

Contents in Brief

PART ONE

AN INTRODUCTION TO BIOLOGY AND CHEMISTRY

- 1 The themes of biology today 2
- 2 The chemistry of life 16

PART TWO

CELLS THE BASIC UNIT OF LIFE

- 3 Cell structure and function 44
- 4 Cell membranes 67
- 5 Cell division 80

PART THREE

HOW LIVING THINGS TRANSFORM ENERGY

- 6 The flow of energy within organisms 100
- 7 Cellular respiration 114
How cells release stored energy from food molecules
- 8 Photosynthesis 130
How plants capture and store energy from the sun

PART FOUR

HUMAN BIOLOGY

THE STRUCTURE AND FUNCTION OF THE BODY

- 9 Levels of organization in the human body 146
- 10 Digestion 165
- 11 Respiration 184
- 12 Circulation 198
- 13 Defense against disease 216
- 14 Excretion 232
- 15 Nerve cells and how they transmit information 249
- 16 The nervous system 262
- 17 The senses 280
- 18 Protection, support, and movement 294
- 19 Hormones 314

PART FIVE**HOW HUMANS REPRODUCE AND PASS ON BIOLOGICAL INFORMATION**

- 20 Sex and reproduction** 334
- 21 Human development before birth** 354
- 22 Patterns of inheritance** 372
- 23 Human genetics** 388
- 24 The molecular basis of inheritance** 404

PART SIX**EVOLUTION HOW LIVING THINGS CHANGE OVER TIME**

- 25 The scientific evidence for evolution** 426
- 26 The evolution of the five kingdoms of life** 444
- 27 Human evolution** 463

PART SEVEN**THE DIVERSITY AND UNITY OF LIVING THINGS**

- 28 Viruses, bacteria, and genetic engineering** 486
- 29 Protists and fungi** 502
- 30 Plants** 526
Reproductive patterns and diversity
- 31 Plants** 544
Patterns of structure and function
- 32 Invertebrate animals** 560
Patterns of structure, function, and reproduction
- 33 Vertebrate animals** 580
Patterns of structure, function, and reproduction

PART EIGHT**HOW LIVING THINGS INTERACT WITH EACH OTHER
AND WITH THEIR ENVIRONMENT**

- 34 Innate behavior and learning in animals** 598
- 35 Social behavior in animals** 610
- 36 Population ecology** 624
- 37 Interactions within communities of organisms** 638
- 38 Ecosystems** 656
- 39 Biomes and life zones of the world** 671
- 40 The biosphere** 694
Today and tomorrow