

# CONTENTS

To the Student iv

## 1 A View of Life 1

### Part I The Cell 8

- 2 The Chemical Basis of Life 8
- 3 The Organic Molecules of Life 16
- 4 Inside the Cell 25
- 5 The Dynamic Cell 37
- 6 Energy for Life 46
- 7 Energy for Cells 53

### Part II Genetics 62

- 8 Cellular Reproduction 62
- 9 Sexual Reproduction 72
- 10 Patterns of Inheritance 81
- 11 DNA Biology and Technology 91
- 12 Gene Regulation and Cancer 101
- 13 Genetic Counseling 109

### Part III Evolution 118

- 14 Darwin and Evolution 118
- 15 Evolution on a Small Scale 124
- 16 Evolution on a Large Scale 131

### Part IV Diversity of Life 140

- 17 The First Forms of Life 140
- 18 Land Environment: Plants and Fungi 153
- 19 Both Water and Land: Animals 165
- 20 Plant Anatomy and Growth 183
- 21 Plant Responses and Reproduction 195

### Part V Animal Structure and Function 206

- 22 Being Organized and Steady 206
- 23 The Transport Systems 216
- 24 The Maintenance Systems 225
- 25 Human Nutrition 238
- 26 Defenses Against Disease 246
- 27 The Control Systems 255
- 28 Sensory Input and Motor Output 268
- 29 Reproduction and Development 279
- 30 Ecology of Populations 289
- 31 Communities and Ecosystems 299
- 32 Human Impact and the Biosphere 310