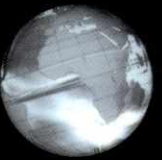


GLOBAL
EDITION



Biology

A Global Approach

TWELFTH EDITION

Campbell • Urry • Cain
Wasserman • Minorsky • Orr



Brief Contents

1 Biology and Its Themes 50

Unit 1 THE ROLE OF CHEMISTRY IN BIOLOGY

75

- 2 Atoms and Molecules 76
- 3 The Chemistry of Water 92
- 4 Carbon: The Basis of Molecular Diversity 104
- 5 Biological Macromolecules and Lipids 114
- 6 Energy and Life 141

Unit 2 CELL BIOLOGY

162

- 7 Cell Structure and Function 163
- 8 Cell Membranes 196
- 9 Cellular Signaling 214
- 10 Cell Respiration 236
- 11 Photosynthetic Processes 259
- 12 Mitosis 284

Unit 3 THE GENETIC BASIS OF LIFE

303

- 13 Sexual Life Cycles and Meiosis 304
- 14 Mendelian Genetics 319
- 15 Linkage and Chromosomes 344
- 16 Nucleic Acids and Inheritance 364
- 17 Expression of Genes 385
- 18 Control of Gene Expression 415
- 19 DNA Technology 449
- 20 The Evolution of Genomes 476

Unit 4 EVOLUTION

501

- 21 How Evolution Works 502
- 22 Phylogenetic Reconstruction 521
- 23 Microevolution 542
- 24 Species and Speciation 562
- 25 Macroevolution 581

Unit 5 THE DIVERSITY OF LIFE

609

- 26 Introduction to Viruses 610
- 27 Prokaryotes 627
- 28 The Origin and Evolution of Eukaryotes 647
- 29 Nonvascular and Seedless Vascular Plants 672
- 30 Seed Plants 690
- 31 Introduction to Fungi 708
- 32 An Introduction to Animal Diversity 727
- 33 Invertebrates 740
- 34 Vertebrates 772

Unit 6 PLANTS: STRUCTURE AND FUNCTION

811

- 35 Plant Structure and Growth 812
- 36 Transport in Vascular Plants 838
- 37 Plant Nutrition 859
- 38 Reproduction of Flowering Plants 876
- 39 Plant Signals and Behavior 896

Unit 7 ANIMALS: STRUCTURE AND FUNCTION

926

- 40 The Animal Body 927
- 41 Chemical Signals in Animals 953
- 42 Animal Digestive Systems 974
- 43 Animal Transport Systems 997
- 44 Animal Excretory Systems 1029
- 45 Animal Reproductive Systems 1051
- 46 Development in Animals 1075
- 47 Animal Defenses Against Infection 1100
- 48 Electrical Signals in Animals 1125
- 49 Neural Regulation in Animals 1143
- 50 Sensation and Movement in Animals 1165

Unit 8 THE ECOLOGY OF LIFE

1197

- 51 An Overview of Ecology 1198
- 52 Behavioral Ecology 1225
- 53 Populations and Life History Traits 1248
- 54 Biodiversity and Communities 1272
- 55 Energy Flow and Chemical Cycling in Ecosystems 1296
- 56 Conservation and Global Ecology 1318