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Nota di contenuto	<p>1. Introduction --</p> <p>2. Anatomy of the liver, biliary tract, and gallbladder -- 2.1 The liver --      2.1.1 Gross and surface anatomy -- 2.1.2 Structural concepts of liver lobes and segmentation -- 2.1.3 Large vessels of the liver -- 2.1.3.1 Portal veins -- 2.1.3.2 Hepatic arteries -- 2.1.3.3 Hepatic veins --      2.1.4 Lymphatic drainage -- 2.2 The biliary tract and gallbladder --      2.2.1 Intrahepatic bile ducts -- 2.2.2 Extrahepatic bile ducts -- 2.2.3 Gallbladder -- 2.3 Liver, gallbladder, and bile duct cell types -- 2.3.1 Parenchymal cells -- 2.3.1.1 Hepatocytes -- 2.3.2 Sinusoidal nonparenchymal cells -- 2.3.2.1 Hepatic sinusoidal endothelial cells --      2.3.2.2 Kupffer cells -- 2.3.3 Perisinusoidal nonparenchymal cells --      2.3.3.1 Hepatic stellate cells -- 2.3.3.2 Pit cells -- 2.3.4 Gallbladder cells -- 2.3.5 Bile duct epithelial cells --</p> <p>3. Physical chemistry of bile -- 3.1 Chemical composition of bile -- 3.2 Biliary cholesterol -- 3.3 Biliary bile acids -- 3.4 Biliary phospholipids -- 3.5 Bile pigments --</p> <p>4. Hepatic cholesterol metabolism -- 4.1 Physical chemistry of cholesterol -- 4.2 Features of cholesterol balance in the body -- 4.3 Cholesterol synthesis rates -- 4.4 Cholesterol biosynthesis pathways --      4.4.1 The conversion of three acetyl CoA molecules to mevalonate --      4.4.2 Synthesis of two activated isoprenes from mevalonate -- 4.4.3 Synthesis of the 30-carbon squalene from six activated isoprenes --</p>

4.4.4 Cholesterol is synthesized from squalene via lanosterol -- 4.5
Regulation of hepatic cholesterol biosynthesis --
5. Physical chemistry and hepatic metabolism of bile acids -- 5.1
Chemical structure and physical-chemical properties of bile acids --
5.2 Hydrophilic-hydrophobic balance of bile acids -- 5.3 Bile acid biosynthesis pathways -- 5.4 Regulation of bile acid biosynthesis --
5.5 Inhibitory mechanisms of FXR signaling on CYP7A1 -- 5.5.1 The FXR/SHP pathway -- 5.5.2 The FXR/FGF19/FGFR4 pathway -- 5.6 FXR-independent bile acid inhibition of CYP7A1 --
6. The enterohepatic circulation of bile acids -- 6.1 Physiology of the enterohepatic circulation -- 6.2 Bile acid pool and kinetics -- 6.3
Driving forces of the enterohepatic circulation -- 6.4 Kinetics and regulation of the enterohepatic circulation -- 6.4.1 The hepatic uptake of bile acids -- 6.4.1.1 Hepatic sinusoidal sodium-dependent bile acid uptake -- 6.4.1.2 Hepatic sinusoidal sodium-independent bile acid uptake -- 6.4.2 The canalicular transport of bile acids -- 6.4.3 The role of gallbladder in the enterohepatic circulation -- 6.4.4 The role of the intestine in the maintenance of the enterohepatic circulation -- 6.4.4.1 Ileal sodium-dependent bile acid uptake -- 6.4.5 The role of kidneys in the enterohepatic circulation -- 6.4.5.1 Renal sodium-dependent bile acid uptake --
7. Hepatic secretion of biliary lipids and bile formation -- 7.1 Structure of the bile secretory apparatus -- 7.2 Source of lipids secreted in bile -- 7.3 Biliary lipid secretion -- 7.4 Canalicular bile flow -- 7.4.1 Bile acid-dependent bile flow -- 7.4.2 Bile acid-independent bile flow --
7.5 Physical states of biliary lipids -- 7.6 Biliary micelles -- 7.7 Biliary vesicles, nonmicellar carriers of cholesterol in bile -- 7.8 Co-existence and interconversion of micelles and vesicles in bile --
8. Cholesterol crystallization and gallstone formation -- 8.1
Introduction -- 8.2 Five primary defects in the pathogenesis of cholesterol gallstone disease -- 8.3 Pathophysiology of cholesterol gallstone formation -- 8.3.1 Phase diagrams and cholesterol solubility in bile -- 8.3.2 Cholesterol nucleation and crystallization in supersaturated bile -- 8.3.3 Cholesterol crystal detection time -- 8.3.4 Agents influencing cholesterol nucleation and crystallization -- 8.3.5 Pro-nucleating agents -- 8.3.6 Anti-nucleating agents -- 8.3.7 Solid cholesterol crystal growth -- 8.4 Future directions --
9. Summary -- Acknowledgments -- References -- Author biographies.

## Sommario/riassunto

The liver is a vital organ involved in numerous metabolic processes such as cholesterol and bile acid metabolism, biliary lipid secretion, and bile formation. Cholesterol balance across the liver has a crucial effect on influencing plasma total and LDL cholesterol levels and biliary cholesterol concentrations. Cholesterol and bile acid biosyntheses are primarily modulated by negative feedback regulatory mechanisms through the sterol regulatory element-binding protein isoform 2 (SREBP-2) and the farnesoid X receptor (FXR) pathways, respectively. The conversion of cholesterol to bile acids in the liver can balance the fecal excretion of bile acids, which is an important route for the removal of cholesterol from the body. Bile formation begins in the bile canaliculi, and maintenance of the enterohepatic circulation of bile acids results in a continuous secretion of bile. Hepatic secretion of biliary lipids is determined mainly by a group of ATP-binding cassette (ABC) transporters that are located on the canalicular membrane of hepatocytes, which are regulated by various nuclear receptors. Bile acids promote bile flow by their osmotic effects. Also, they are essential for the intestinal absorption of cholesterol, fatty acids, and fat-soluble vitamins and play an important role in aiding the digestion of dietary fat. Bile acids function as signaling molecules and anti-inflammatory

agents to regulate lipid, glucose, and energy metabolism by rapidly activating nuclear receptors and cell signaling pathways. This eBook summarizes the progress in the molecular and cellular mechanisms of cholesterol and bile acid metabolism and the physical-chemistry of biliary lipids, with emphasis on biliary lipid metabolism that is regulated by nuclear receptors in the hepatobiliary system.

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