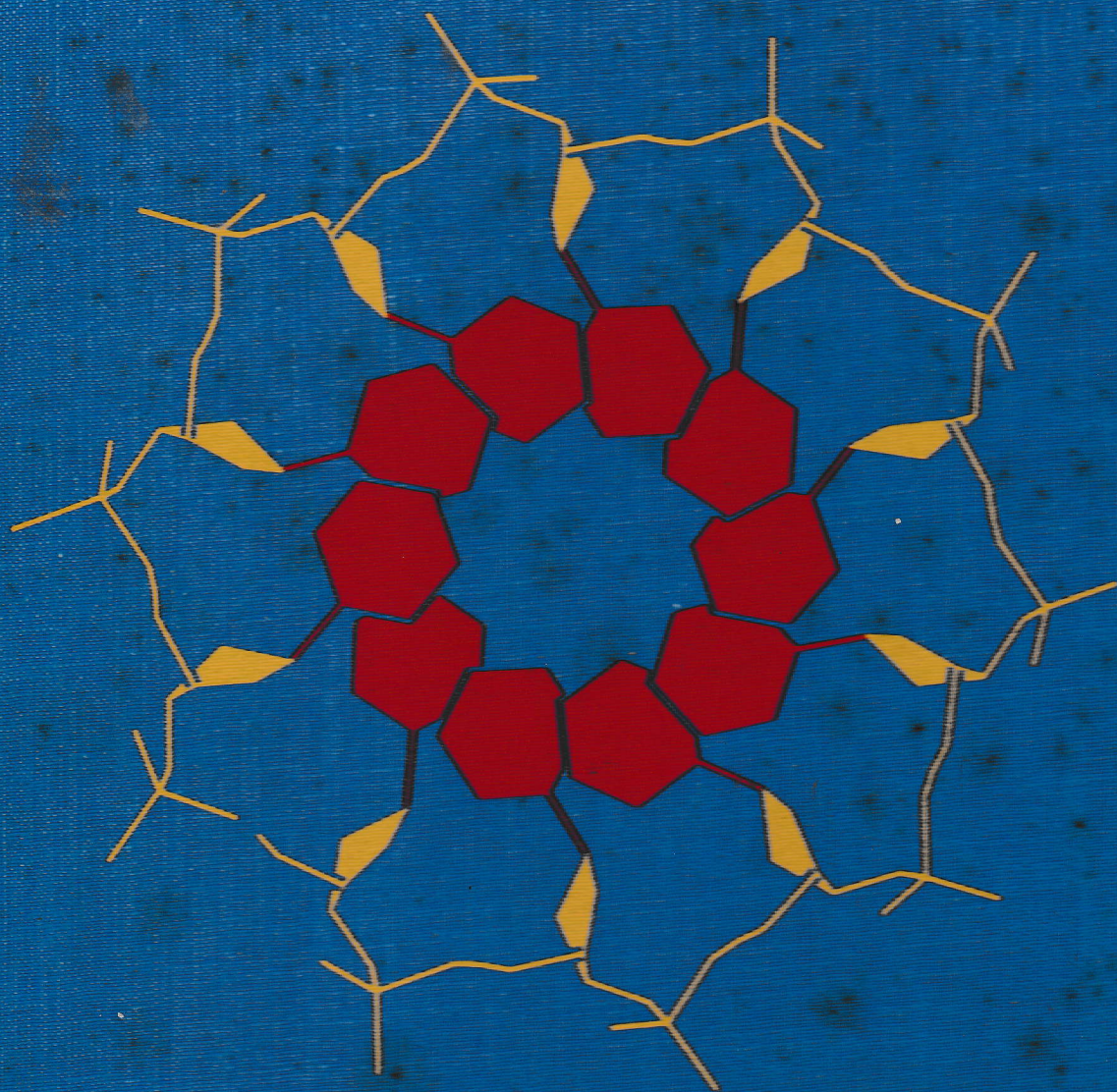




BIOCHEMISTRY

THIRD EDITION

Contents

List of Topics	ix
Preface to the Third Edition	xxv
Preface to the Second Edition	xxix
Preface to the First Edition	xxx

PART I MOLECULAR DESIGN OF LIFE 1

CHAPTER	1. Prelude	3
	2. Protein Structure and Function	15
	3. Exploring Proteins	43
	4. DNA and RNA: Molecules of Heredity	71
	5. Flow of Genetic Information	91
	6. Exploring Genes: Analyzing, Constructing, and Cloning DNA	117

PART II PROTEIN CONFORMATION, DYNAMICS, AND FUNCTION 141

CHAPTER	7. Oxygen-transporting Proteins: Myoglobin and Hemoglobin	143
	8. Introduction to Enzymes	177
	9. Mechanisms of Enzyme Action	201
	10. Control of Enzymatic Activity	233
	11. Connective-Tissue Proteins	261
	12. Introduction to Biological Membranes	283

PART III GENERATION AND STORAGE OF METABOLIC ENERGY 313

- CHAPTER 13. Metabolism: Basic Concepts and Design 315
- 14. Carbohydrates 331
 - 15. Glycolysis 349
 - 16. Citric Acid Cycle 373
 - 17. Oxidative Phosphorylation 397
 - 18. Pentose Phosphate Pathway and Gluconeogenesis 427
 - 19. Glycogen Metabolism 449
 - 20. Fatty Acid Metabolism 469
 - 21. Amino Acid Degradation and the Urea Cycle 495
 - 22. Photosynthesis 517
-

PART IV BIOSYNTHESIS OF MACROMOLECULAR PRECURSORS 545

- CHAPTER 23. Biosynthesis of Membrane Lipids and Steroid Hormones 547
- 24. Biosynthesis of Amino Acids and Heme 575
 - 25. Biosynthesis of Nucleotides 601
 - 26. Integration of Metabolism 627
-

PART V GENETIC INFORMATION: storage, transmission, and expression 647

- CHAPTER 27. DNA Structure, Replication, and Repair 649
- 28. Gene Rearrangements: Recombination and Transposition 687
 - 29. RNA Synthesis and Splicing 703
 - 30. Protein Synthesis 733
 - 31. Protein Targeting 767
 - 32. Control of Gene Expression in Prokaryotes 799
 - 33. Eukaryotic Chromosomes and Gene Expression 823
 - 34. Viruses and Oncogenes 851
-

PART VI MOLECULAR PHYSIOLOGY: interaction of information, conformation, and metabolism in physiological processes 887

- CHAPTER 35. Molecular Immunology 889
- 36. Muscle Contraction and Cell Motility 921
 - 37. Membrane Transport 949
 - 38. Hormone Action 975
 - 39. Excitable Membranes and Sensory Systems 1005
- Appendixes 1044
Answers to Problems 1049
Index 1065