Contents in Brief

21 Lipid Biosynthesis

Related Molecules

Mammalian Metabolism

24 Genes and Chromosomes

28 Regulation of Gene Expression

Research Literature A-1

Appendix A Common Abbreviations in the Biochemical

Appendix B Abbreviated Solutions to Problems AS-1

25 DNA Metabolism

26 RNA Metabolism

Glossary G-1 Credits C-1 Index I-1

27 Protein Metabolism

Preface		viii
1	The Foundations of Biochemistry	1
l	STRUCTURE AND CATALYSIS	41
2	Water	43
3	Amino Acids, Peptides, and Proteins	71
4	The Three-Dimensional Structure of Proteins	113
5	Protein Function	153
6	Enzymes	183
7	Carbohydrates and Glycobiology	235
8	Nucleotides and Nucleic Acids	271
9	DNA-Based Information Technologies	303
10	Lipids	343
11	Biological Membranes and Transport	371
12	Biosignaling	417
11	BIOENERGETICS AND METABOLISM	485
13	Bioenergetics and Biochemical Reaction Types	489
14	Glycolysis, Gluconeogenesis, and the Pentose	
	Phosphate Pathway	527
15	Principles of Metabolic Regulation	569
16	The Citric Acid Cycle	615
17	Fatty Acid Catabolism	647
18	Amino Acid Oxidation and the Production of Urea	673
19	Oxidative Phosphorylation and Photophosphorylation	707

20 Carbohydrate Biosynthesis in Plants and Bacteria

22 Biosynthesis of Amino Acids, Nucleotides, and

23 Hormonal Regulation and Integration of

III INFORMATION PATHWAYS

773

805

851

901

945

947

975

1021

1065

1115