

# Contents in Brief

## **PART I** Laying the Groundwork

- 1 The Dynamic Cell 1
- 2 Chemical Foundations 14
- 3 Protein Structure and Function 50
- 4 Nucleic Acids, the Genetic Code, and the Synthesis of Macromolecules 100
- 5 Biomembranes and the Subcellular Organization of Eukaryotic Cells 138
- 6 Manipulating Cells and Viruses in Culture 180
- 7 Recombinant DNA and Genomics 207
- 8 Genetic Analysis in Cell Biology 254

## **PART II** Nuclear Control of Cellular Activity

- 9 Molecular Structure of Genes and Chromosomes 294
- 10 Regulation of Transcription Initiation 341
- 11 RNA Processing, Nuclear Transport, and Post-Transcriptional Control 404
- 12 DNA Replication, Repair, and Recombination 453
- 13 Regulation of the Eukaryotic Cell Cycle 495
- 14 Gene Control in Development 537

## **PART III** Building and Fueling the Cell

- 15 Transport across Cell Membranes 578
- 16 Cellular Energetics: Glycolysis, Aerobic Oxidation, and Photosynthesis 616
- 17 Protein Sorting: Organelle Biogenesis and Protein Secretion 675
- 18 Cell Motility and Shape I: Microfilaments 751
- 19 Cell Motility and Shape II: Microtubules and Intermediate Filaments 795

## **PART IV** Cell Interactions

- 20 Cell-to-Cell Signaling: Hormones and Receptors 848
- 21 Nerve Cells 911
- 22 Integrating Cells into Tissues 968
- 23 Cell Interactions in Development 1003
- 24 Cancer 1054