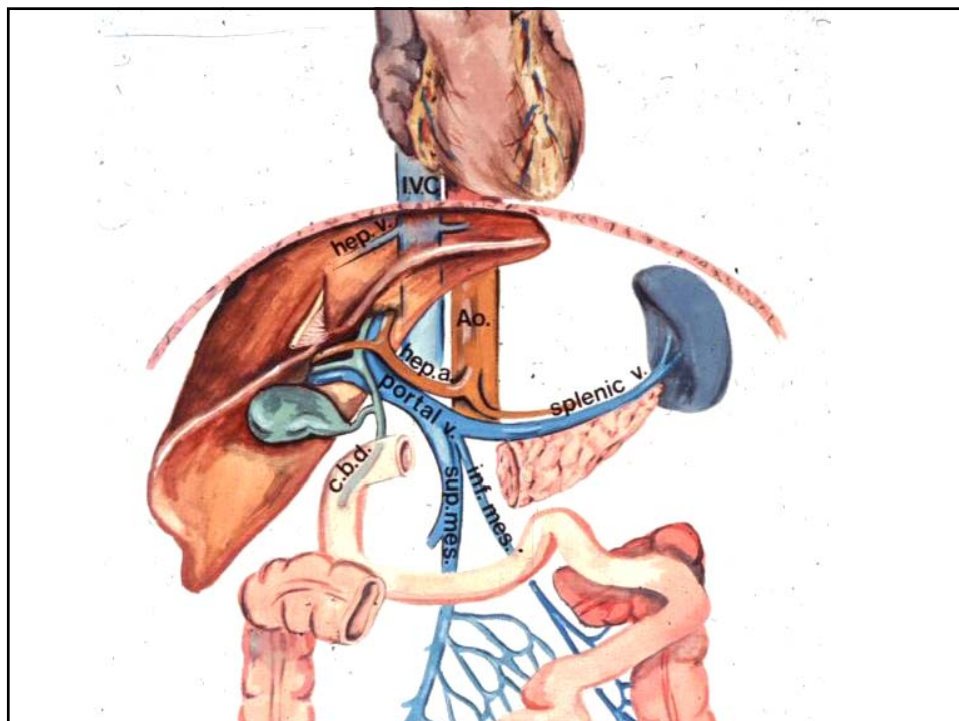
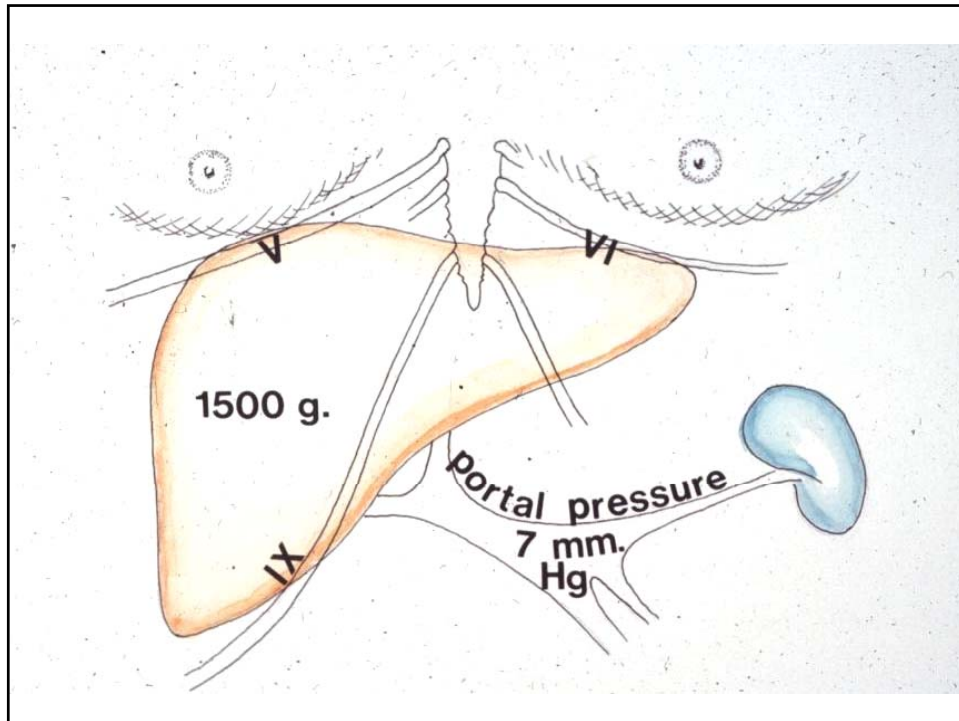
Principles of Liver Pathology

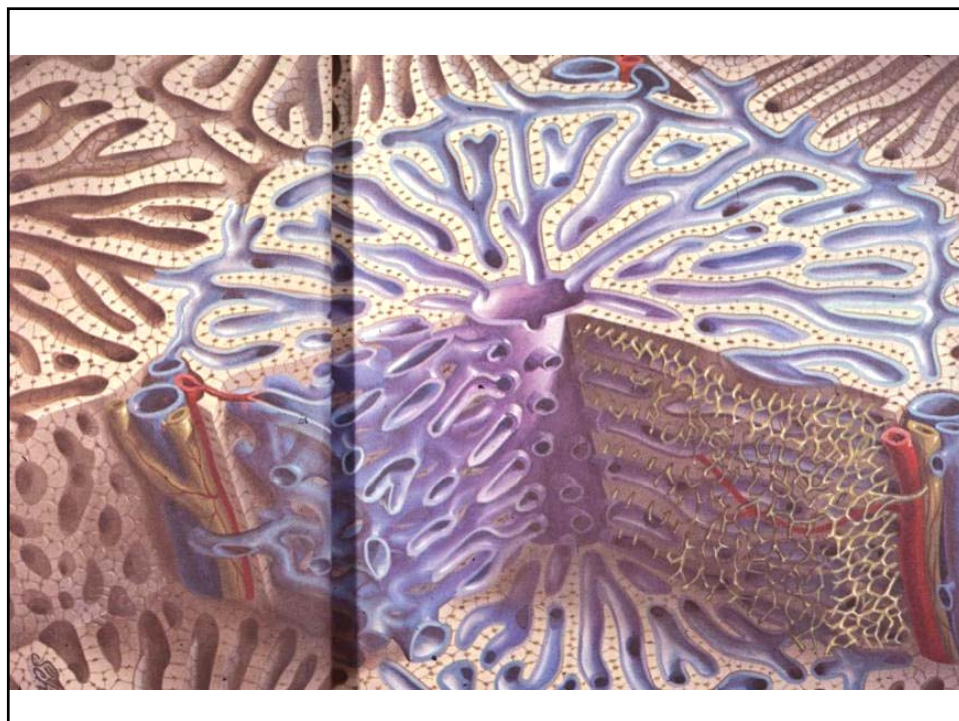
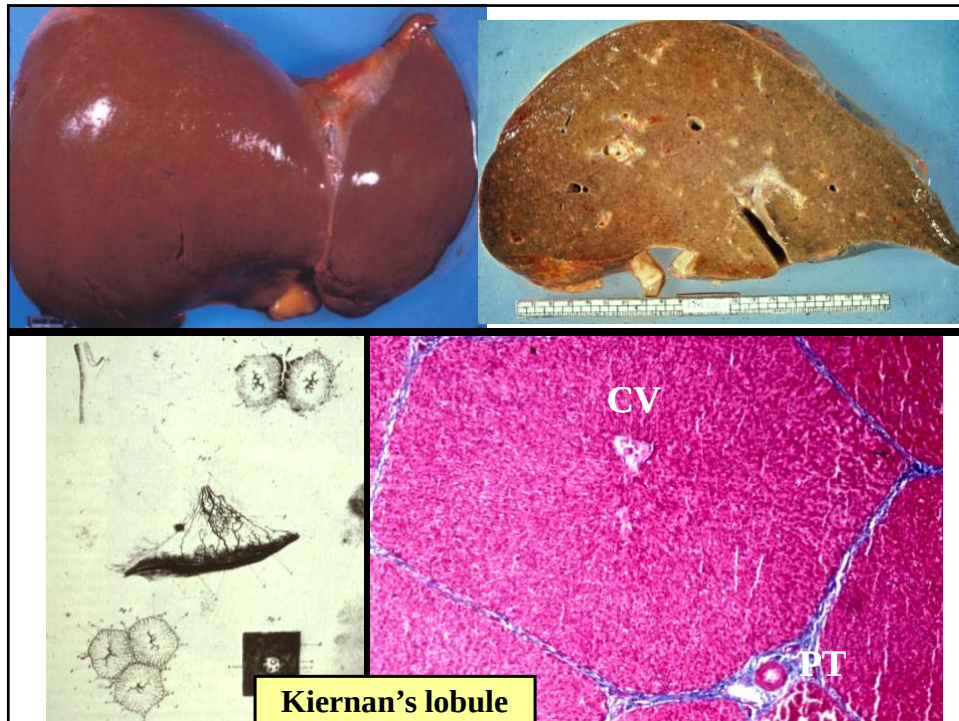
1. Review of normal gross and microscopic anatomy

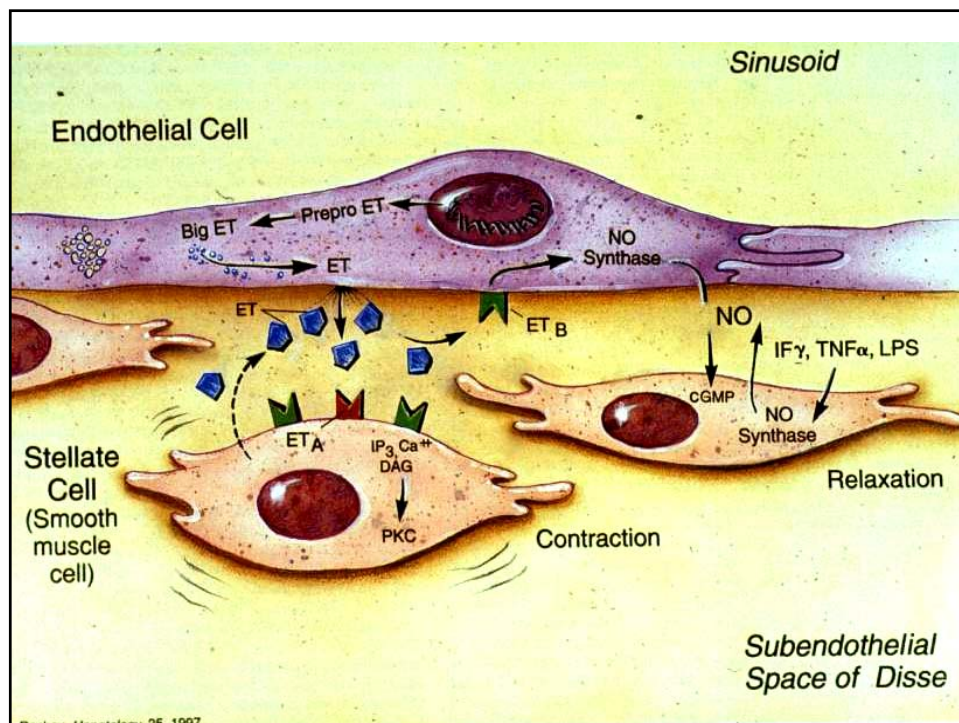
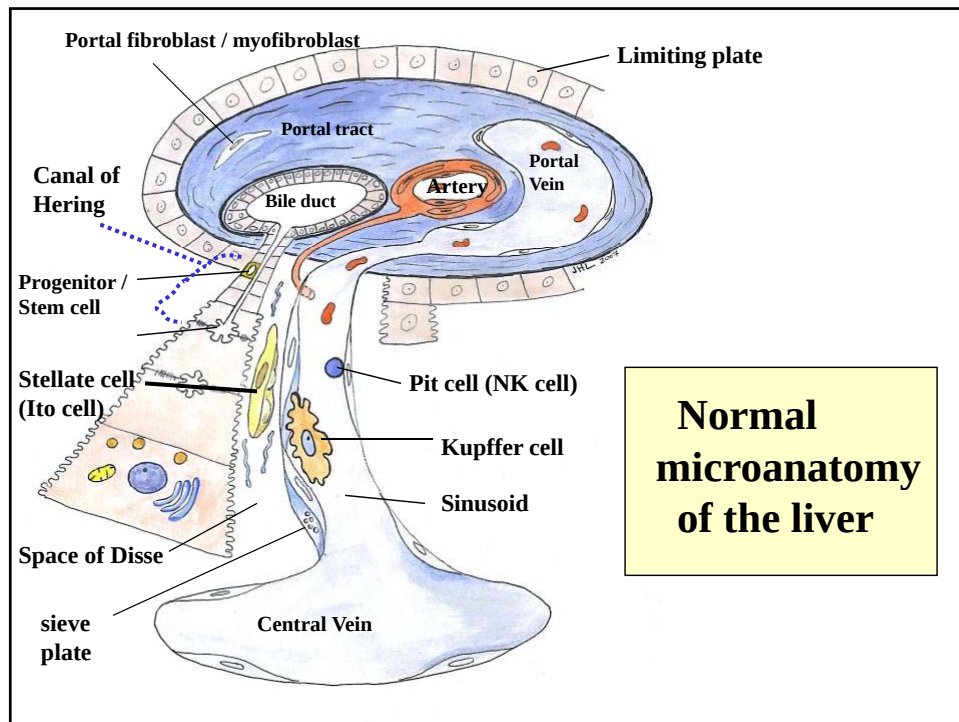
2. Major pathologic pathways in liver disease

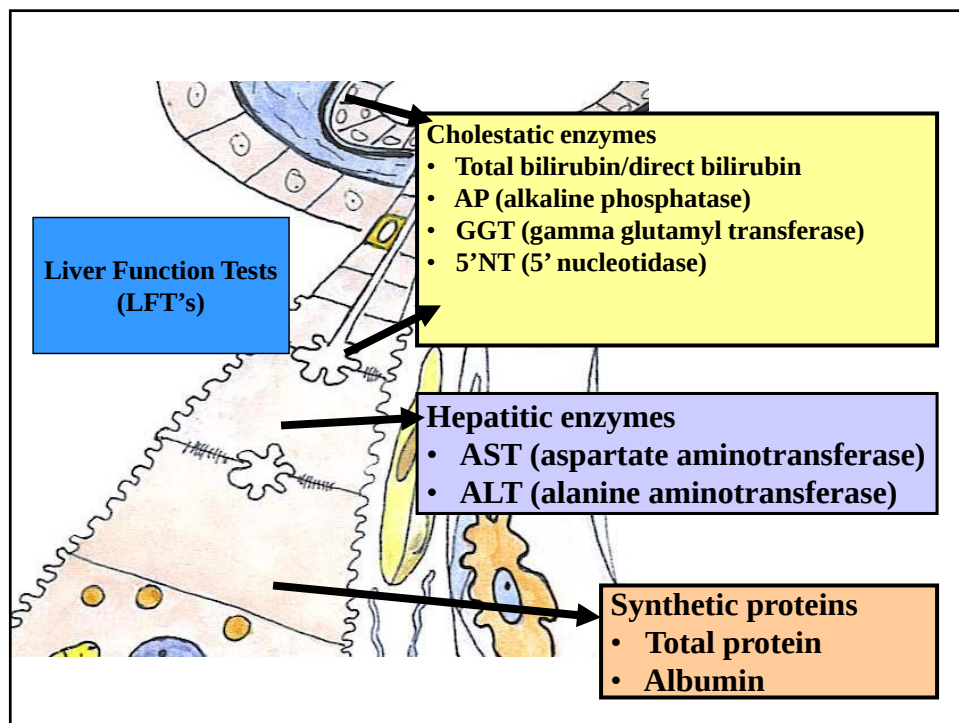
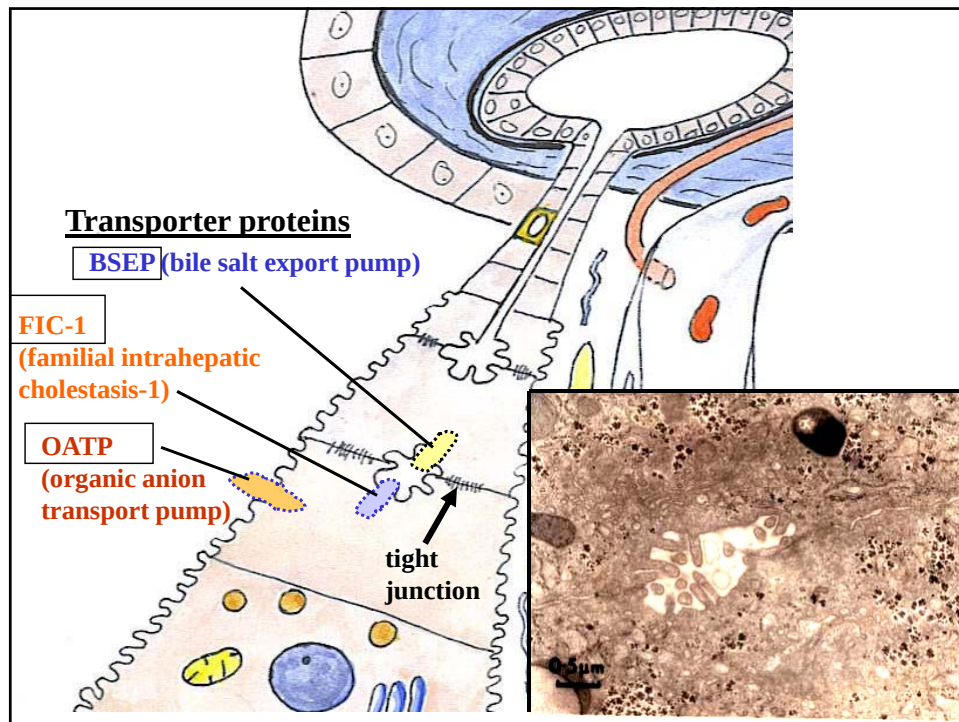
- Acute hepatitis
- Chronic hepatitis
- Fatty liver
- Cholestasis
- Cirrhosis

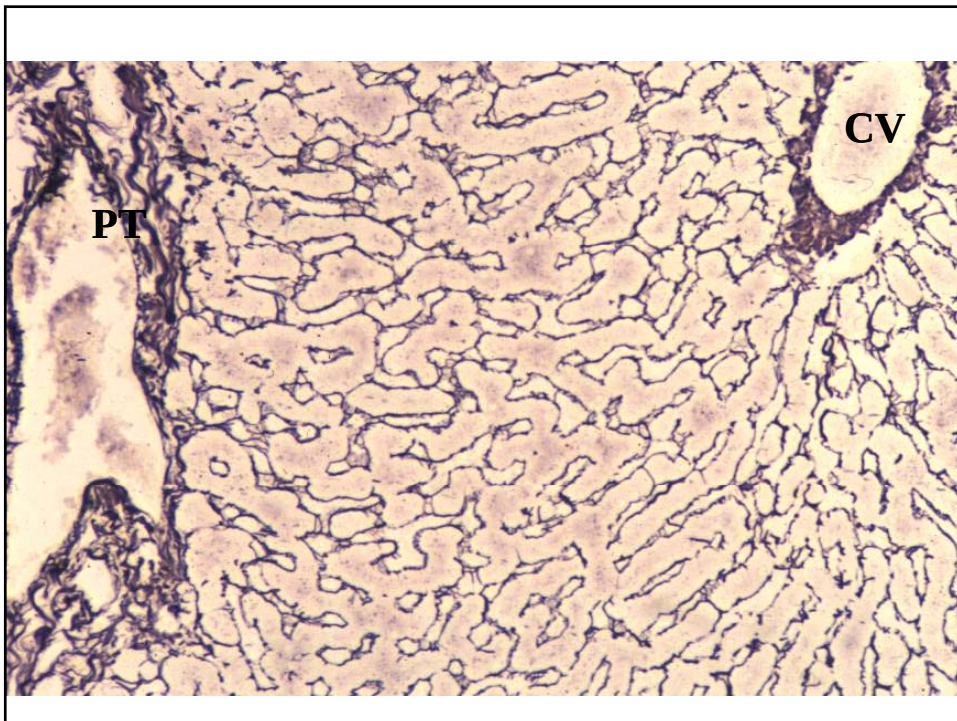
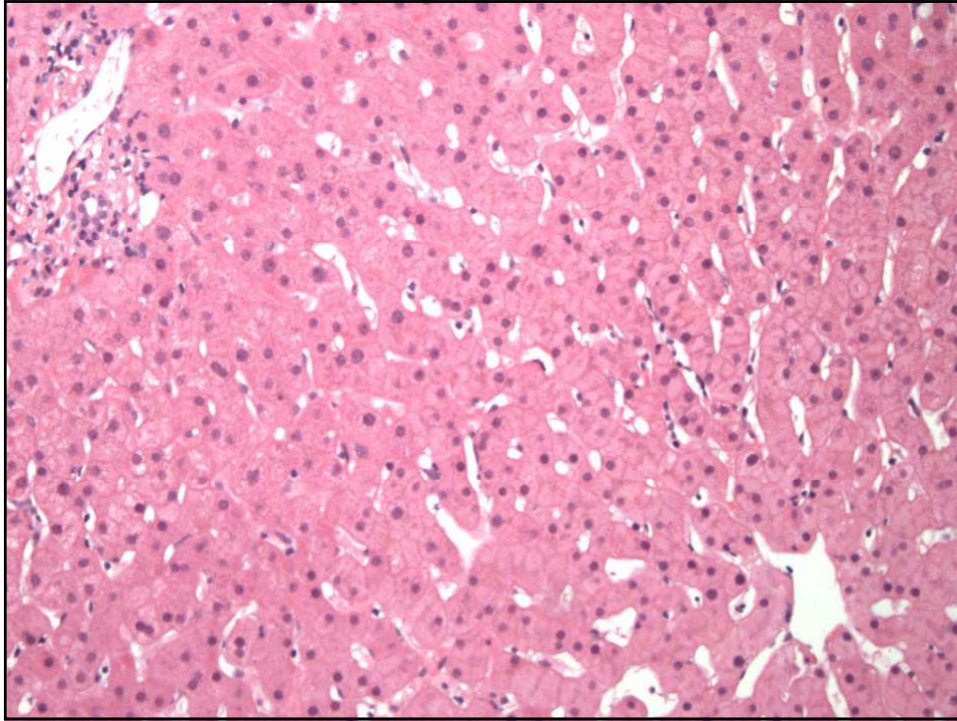


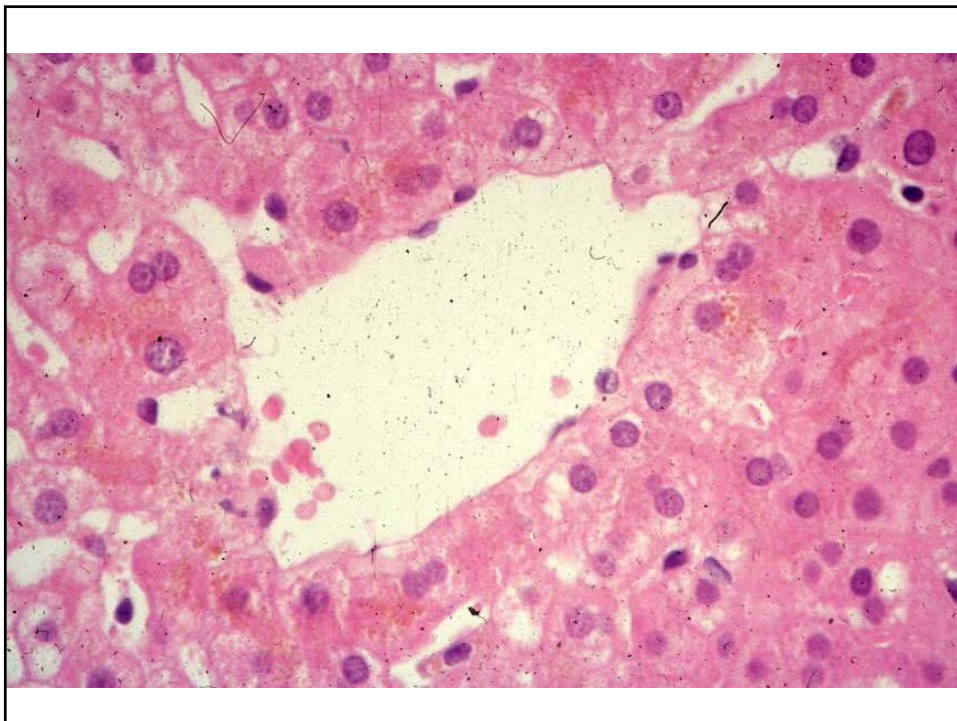
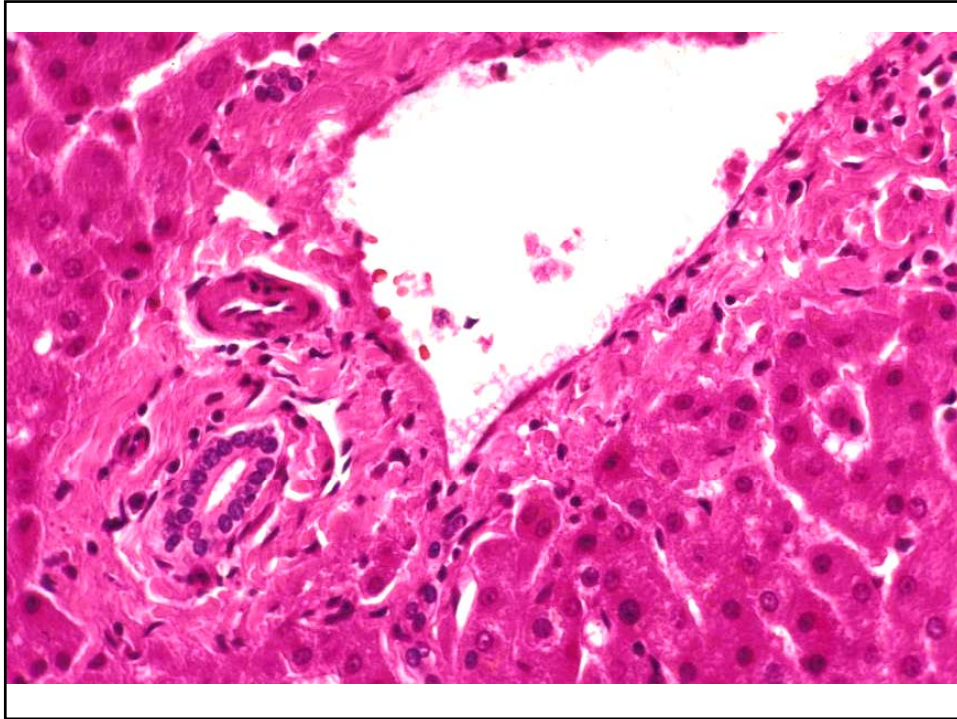


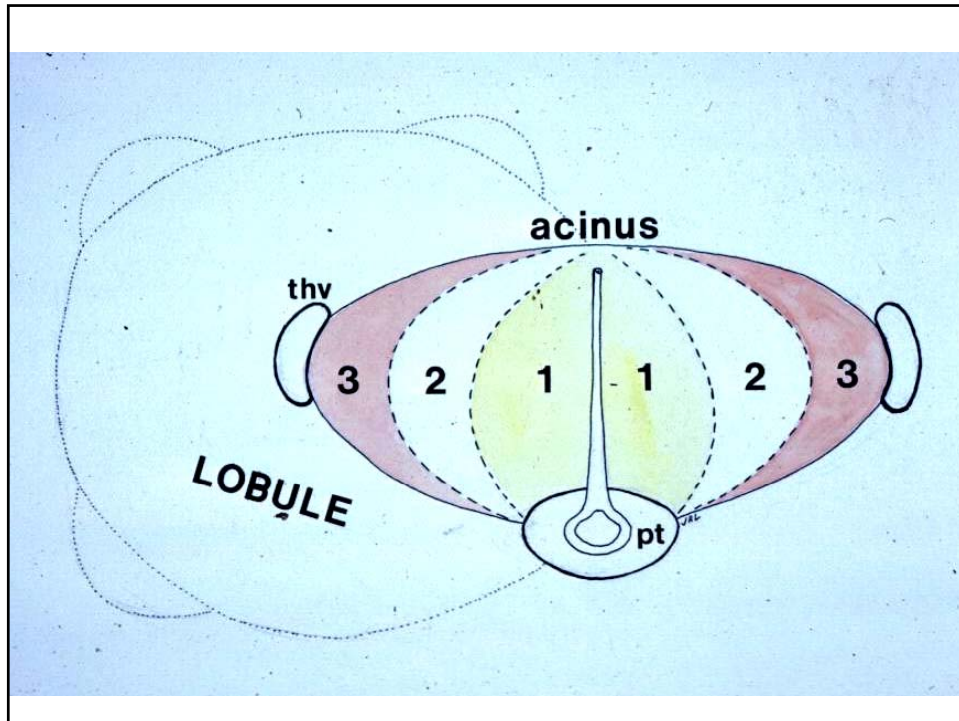












Hepatitis

Inflammation

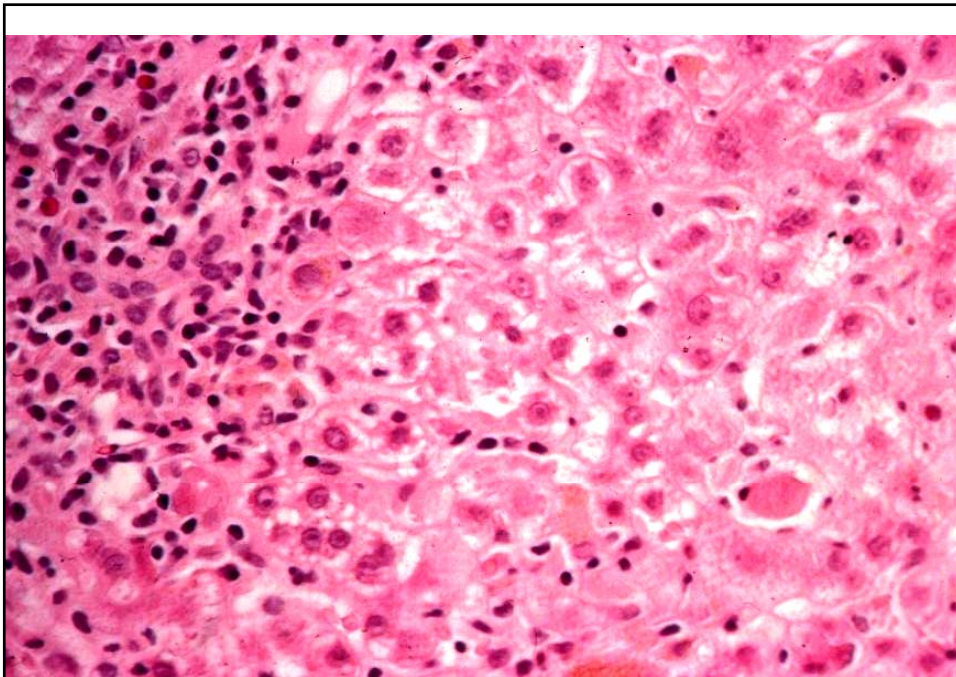
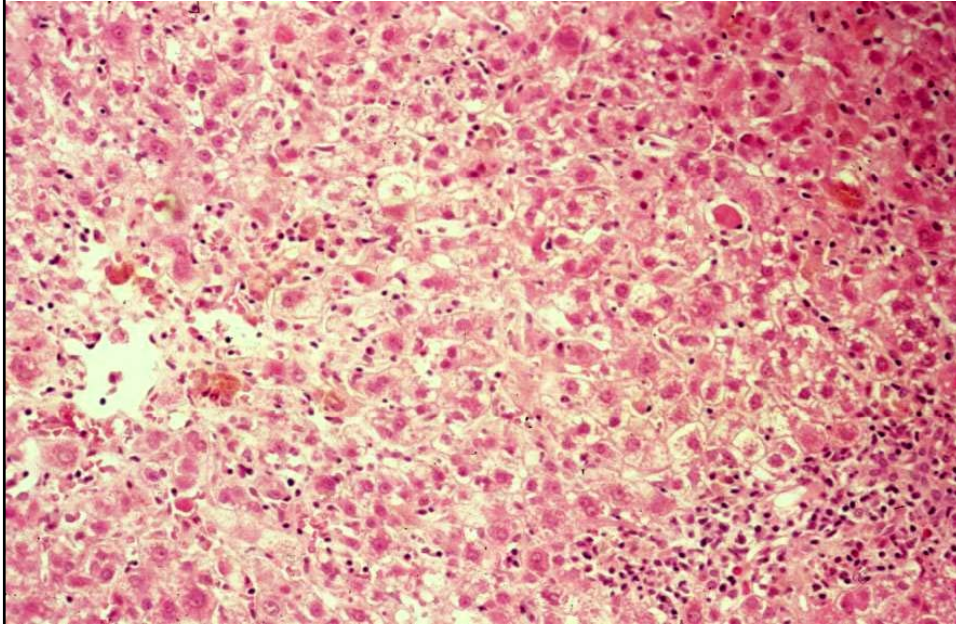
+

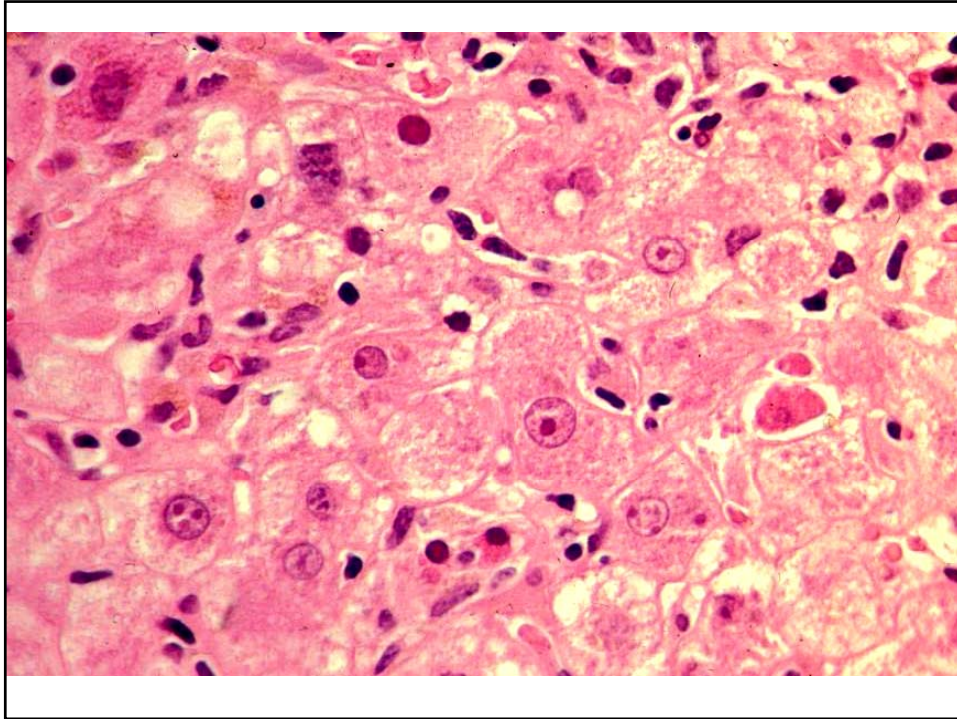
Hepatocyte Apoptosis/Necrosis

Time Course: Acute / Chronic

Causes: Virus / Drugs

Acute Hepatitis



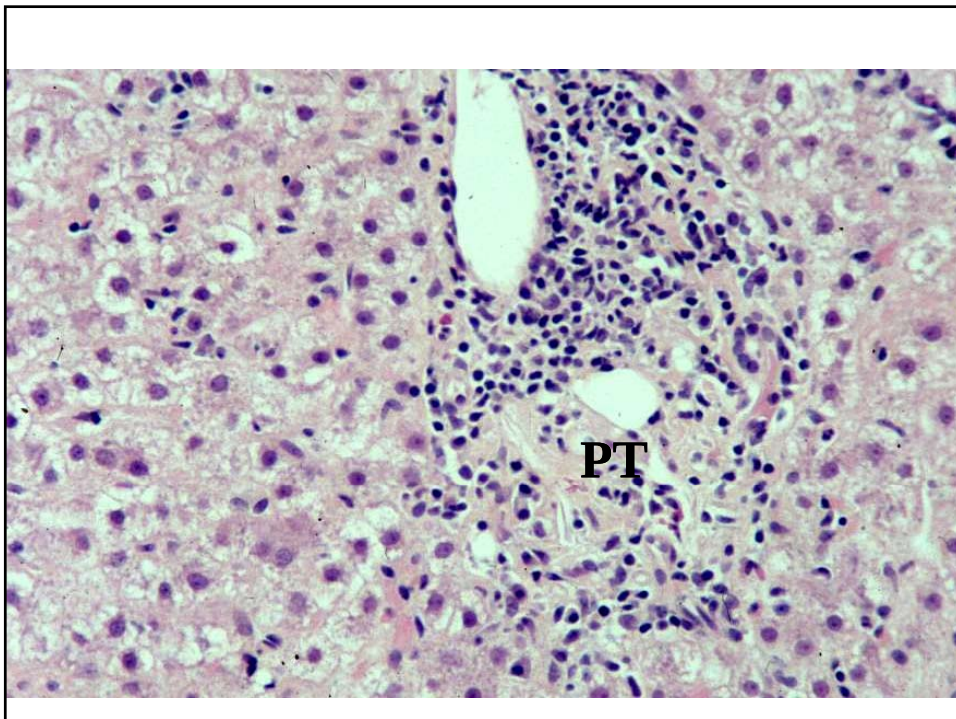


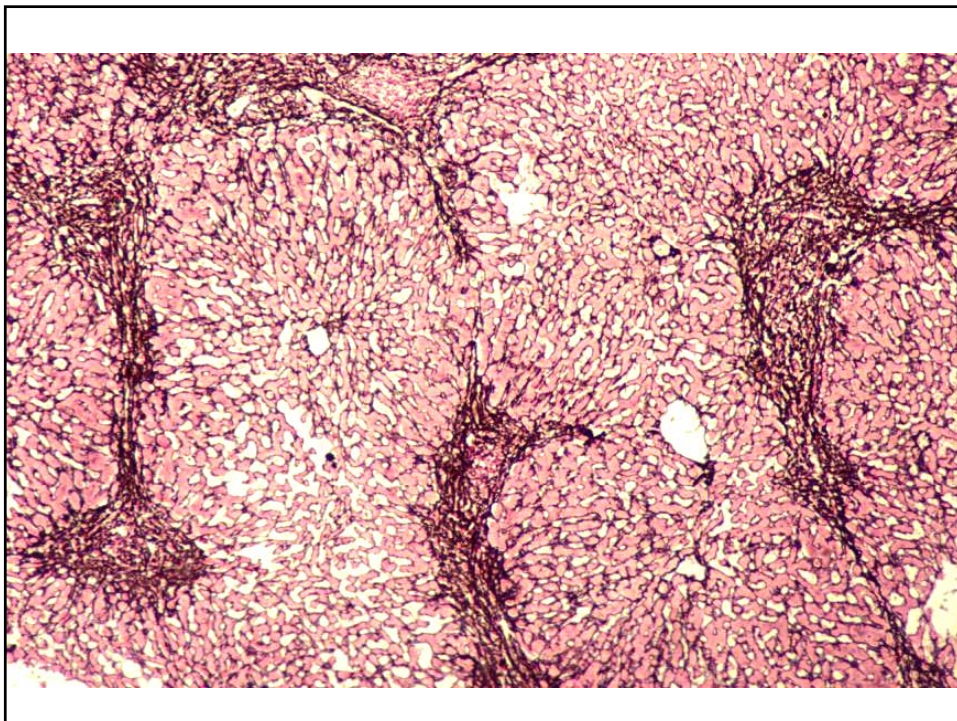
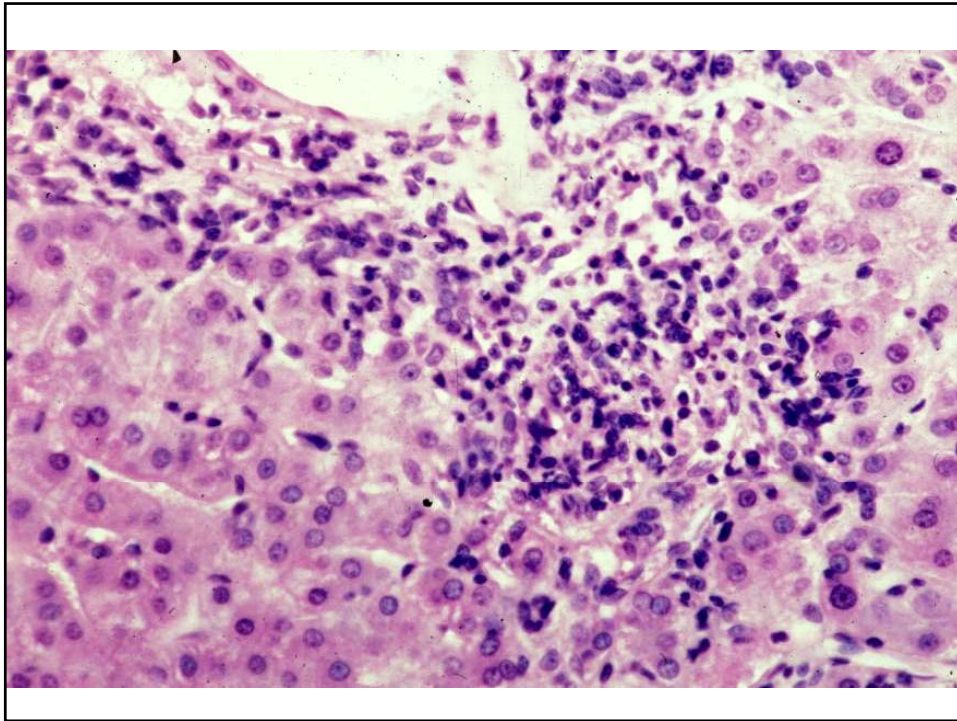
Chronic Hepatitis

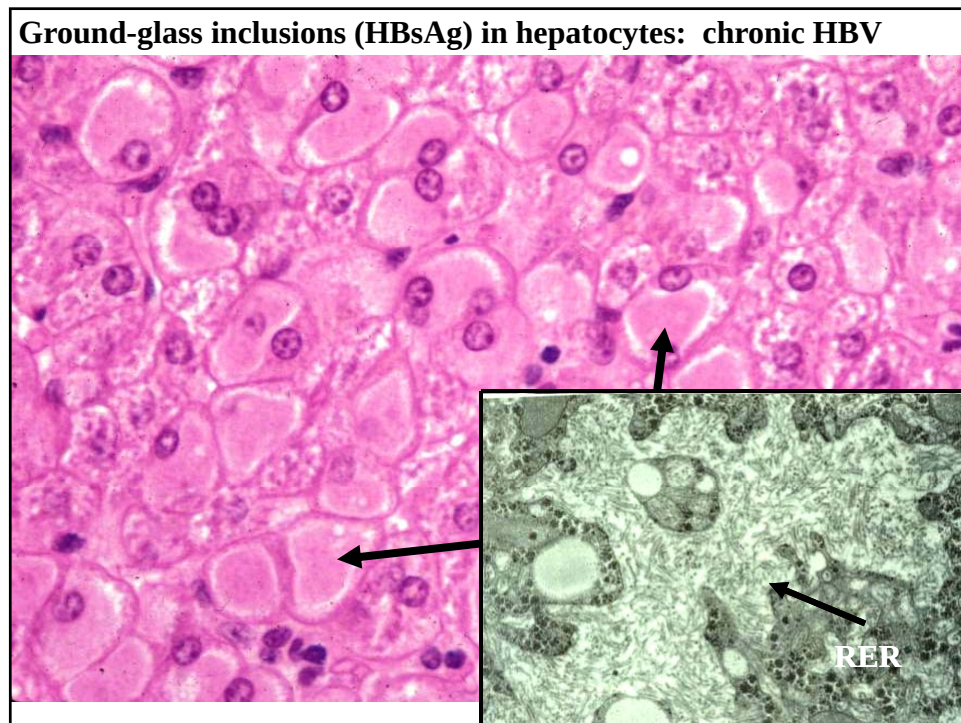
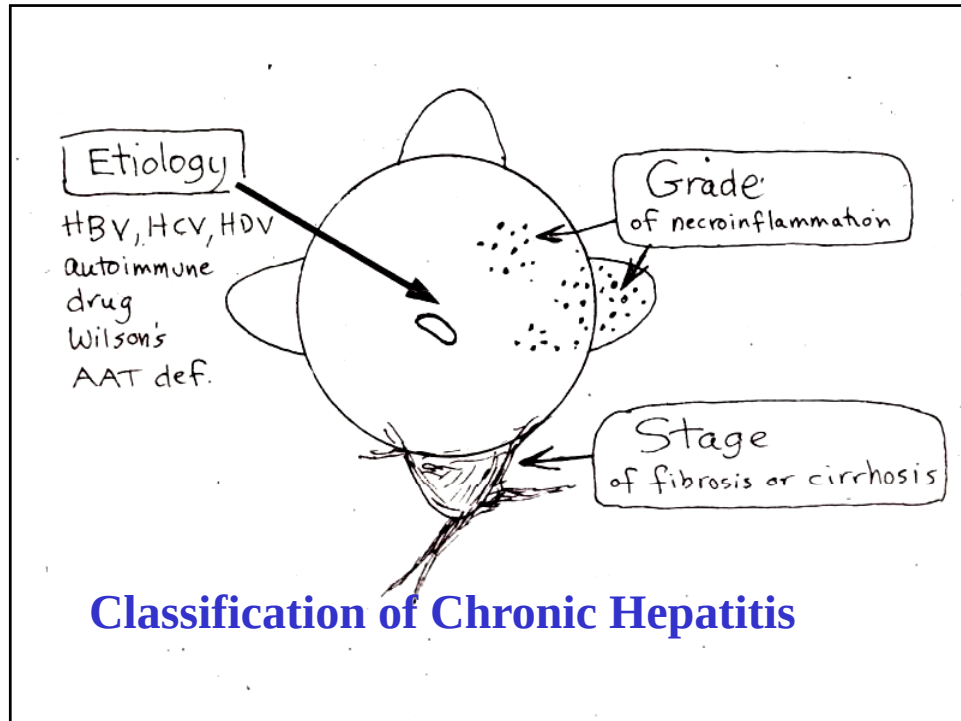
Def.: *Inflammation of the liver continuing without improvement for 6 mos. or longer*

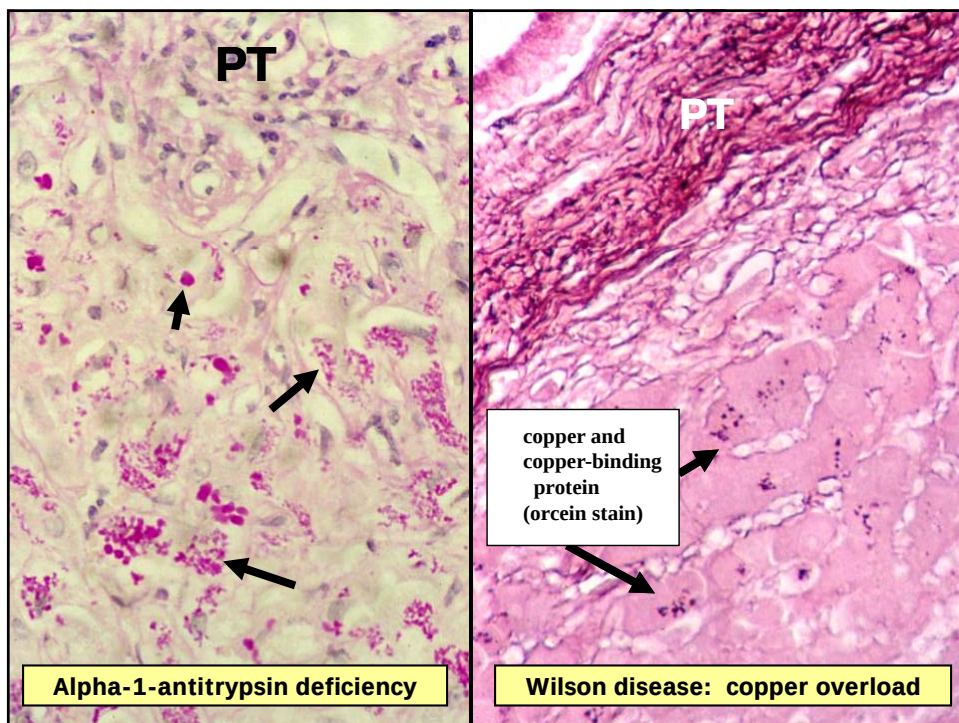
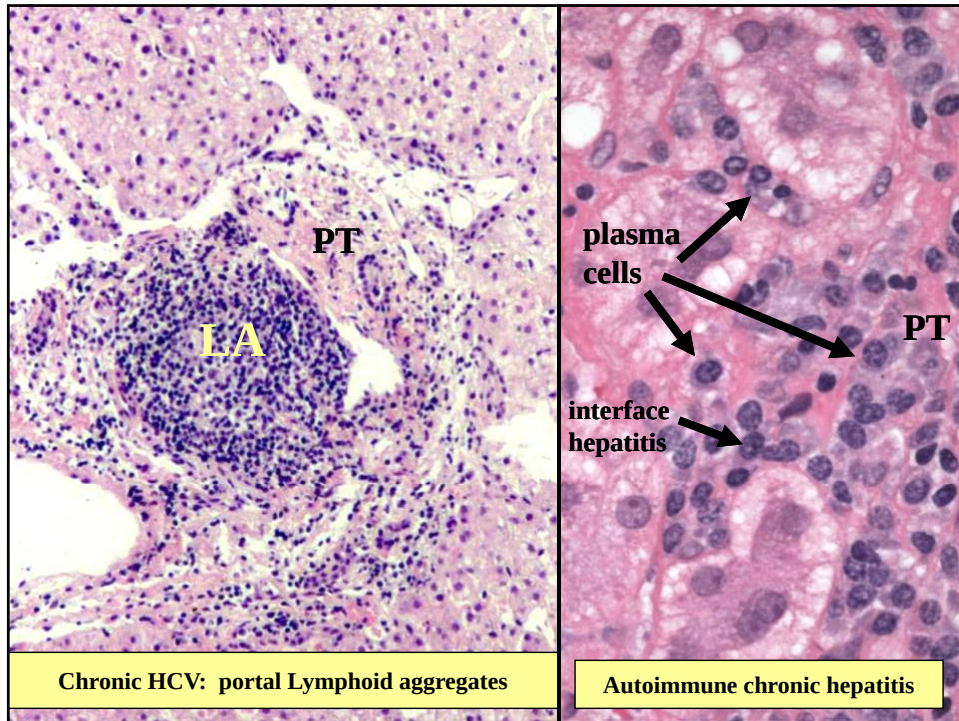
Causes of Chronic Hepatitis

1. Hepatitis viruses: HBV, HCV
2. Autoimmune hepatitis
3. Drugs
4. Metabolic diseases:
 - AAT deficiency
 - Wilson's disease
5. Cryptogenic







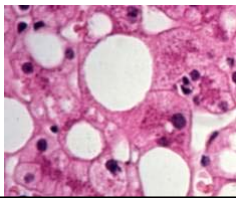


Fatty Liver

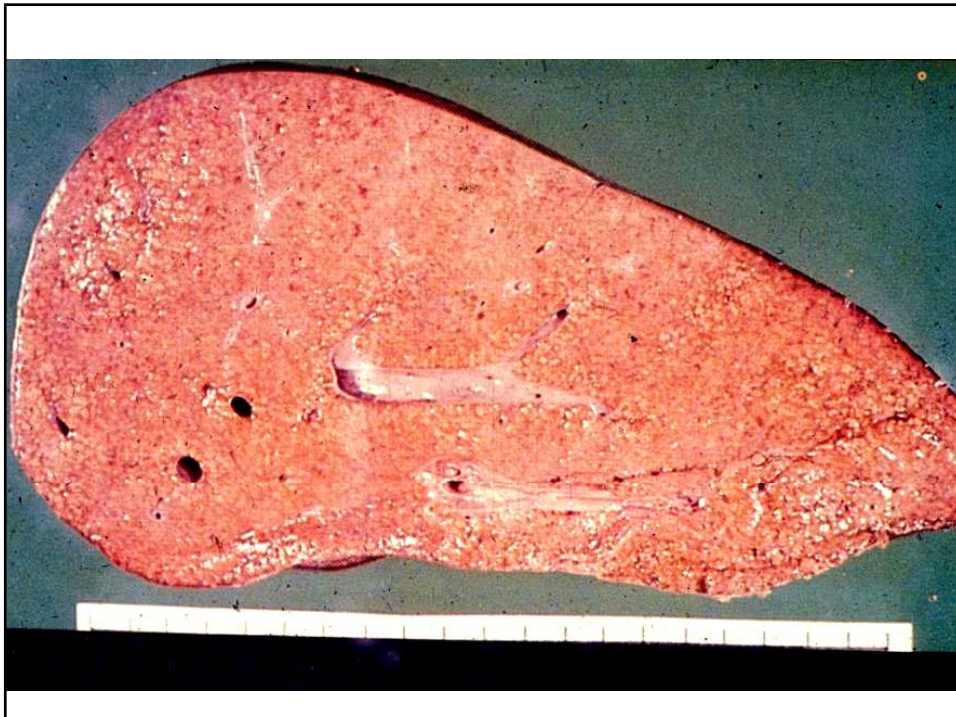
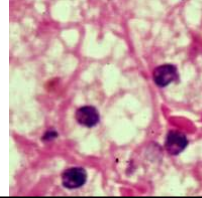
- Triglyceride vacuoles in hepatocytes
- Fatty liver is the most common cause of increased serum AST & ALT in the U.S.
- MAJOR CAUSES:
 - alcohol—obesity—diabetes—steroids

Types

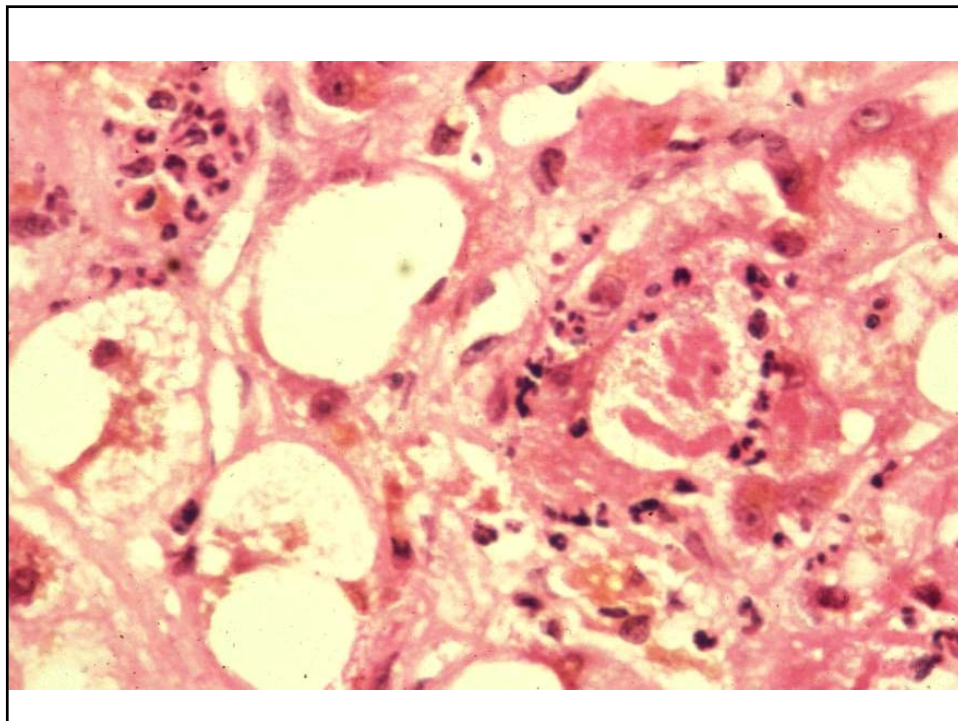
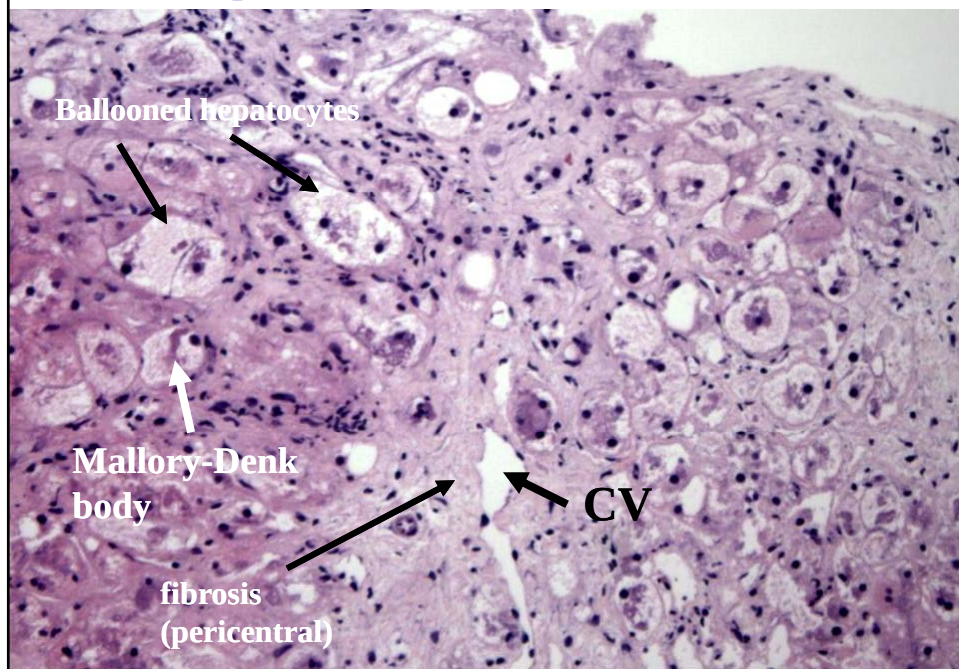
Large droplet (common)
(macrovesicular)

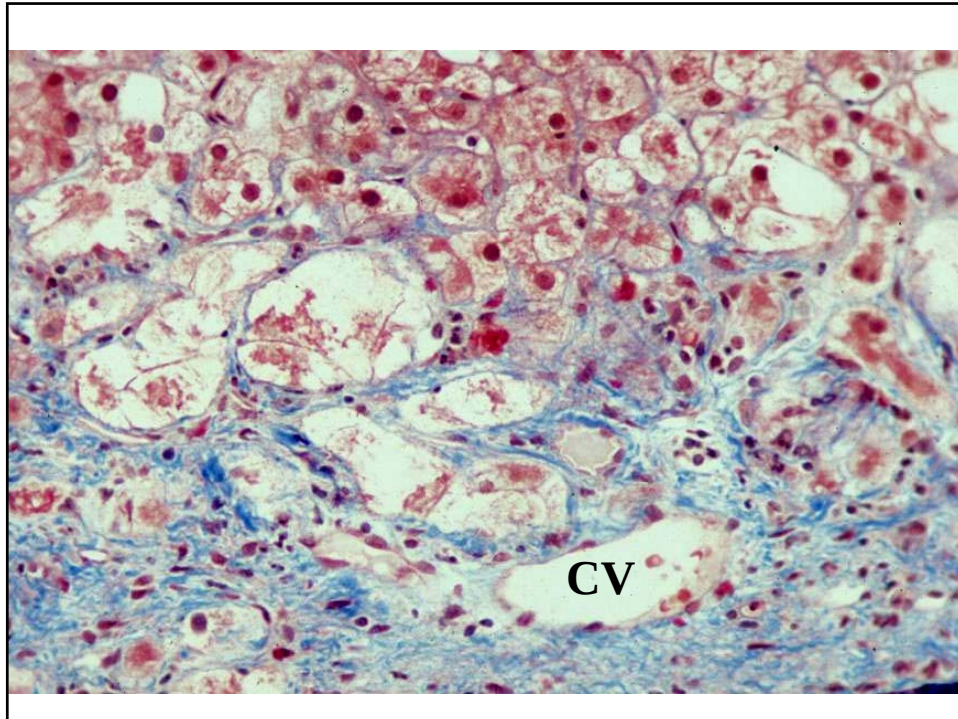


Small droplet (uncommon)
(microvesicular)



Steatohepatitis

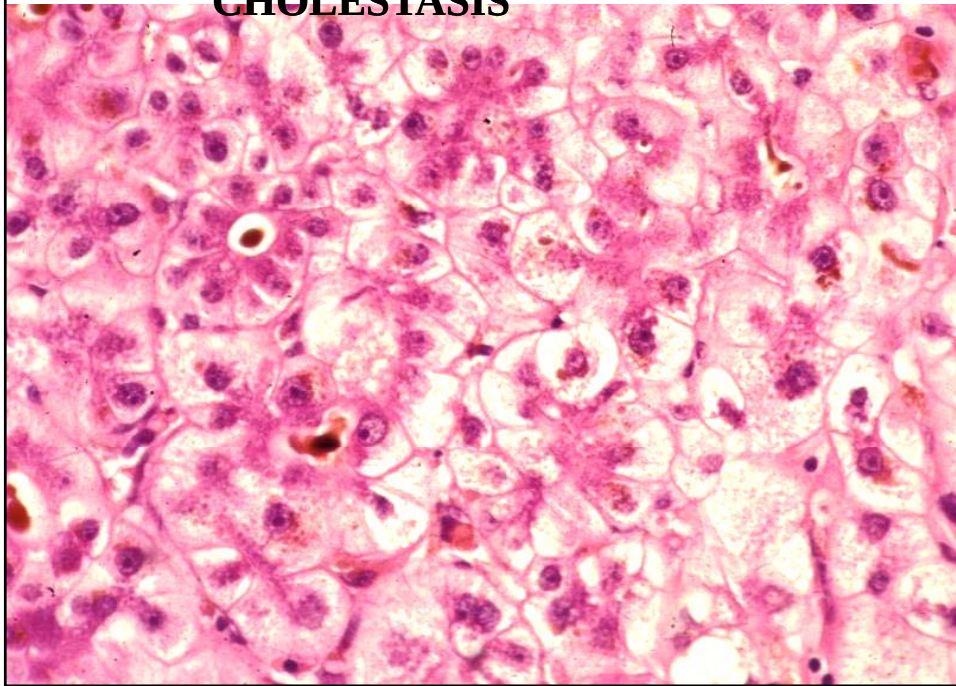




Cholestasis

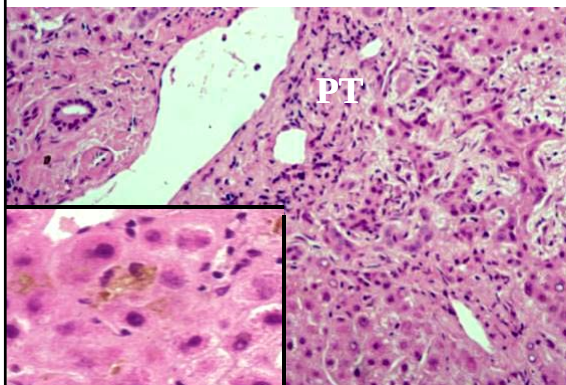
***Impaired bile secretion**
(stagnation of bile flow in the liver)

CHOLESTASIS

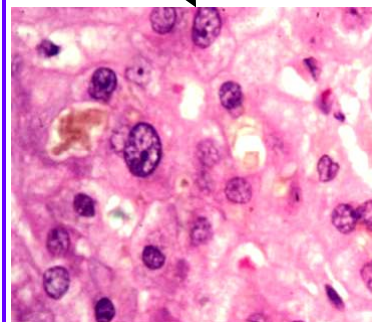


CHOLESTASIS: impaired bile secretion

Surgical Jaundice:
Large bile duct obstruction

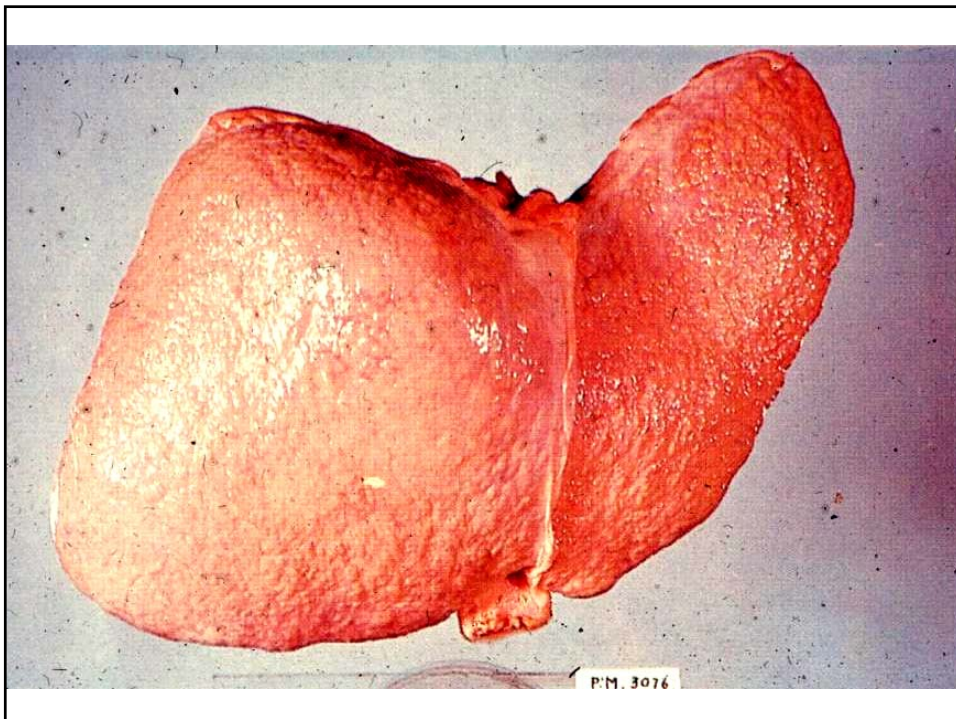


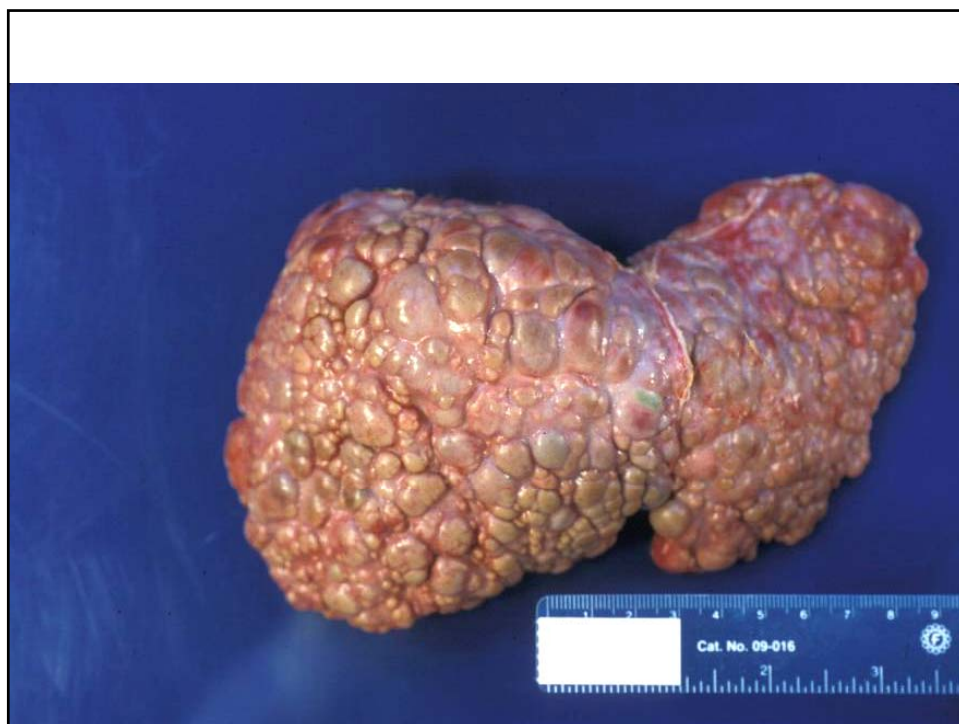
Medical Jaundice:
Intrahepatic disease
(sepsis/drugs/hepatitis/
Bile salt transporter dis.)



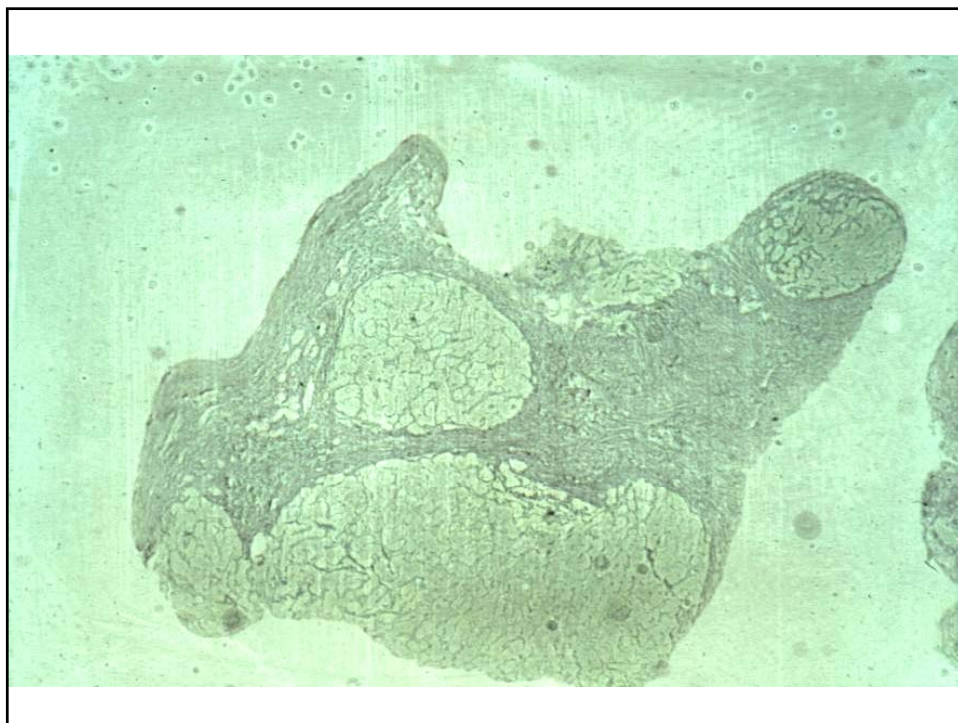
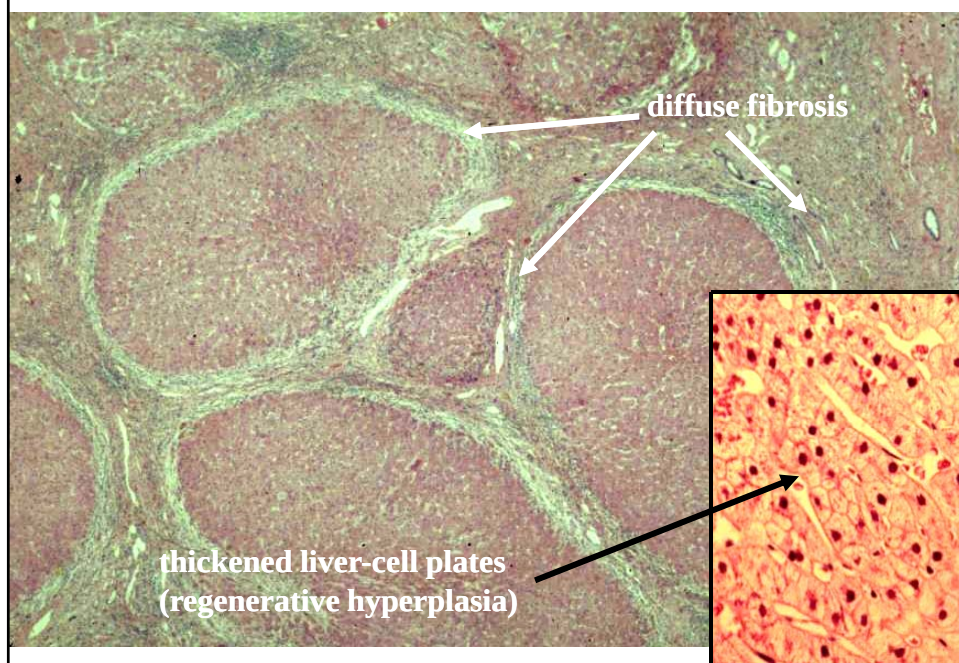
Cirrhosis

- Def.: **2 components:**
diffuse fibrosis +
regenerative nodules
- Multifactorial etiology
- Gross types: **Micronodular ($\leq 3\text{mm}$)**
Macronodular ($\geq 3\text{ mm}$)
- Complications:
 - portal HTN
 - liver cell failure
 - HCC

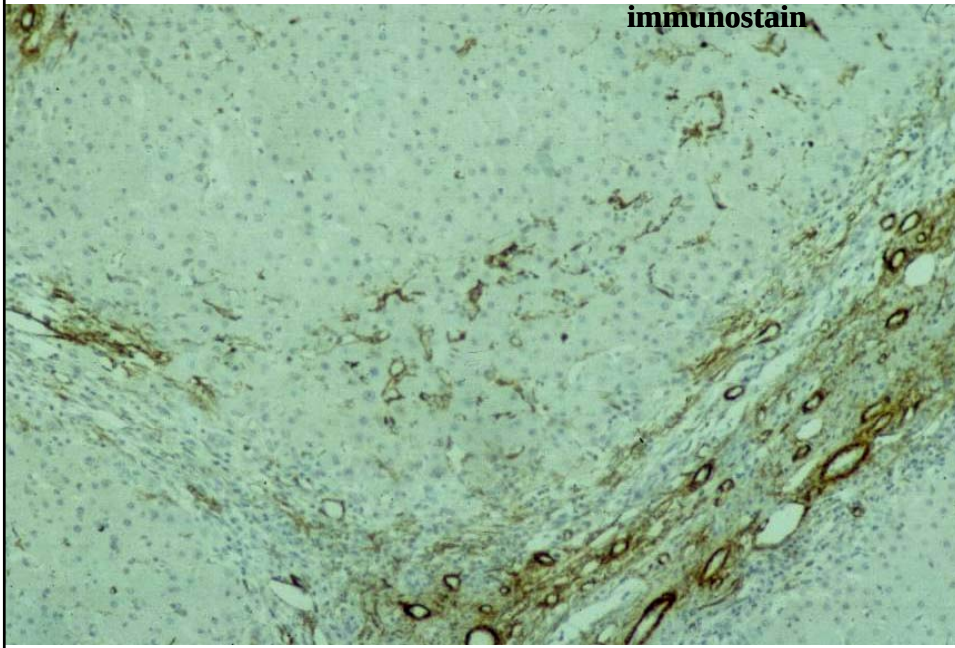




Cirrhosis: Diffuse fibrosis + nodules of regenerative liver



Activated stellate (Ito) cells in cirrhosis: smooth muscle actin immunostain



Causes of Cirrhosis

Alcoholic liver disease, 60-70%

Viral hepatitis, 10%

Biliary diseases, 5-10%

Hereditary hemochromatosis, 5%

Wilson's disease, rare

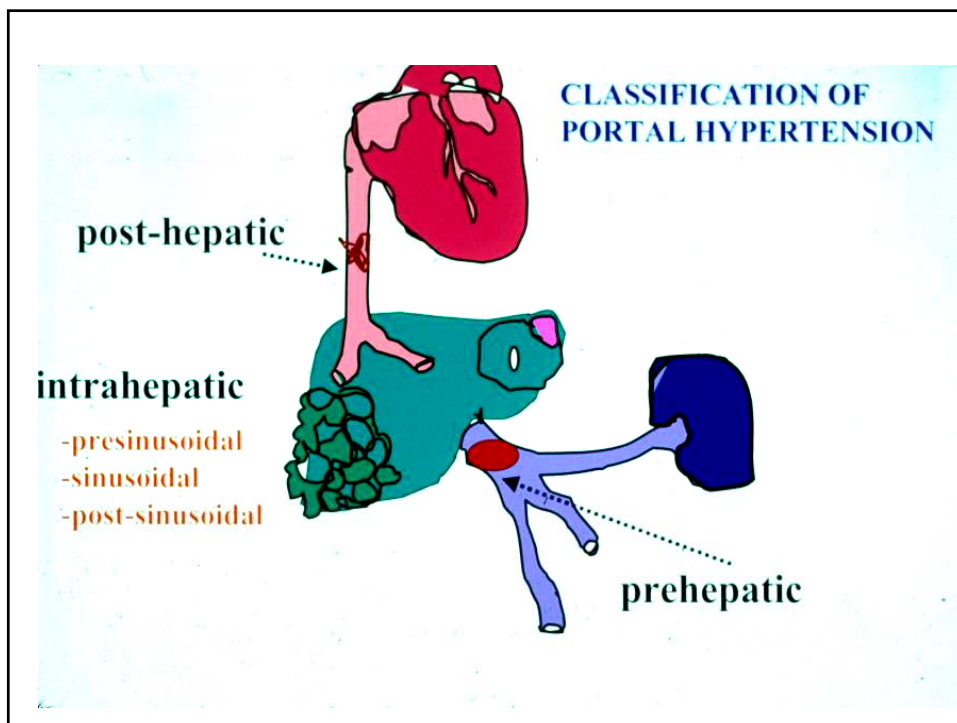
Alpha-1-antitrypsin def., rare

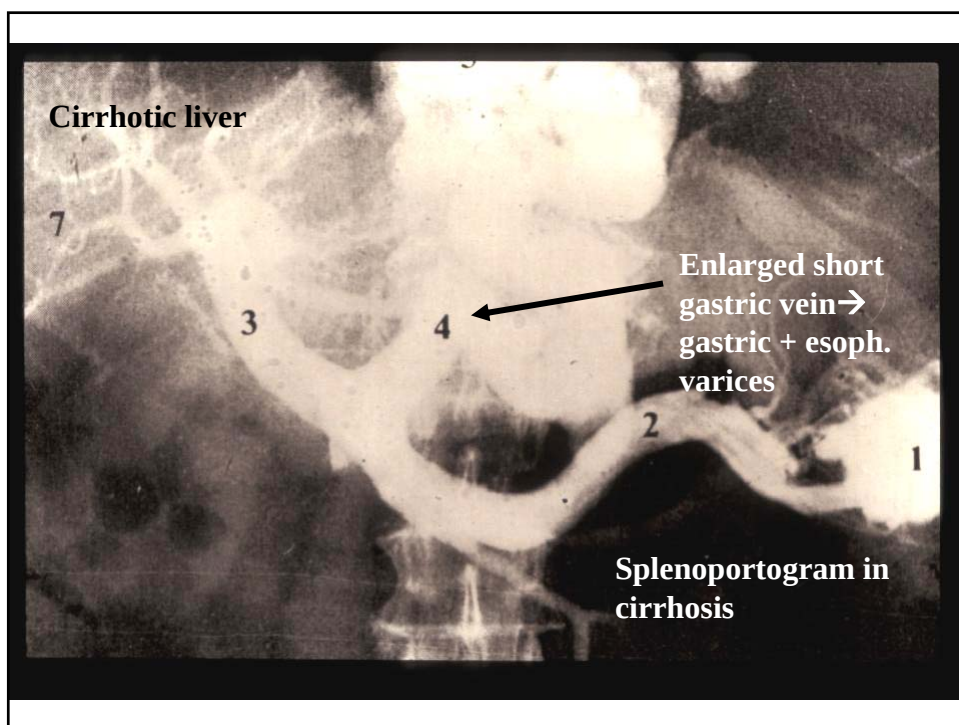
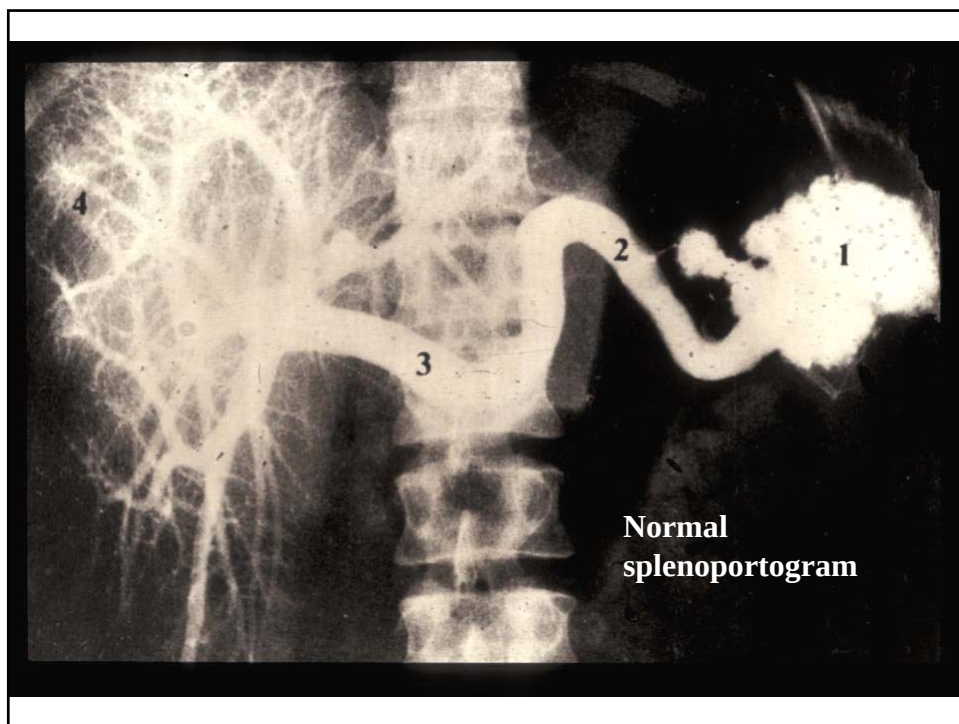
Cryptogenic cirrhosis, 10-15%

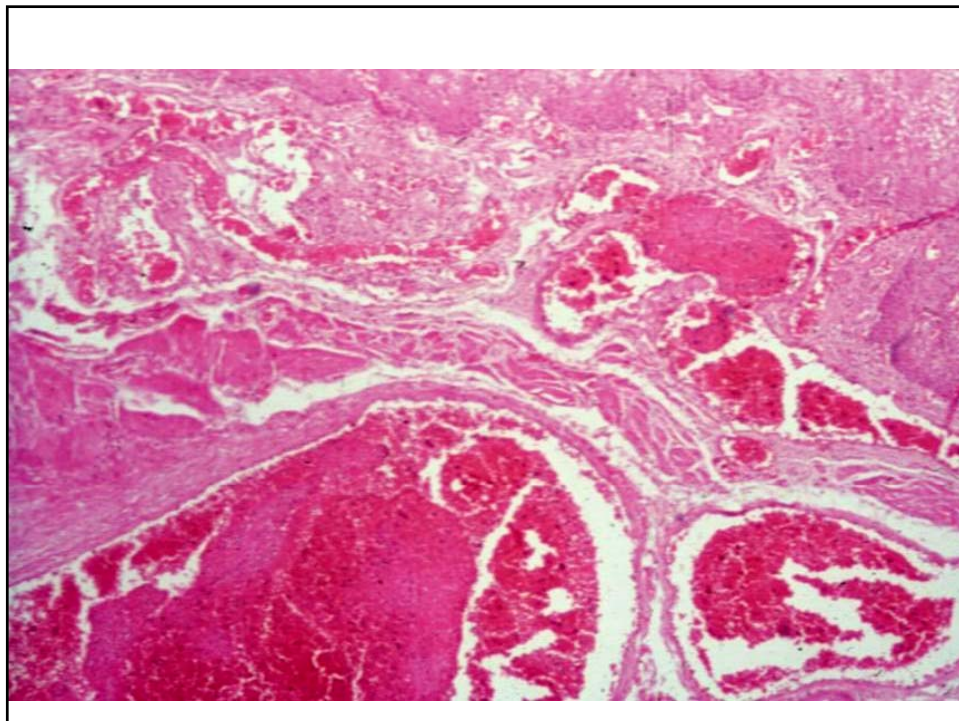
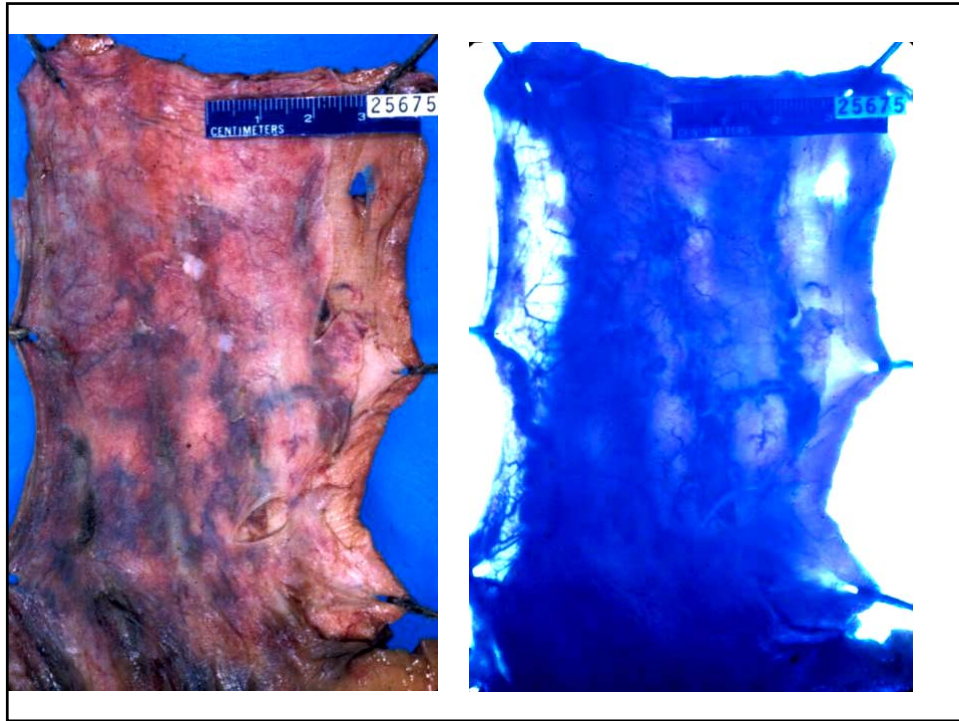
Portal Hypertension

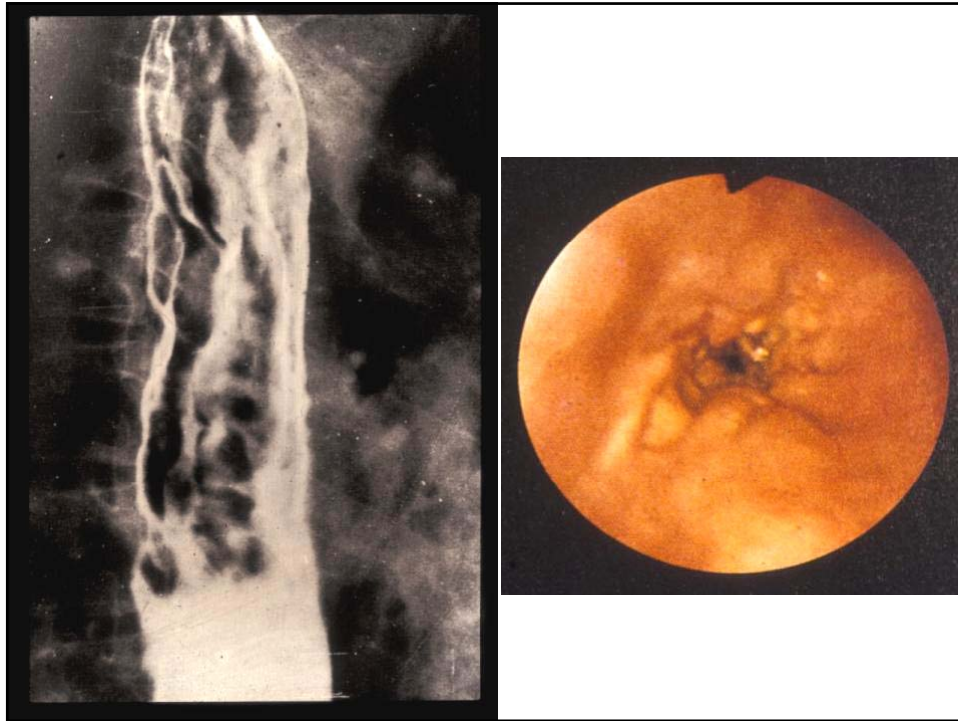
Develops when there is obstruction to the portal blood flow anywhere along its course, with

- increase in portal pressure >7 mm Hg
- development of collateral circulation (varices)









RECAP

1. Liver gross + lobule /acinus
2. Micro: space of Disse / Stellate cells / periportal limiting plate /progenitor cells in canal of Hering
3. Acute hepatitis: Hepatitis virus A-E, drugs
4. Chronic hepatitis: def. /causes / grading + staging
5. Fatty liver (large/small droplet), steatohepatitis
6. Cholestasis: bile duct obstruct. / intrahepatic—including transporter proteins
7. Cirrhosis: gross types, causes, complications
8. Portal hypertension: pre-hepatic / INTRAHEPATIC / post-hepatic