

GUT ACCESSORY ORGANS

LIVER

GALL BLADDER

PANCREAS (EXOCRINE)

LIVER

functions:

- process nutrients from intestine - CHO, AA
- break down toxins, wastes in blood → bile (exocrine)
- synthesize plasma proteins (endocrine)

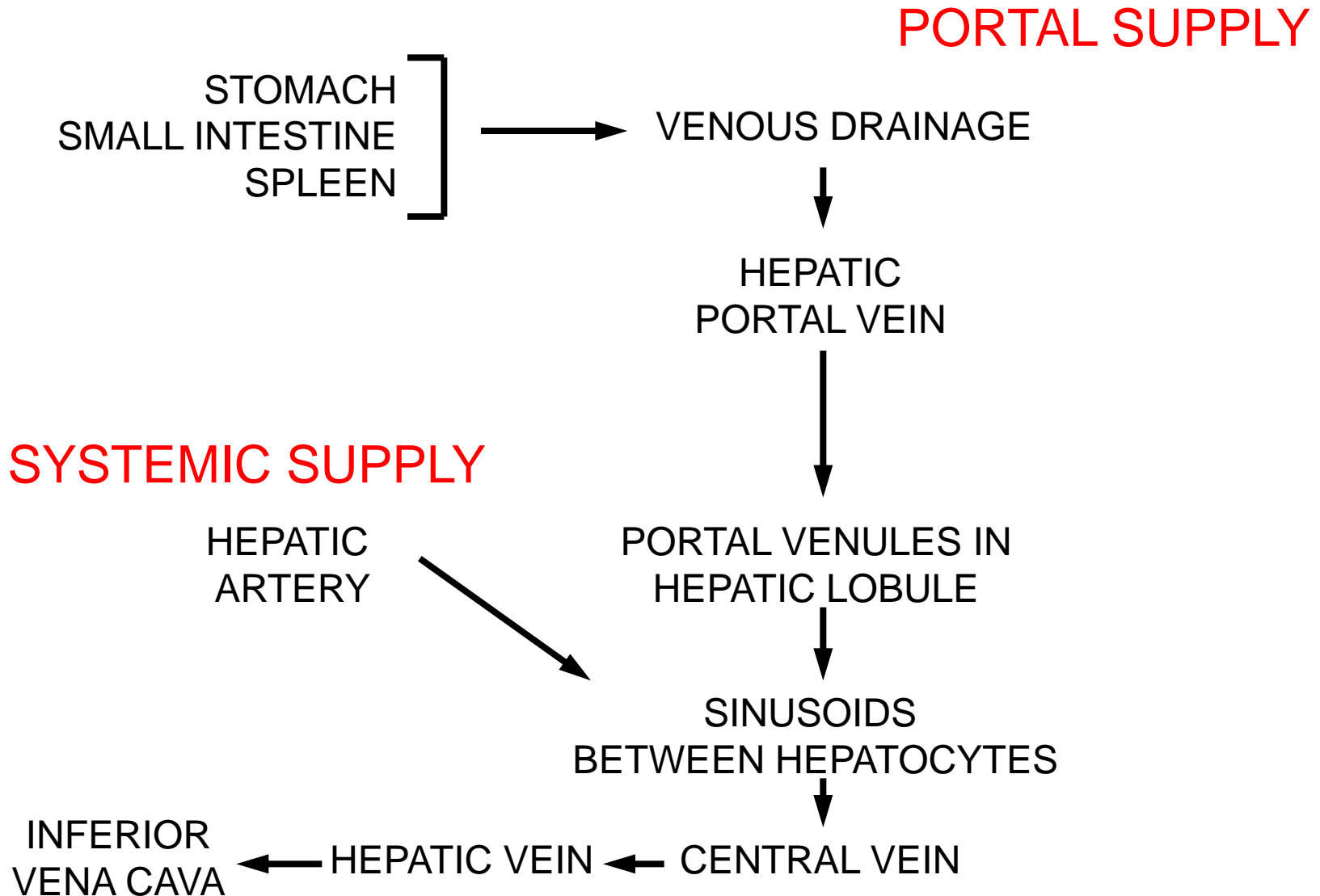
blood supply

lobule structure

hepatocytes

bile production

LIVER: two blood circulations



HEPATOCYTE: BASIC UNIT OF LIVER FUNCTION

histological features:

- polyhedral cell (usually 6 sides)
- large round nuclei, central (may be double)
- organized in plates 1-2 cells thick between sinusoids
 - maximum exposure to blood

microvilli on apical surfaces - increase surface area for exchange with plasma

HEPATOCTE FUNCTIONS

- metabolically active: > 2000 mitochondria/cell
 - extensive Golgi, endoplasmic reticulum
- take up sugars →glycogen (energy store),
amino acids, lipids → gluconeogenesis
 - rapid glycogen mobility →glucose into blood
- synthesize plasma proteins, lipoproteins
- break down proteins, amino acids →urea →excreted
- metabolize toxins (ammonia, drugs, steroids, chemicals)
- secrete bile (exocrine)

BILE COMPONENTS

aqueous salt solution

bile acids, bile salts:

- help emulsify fats in small intestine

- promote lipase action and lipid absorption

bilirubin: spleen macrophages phagocytose old erythrocytes,
produce bilirubin → plasma → hepatocytes absorb,
secrete into bile

PANCREAS: MIXED EXOCRINE AND ENDOCRINE

-acinar glands: exocrine

- pancreatic juice - digestive enzymes
via pancreatic duct → duodenum

-pancreatic islets (islets of Langerhans): endocrine

-hormones

insulin - β cells

glucagon - α cells

peptide hormones