Table of Contents:

- Preface
- Chapter 1. Functional Roles of Lipids in Membranes
 - o 1. Introduction and Overview
 - o 2. Diversity in Lipid Structure
 - o 3. Properties of Lipids in Solution
 - o 4. Engineering of Membrane Lipid Composition
 - o 5. Role of Lipids in Cell Function
 - o 6. Summary and Future Directions
- Chapter 2. Approaches to Lipid Analysis
 - o 1. Introduction and Overview
 - 2. Lipid Diversity
 - o 3. Chromatographic-Based Analysis of Lipids
 - o 4. Basic Concepts of Analytical Biochemistry
 - 5. Lipid Mass Spectrometry
 - o 6. Future Directions
- Chapter 3. Fatty Acid and Phospholipid Biosynthesis in Prokaryotes
 - o 1. Overview of Bacterial Lipid Metabolism
 - o 2. Membrane Systems of Bacteria
 - o 3. The Initiation Module
 - 4. The Elongation Module
 - 5. The Acyltransfer Module
 - o 6. The Phospholipid Module
 - o 7. Genetic Regulation of Lipid Metabolism
 - 8. Future Directions
- Chapter 4. Lipid Metabolism in Plants
 - o 1. Introduction
 - 2. Plant Lipid Geography
 - o 3. Acyl-Acyl Carrier Protein Synthesis in Plants
 - 4. Acetyl-Coenzyme A Carboxylase and Control of Fatty Acid Synthesis
 - 5. Phosphatidic Acid Synthesis Occurs via Prokaryotic and Eukaryotic Acyltransferases
 - o 6. Membrane Glycerolipid Synthesis
 - o 7. Lipid Storage in Plants
 - o 8. Protective Lipids: Cutin, Waxes, Suberin and Sporopollenin
 - o 9. Sphingolipid Biosynthesis
 - 10. Oxvlipins as Plant Hormones
 - 11. Sterol and Isoprenoid Biosynthesis
 - o 12. Future Prospects
- Chapter 5. Fatty Acid Handling in Mammalian Cells
 - o 1. Introduction
 - 2. Fatty Acid Biosynthesis
 - 3. Fatty Acid Uptake, Activation and Trafficking
 - 4. Fatty Acid Storage as Triacylglycerol in Lipid Droplets
 - 5. Fatty Acid Use for Energy
 - o 6. Fatty Acids and Signalling
 - o 7. Fatty Acids and Disease Pathogenesis
 - 8. Future Directions
- Chapter 6. Fatty Acid Desaturation and Elongation in Mammals
 - o 1. Introduction
 - o 2. Elongation Reactions of Long-Chain Fatty Acids

- o 3. Desaturation of Long-Chain Fatty Acid in Mammals
- o 4. Transcriptional Regulation of Desaturases and Elongases
- o 5. Summary and Future Directions
- Chapter 7. Phospholipid Synthesis in Mammalian Cells
 - o 1. Introduction
 - o 2. Biosynthesis of Phosphatidic Acid and Diacylglycerol
 - o 3. Phosphatidylcholine Biosynthesis and Regulation
 - o 4. Phosphatidylethanolamine Biosynthesis and Regulation
 - o 5. Phosphatidylserine Biosynthesis and Regulation
 - 6. Phosphatidylinositol and Polyphosphorylated Phosphatidylinositol
 - o 7. Biosynthesis of Phosphatidylglycerol and Cardiolipin
 - o 8. Fatty Acid Remodelling of Phospholipids
 - 9. Future Directions
- Chapter 8. Phospholipid Catabolism
 - o 1. Introduction
 - o 2. The Phospholipase A Family
 - o 3. Phospholipase C
 - 4. Phospholipase D
 - o 5. Future Directions
- Chapter 9. The Eicosanoids: Cyclooxygenase, Lipoxygenase and Epoxygenase Pathways
 - o 1. Introduction
 - o 2. Prostanoids
 - o 3. Prostanoid Biosynthesis
 - o 4. Prostanoid Catabolism and Mechanisms of Action
 - 5. Leukotrienes and Lipoxygenase Products
 - 6. Cytochrome P450S and Epoxygenase Pathways
 - o 7. Future Directions
- Chapter 10. Sphingolipids
 - o 1. Introduction
 - 2. Nomenclature and Structure
 - 3. Sphingolipids Biosynthesis
 - 4. Sphingolipid Degradation
 - o 5. Sphingolipid Signalling and Roles in Cell Regulation
 - 6. Sphingolipid Biophysics
 - 7. Sphingolipids in Disease Pathology
 - o 8. Perspectives
- Chapter 11. Cholesterol Synthesis
 - o 1. Introduction
 - o 2. Cholesterol Synthesis An Historical Overview
 - 3. Targeting Cholesterol Synthesis Therapeutically
 - o 4. Sterol Pathway Intermediates
 - o 5. Enzymes of Cholesterol Biosynthesis
 - 6. Oxysterols
 - 7. Regulation of Cholesterol Synthesis
 - o 8. Summary
- Chapter 12. Bile Acid Metabolism
 - o 1. Introduction
 - o 2. Bile Acid Structure and Physical Properties
 - 3. Biosynthesis of Bile Acids
 - o 4. Enterohepatic Circulation of Bile Acids
 - o 5. Bile Acids as Signalling Molecules

- 6. Future Directions
- Chapter 13. Lipid Modification of Proteins
 - o 1. Introduction
 - o 2. Attachment of Fatty Acids to Proteins
 - o 3. Attachment of Cholesterol to Hedgehog Proteins
 - o 4. Attachment of Isoprenoids to Proteins
 - 5. Attachment of Phospholipids and Diacylglycerol Lipids to Proteins
 - 6. Spotlight on Inhibitors of Lipid-Modifying Enzymes and Their Roles in Disease
 - 7. Future Directions and Challenges
- Chapter 14. Intramembrane and Intermembrane Lipid Transport
 - o 1. Introduction
 - 2. Vesicular Trafficking of Lipids
 - 3. Nonvesicular Transport of Lipids
 - o 4. Transbilayer Movement of Lipids
 - o 5. Specific Examples of Intracellular Lipid Transport
 - 6. Future Directions
- Chapter 15. High-Density Lipoproteins: Metabolism and Protective Roles Against Atherosclerosis
 - o 1. Introduction
 - o 2. High-Density Lipoprotein Formation
 - o 3. High-Density Lipoprotein Remodelling and Lipid Transfer
 - 4. Extremes of High-Density Lipoprotein Cholesterol Levels and Relationship to Atherosclerosis
 - 5. Protective Actions of High-Density Lipoproteins
 - o 6. High-Density Lipoprotein-Raising Therapies
 - 7. Summary and Future Directions
- Chapter 16. Assembly and Secretion of Triglyceride-Rich Lipoproteins
 - o 1. Overview of Apolipoprotein B-Containing Lipoproteins
 - 2. Structure and Regulation of the Apolipoprotein B Gene
 - 3. Structural Features of Apolipoprotein B
 - 4. Assembly of Hepatic Very Low Density Lipoproteins
 - 5. Regulation of Hepatic Very Low Density Lipoprotein Assembly and Secretion
 - 6. Intracellular Degradation of Apolipoprotein B
 - 7. Dysregulation of Very Low Density Lipoprotein assembly and Secretion
 - 8. Assembly and Secretion of Chylomicrons
 - 9. Hepatocyte and Enterocyte Models Strengths and Limitations
 - 10. Future Directions
- Chapter 17. Lipoprotein Receptors
 - o 1. Introduction: Receptor-Mediated Lipoprotein Metabolism
 - 2. Removal of Low-Density Lipoprotein from the Circulation
 - 3. Post-translational Modulators of Low-Density Lipoprotein Receptor Activity
 - 4. Receptor-Mediated Removal of Triacylglycerol-Rich Lipoproteins from the Plasma
 - 5. Other Relatives of the Low-Density Lipoprotein Receptor Family
 - o 6. Roles of Lipoprotein Receptors in Signal Transduction
 - o 7. Scavenger Receptors: Lipid Uptake and Beyond

- o 8. Outlook
- Chapter 18. Atherosclerosis
 - o 1. Atherosclerosis
 - o 2. Lipoprotein Transport in Atherosclerosis
 - o 3. Lipoprotein Receptors and Lipid Transporters
 - 4. Contributions of Lipoprotein-Mediated Inflammation to Atherosclerosis
 - 5. New Emerging Mechanisms of Lipid Metabolism Influencing Atherosclerosis
 - 6. Traditional and Evolving Lipid-Lowering Therapies for the Treatment of Atherosclerosis
 - o 7. Future Directions
- Chapter 19. Diabetic Dyslipidaemia
 - 1. Introduction to the Typical Dyslipidaemia of Insulin-Resistant States
 - 2. Dyslipidaemia of Insulin-Resistant States: Key Factors and Mechanisms, with a Focus on Hepatic Lipoprotein Overproduction
 - 3. Postprandial Dyslipidaemia and Intestinal Chylomicron Hypersecretion in Insulin-Resistant States
 - 4. Low High-Density Lipoprotein in Insulin Resistance and Type
 2 Diabetes
 - o 5. Treatment of the Dyslipidaemia of Insulin-Resistant States
 - 6. Conclusions
- Index