

CONTENTS

Preface

1 A Framework for Human Physiology

PART ONE BASIC CELL FUNCTIONS

- 2 Chemical Composition of the Body
- 3 Cell Structure
- 4 Molecular Control Mechanisms—DNA and Protein
- 5 Energy and Cellular Metabolism
- 6 Movement of Molecules across Cell Membranes

PART TWO BIOLOGICAL CONTROL SYSTEMS

- 7 Homeostatic Mechanisms and Cellular Communication
- 8 Neural Control Mechanisms
- 9 The Sensory Systems
- 10 Hormonal Control Mechanisms
- 11 Muscle
- 12 Control of Body Movement

vii

PART THREE COORDINATED BODY FUNCTIONS

- 13 Circulation 347
- 14 Respiration 349
- 15 The Kidneys and Regulation of Water and Inorganic Ions 427
- 16 The Digestion and Absorption of Food 471
- 17 Regulation of Organic Metabolism, Growth, and Energy Balance 513
- 18 Reproduction 553
- 19 Defense Mechanisms of the Body 601
- 20 Consciousness and Behavior 653
- 705
- 139 Appendix A: Answers to Thought Questions A-1
- 141 Appendix B: English and Metric Units A-12
- 167 Appendix C: Equations A-13
- 219 Appendix D: Glossary A-14
- 255 Appendix E: References for Figure Adaptations A-41
- 283 Appendix F: Suggested Reading A-42
- 325 Index I-1