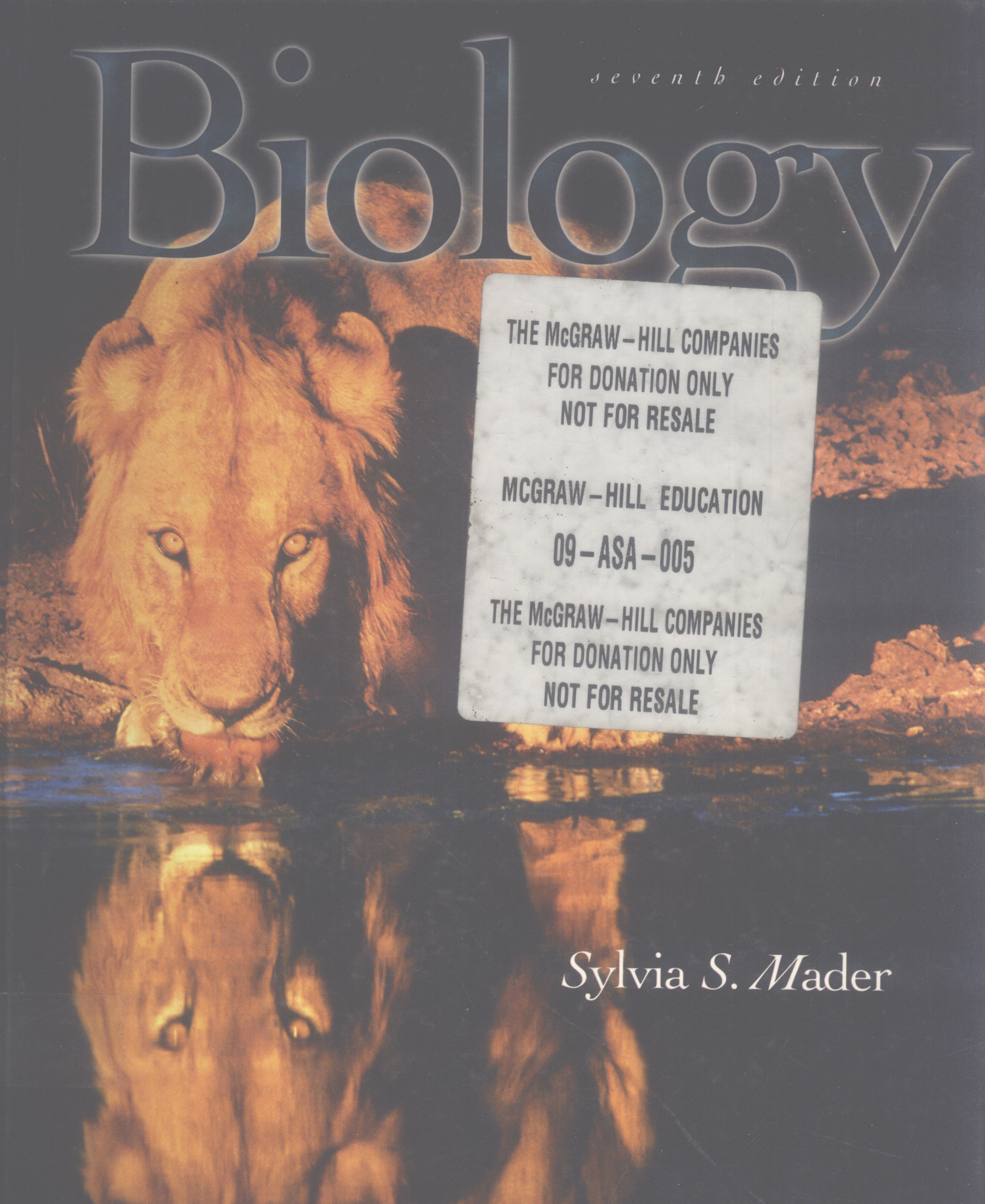


Biology

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Biology

seventh edition

Sylvia S. Mader

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Preface

When I write *Biology* I always feel that I am speaking directly to you, the reader. This occurs, no doubt, because I taught biology before I began to write about it. During those years, I began to develop techniques for making science-shy students successful in their study of biology. The first edition of *Biology* had a learning system that has continued to improve through feedback from both students and instructors. The end result is the seventh edition you hold in your hands. The major topics in *Biology* are now numbered. This allows instructors to assign just certain portions of the chapter and permits study in terms of the concepts listed in the chapter outline. With the advent of the computer it became possible for me to page the text so that each illustration is on the same or facing page as the reference.

Most illustrations in this edition are new or revised to improve their student appeal and educational design. Each type of molecule (fat, protein, nucleic acids) is colored the same, not just in the chemistry chapters but throughout the book. Each type organelle is colored the same in the cell chapter and also in all chapters. The addition of icons relates the part to the whole and the addition of micrographs relates art to an actual structure. Icons occur in the cell, ecology, diversity, and systems chapters. A cell icon shows the usual location of organelles. A cellular respiration icon depicts the connections between various pathways. Phylogenetic tree icons remind students of the evolutionary relationship among groups of organisms.

The emphasis on the scientific process has been strengthened in this edition of *Biology*. The first chapter has an improved description of the scientific process using a more appealing experiment from literature. The end matter of each chapter now contains *Thinking Scientifically* questions and these give students an opportunity to participate in the scientific process and learn to think critically. The *Science Focus* readings are more varied this edition. Some of these are written by contemporary biologists who tell how they go about doing their research and how these findings can be applied to human beings.

A *Bioethical Issue* section has been added to the end of most chapters. These issues pertain to a wide range of topics that require thoughtful consideration by society at this

time. The issues end with appropriate questions to help students center their thoughts and arrive at an opinion. The myriad of topics considered include genetic disease testing, human cloning, AIDS vaccine trials, animal rights, responsibility for one's health, and fetal research.

New Chapters and Sections

Biology is an introductory text that covers the concepts and principles of biology from the structure and function of the cell to the organization of the biosphere. It draws upon the entire world of living things to bring out an evolutionary theme that is introduced from the start. The concept of evolution is necessary to understanding the unity and diversity of life and serves as a background for the study of ecological principles and modern ecological problems.

Every chapter of *Biology* has been revised and skillfully updated so that this edition has not grown in page length. These chapters are new:

Chapter 9, Cellular Reproduction and the Cell Cycle, has been reorganized and now ends with a discussion of the relationship between the cell cycle and cancer.

Chapter 27, Conservation Biology, is a new chapter which discusses the current biodiversity crisis including why we should care, the root causes, and how to preserve species and prevent extinctions.

Chapter 30, The Protists, was thoroughly updated to better reflect modern concepts regarding protist diversity.

Chapter 37, Nutrition and Transport in Plants, now begins with a section that includes a discussion of soil formation and its nutritional functions. In this chapter, new figures support an improved discussion of xylem and phloem transport.

Chapter 46, Neurons and Nervous Systems, has been reorganized and rewritten for better flow. The more thorough discussion of the central nervous system includes a new section on learning and memory.

Chapter 49, Hormones and Endocrine Systems, better emphasizes the role of hormones in homeostasis and the effects of imbalance on the human phenotype.

A more complete list of updates for the seventh edition is available on the *Biology* website.

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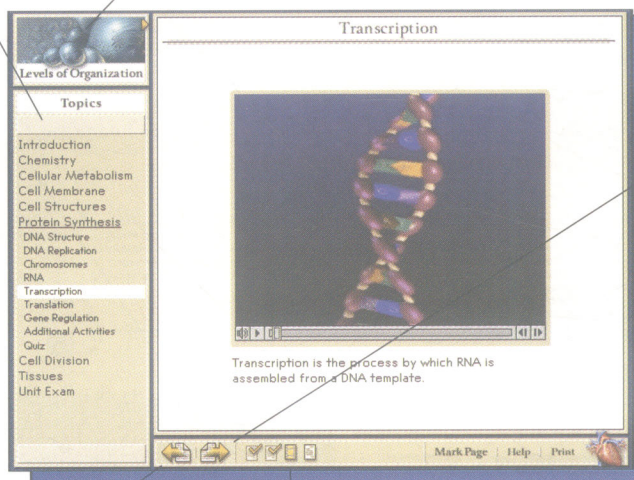
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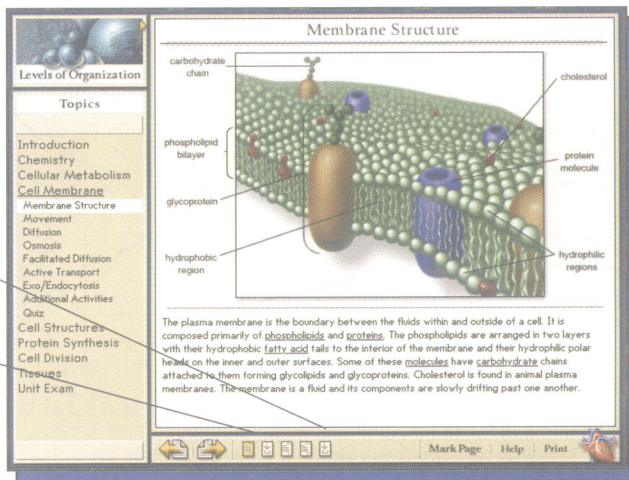
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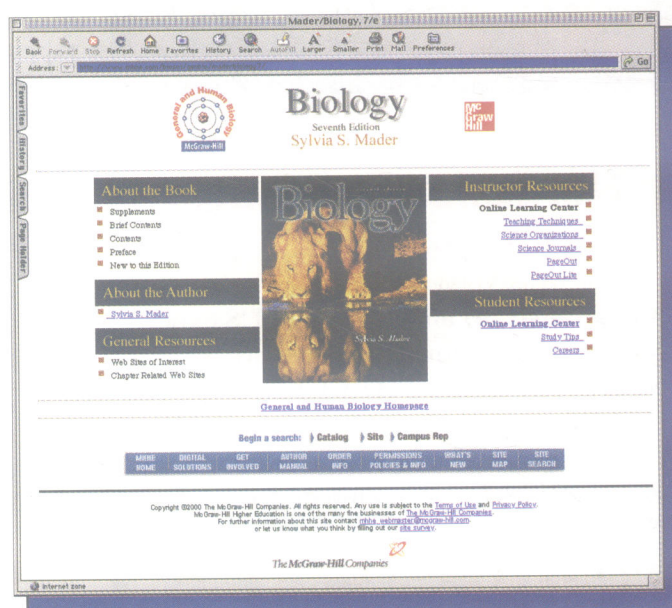
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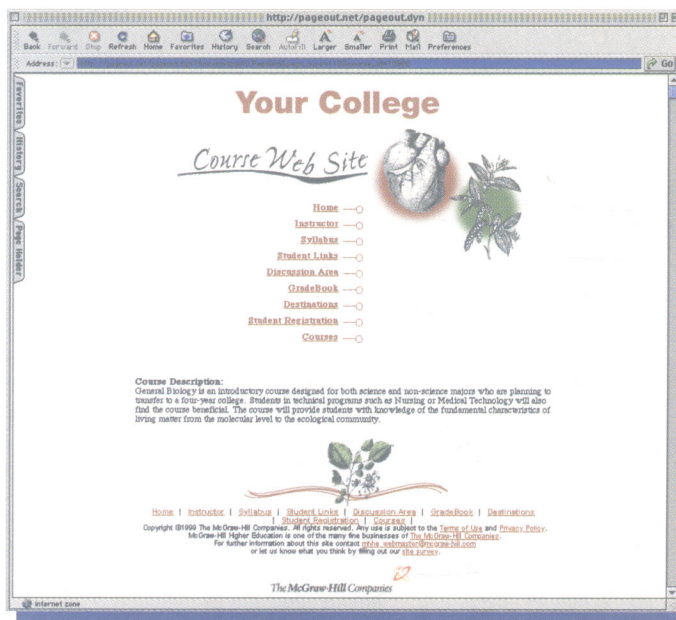
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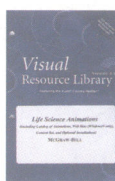
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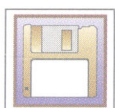
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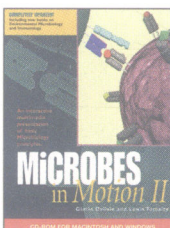
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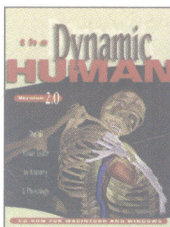
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Instructor's Manual

The *Instructor's Manual* is designed to assist instructors as they plan and prepare for classes using **Biology**. The *Instructor's Manual* contains both an extended lecture outline and lecture enrichment ideas, which together review in detail the contents of the text chapter. The technology section lists videos and computer software items that are available from outside sources and also those that are available from McGraw-Hill.

Student Study Guide

To ensure close coordination with the text, the author Dr. Sylvia S. Mader has written the *Student Study Guide* that accompanies the text. Each text chapter has a corresponding study guide chapter that includes a listing of objectives, study questions, and a chapter test. Answers to the study questions and the chapter tests are provided to give students immediate feedback.

The concepts in the study guide are the same as those in the text, and the study questions in the study guide are sequenced according to these concepts. Instructors who make their choice of concepts known to the students can thereby direct student learning in an efficient manner. Instructors and students who make use of the *Student Study Guide* should find that student performance increases dramatically.

Laboratory Manual

Dr. Mader has also written the *Laboratory Manual* to accompany **Biology**. With few exceptions, each chapter in the text has an accompanying laboratory exercise in the manual (some chapters have more than one accompanying exercise). In this way, instructors are better able to emphasize particular portions of the curriculum, if they wish. The 35 laboratory sessions in the manual are designed to further help students appreciate the scientific method and to learn the fundamental concepts of biology and the specific content of each chapter. All exercises have been tested for student interest, preparation time, and feasibility. This lab manual can be customized to fit your lab course, contact your McGraw-Hill representative for details.

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Brief Contents

- 1 A View of Life 1

part I

The Cell 16

- 2 Basic Chemistry 17
3 The Chemistry of Organic Molecules 33
4 Cell Structure and Function 55
5 Membrane Structure and Function 79
6 Metabolism: Energy and Enzymes 97
7 Photosynthesis 111
8 Cellular Respiration 127
9 Cellular Reproduction and the Cell Cycle 143

part II

Genetic Basis of Life 158

- 10 Meiosis and Sexual Reproduction 159
11 Mendelian Patterns of Inheritance 173
12 Chromosomes and Genes 187
13 Human Genetics 201
14 DNA Structure and Functions 219
15 Gene Activity: How Genes Work 233
16 Genome Organization and Regulation of Gene Activity 247
17 Biotechnology 265

part III

Evolution 280

- 18 Darwin and Evolution 281
19 Process of Evolution 301
20 Origin and History of Life 319
21 Human Evolution 341

part IV

Behavior and Ecology 360

- 22 Animal Behavior 361
23 Ecology of Populations 377

- 24 Community Ecology 399
25 Ecosystems and Human Interferences 421
26 The Biosphere 441
27 Conservation Biology 469

part V

Diversity of Life 488

- 28 Classification of Living Things 489
29 Viruses, Bacteria, and Archaea 507
30 The Protists 525
31 The Fungi 543
32 The Plants 557
33 Animals: Introduction to Invertebrates 579
34 Animals: The Protostomes 597
35 Animals: The Deuterostomes 617

part VI

Plant Structure and Function 640

- 36 Plant Structure 641
37 Nutrition and Transport in Plants 665
38 Control of Plant Growth and Responses 683
39 Reproduction in Plants 699

part VII

Animal Structure and Function 722

- 40 Animal Organization and Homeostasis 723
41 Circulation 739
42 Lymph Transport and Immunity 759
43 Digestion and Nutrition 781
44 Respiration 797
45 Body Fluid Regulation and Excretion 811
46 Neurons and Nervous Systems 825
47 Sense Organs 847
48 Support Systems and Locomotion 863
49 Hormones and Endocrine Systems 881
50 Reproduction 901
51 Development 919

Table of Contents

Preface	xiv
Readings	xi
The Learning System	xii
Supplements	
Acknowledgments	

chapter 1

A View of Life 1

1.1 How to Define Life	2
Living Things Are Organized	2
Living Things Acquire Materials and Energy	3
Living Things Respond	3
Living Things Reproduce and Develop	4
Living Things Have Adaptations	4
1.2 How the Biosphere Is Organized	5
Tropical Rain Forest, a Terrestrial Ecosystem	6
■ <i>Ecology Focus:</i> Tropical Rain Forests: Can We Live Without Them?	7
The Human Population	7
1.3 How Living Things Are Classified	8
1.4 The Process of Science	9
A Field Investigation	9
A Laboratory Investigation	10
The Scientific Method	12
Scientific Theories in Biology	12
CONNECTING CONCEPTS	13
SUMMARY	13
REVIEWING THE CHAPTER	13
TESTING YOURSELF	14
THINKING SCIENTIFICALLY	14
BIOETHICAL ISSUE	14
UNDERSTANDING THE TERMS	15
WEB CONNECTIONS	15
FURTHER READINGS FOR CHAPTER ONE	15

part i

The Cell 16

chapter 2

Basic Chemistry 17

2.1 Chemical Elements	18
2.2 Compounds and Molecules	22
2.3 Chemistry of Water	25

chapter 3

The Chemistry of Organic Molecules 33

3.1 Organic Molecules	34
3.2 Carbohydrates	37
3.3 Lipids	40
3.4 Proteins	44
3.5 Nucleic Acids	48

chapter 4

Cell Structure and Function 55

4.1 Cellular Level of Organization	56
4.2 Bacterial Cells	60
4.3 Eukaryotic Cells	61

chapter 5

Membrane Structure and Function 79

- 5.1 Membrane Models 80
- 5.2 Plasma Membrane Structure and Function 81
- 5.3 Permeability of the Plasma Membrane 84
- 5.4 Modification of Cell Surfaces 92

chapter 6

Metabolism: Energy and Enzymes 97

- 6.1 Energy 98
- 6.2 Metabolic Reactions and Energy Transformations 100
- 6.3 Metabolic Pathways and Enzymes 102
- 6.4 Metabolic Pathways and Oxidation-Reduction 106

chapter 7

Photosynthesis 111

- 7.1 Solar Energy 112
- 7.2 Structure and Function of Chloroplasts 114
- 7.3 Solar Energy Capture 116
- 7.4 Carbohydrate Synthesis 119

chapter 8

Cellular Respiration 127

- 8.1 Cellular Respiration 128
- 8.2 Outside the Mitochondria: Glycolysis 130
- 8.3 Inside the Mitochondria 132
- 8.4 Fermentation 137
- 8.5 Metabolic Pool 139

chapter 9

Cellular Reproduction and the Cell Cycle 143

- 9.1 How Prokaryotic Cells Divide 144
- 9.2 How Eukaryotic Cells Divide 145
- 9.3 How Eukaryotic Cells Cycle 150
- 9.4 How Cancer Develops 152

part ii

Genetic Basis of Life 158

chapter 10

Meiosis and Sexual Reproduction 159

- 10.1 Halving the Chromosome Number 160
- 10.2 Genetic Recombination 162
- 10.3 The Phases of Meiosis 164
- 10.4 Comparison of Meiosis with Mitosis 166
- 10.5 The Human Life Cycle 168

chapter 11

Mendelian Patterns of Inheritance 173

- 11.1 Gregor Mendel 174
- 11.2 Monohybrid Inheritance 176
- 11.3 Dihybrid Inheritance 181

chapter 12

Chromosomes and Genes 187

- 12.1 Mendelism and the Genotype 188
- 12.2 Mendelism and the Chromosomes 192
- 12.3 Chromosomal Mutations 196

chapter 13

Human Genetics 201

- 13.1 Inheritance of Chromosomes 202
- 13.2 Autosomal Genetic Disorders 207
- 13.3 Sex-Linked Genetic Disorders 214

chapter 14

DNA Structure and Functions 219

- 14.1 The Genetic Material 220
- 14.2 The Structure of DNA 223
- 14.3 Replication of DNA 226

chapter 15

Gene Activity: How Genes Work 233

- 15.1 The Function of Genes 234
- 15.2 The Genetic Code 237
- 15.3 The First Step: Transcription 238
- 15.4 The Second Step: Translation 240

chapter 16

Genome Organization and Regulation of Gene Activity 247

- 16.1 Prokaryotic Regulation 248
- 16.2 Eukaryotic Regulation 251
- 16.3 Genetic Mutations 258

chapter 17

Biotechnology 265

- 17.1 Cloning of a Gene 266
- 17.2 Biotechnology Products 270
- 17.3 The Human Genome Project 274
- 17.4 Gene Therapy 275

part iii

Evolution 280

chapter 18

Darwin and Evolution 281

- 18.1 History of the Theory of Evolution 282
- 18.2 Darwin's Theory of Evolution 285
- 18.3 Evidence for Evolution 292

chapter 19

Process of Evolution 301

- 19.1 Evolution in a Genetic Context 302
- 19.2 Natural Selection 306
- 19.3 Speciation 310

chapter 20

Origin and History of Life 319

- 20.1 Origin of Life 320
- 20.2 History of Life 324
- 20.3 Factors That Influence Evolution 334

chapter 21

Human Evolution 341

- 21.1 Humans Are Primates 342
- 21.2 Evolution of Australopithecines 348
- 21.3 Evolution of Humans 351

part iv

Behavior and Ecology 360

chapter 22

Animal Behavior 361

- 22.1 Behavior Has a Genetic Basis 362
- 22.2 Behavior Undergoes Development 364
- 22.3 Behavior Is Adaptive 366
- 22.4 Animal Societies 370
- 22.5 Sociobiology and Animal Behavior 372

chapter 23

Ecology of Populations 377

- 23.1 Scope of Ecology 378
- 23.2 Characteristics of Populations 380
- 23.3 Regulation of Population Size 386
- 23.4 Life History Patterns 390
- 23.5 Human Population Growth 393

chapter 24

Community Ecology 399

- 24.1 Concept of the Community 400
- 24.2 Structure of the Community 403
- 24.3 Community Development 414
- 24.4 Community Biodiversity 416

chapter 25

Ecosystems and Human Interferences 421

- 25.1 The Nature of Ecosystems 422
- 25.2 Energy Flow and Nutrient Cycling 424
- 25.3 Global Biogeochemical Cycles 428

chapter 26

The Biosphere 441

- 26.1 Climate and the Biosphere 442
- 26.2 Biomes of the World 445
- 26.3 Terrestrial Biomes 447
- 26.4 Aquatic Biomes 455

chapter 27

Conservation Biology 469

- 27.1 Conservation Biology and Biodiversity 470
- 27.2 Value of Biodiversity 472
- 27.3 Causes of Extinction 476
- 27.4 Conservation Techniques 480

part V

Diversity of Life 488

chapter 28

Classification of Living Things 489

- 28.1 Taxonomy 490
- 28.2 Phylogenetic Trees 494
- 28.3 Systematics Today 498
- 28.4 Classification Systems 501

chapter 29

Viruses, Bacteria, and Archaea 507

- 29.1 The Viruses 508
- 29.2 The Prokaryotes 513
- 29.3 The Bacteria 517
- 29.4 The Archaea 519

chapter 30

The Protists 525

- 30.1 General Biology of the Protists 526
- 30.2 Diversity of the Protists 528

chapter 31

The Fungi 543

- 31.1 Characteristics of Fungi 544
- 31.2 Classification of Fungi 546
- 31.3 Symbiotic Relationships of Fungi 553

chapter 32

The Plants 557

- 32.1 Classification of Plants 558
- 32.2 Nonvascular Plants 559
- 32.3 Vascular Plants 562
- 32.4 Ferns and Allies 564
- 32.5 Gymnosperms 568
- 32.6 Angiosperms 572

chapter 33

Animals: Introduction to Invertebrates 579

- 33.1 Classification of Animals 580
- 33.2 Multicellularity 582
- 33.3 Two Tissue Layers 584
- 33.4 Bilateral Symmetry 588
- 33.5 A Pseudocoelom 592

chapter 34

Animals: The Protostomes 597

- 34.1 A Coelom 598
- 34.2 Molluscs 600
- 34.3 Annelids 604
- 34.4 Arthropods 606

chapter 35

Animals: The Deuterostomes 617

- 35.1 Echinoderms 618
- 35.2 Chordates 619
- 35.3 Vertebrates 622

part vi

Plant Structure and Function 640

chapter 36

Plant Structure 641

- 36.1 Plant Organs 642
- 36.2 Monocot Versus Dicot Plants 644
- 36.3 Plant Tissues 645
- 36.4 Organization of Roots 648
- 36.5 Organization of Stems 652
- 36.6 Organization of Leaves 658

chapter 37

Nutrition and Transport in Plants 665

- 37.1 Plant Nutrition and Soil 666
- 37.2 Uptake of Water and Minerals 670
- 37.3 Transport Mechanisms in Plants 672

chapter 38

Control of Plant Growth and Response 683

- 38.1 Plant Responses 684
- 38.2 Plant Hormones 688
- 38.3 Photoperiodism 694

chapter 39

Reproduction in Plants 699

- 39.1 Life Cycle of Flowering Plants 700
- 39.2 Development of the Embryo 707
- 39.3 Fruits and Seeds 708
- 39.4 Asexual Reproduction in Plants 712

part vii

Animal Structure and Function 722

chapter 40

Animal Organization and Homeostasis 723

- 40.1 Types of Tissues 724
- 40.2 Organs and Organ Systems 730
- 40.3 Homeostasis 734

chapter 41

Circulation 739

- 41.1 Transport in Invertebrates 740
- 41.2 Transport in Vertebrates 742
- 41.3 Transport in Humans 744
- 41.4 Cardiovascular Disorders 750
- 41.5 Blood, a Transport Medium 753

chapter 42

Lymph Transport and Immunity 759

- 42.1 Lymphatic System 760
- 42.2 Nonspecific Defenses 762
- 42.3 Specific Defenses 764
- 42.4 Immunity in Other Animals 772
- 42.5 Induced Immunity 772
- 42.6 Immunity Side Effects 774