

Contents

Preface xi

To the Reader xvii



I BIOLOGICAL ANTHROPOLOGY 3

In the Field: Doing Biological Anthropology 4

What Is Biological Anthropology? 12

Bioanthropology and Science 15

The Scientific Method 15

Belief Systems 20

*Contemporary Reflections: Is Evolution a Fact, a Theory,
or Just a Hypothesis?* 22

Summary 23

Questions for Further Thought 23

Key Terms 24

Suggested Readings 24

2 THE EVOLUTION OF EVOLUTION 27

"On the Shoulders of Giants": Explaining the Changing Earth 28

"Common Sense at Its Best": Explaining Biological Change 36

Contemporary Reflections: Has Science Dehumanized Society? 43

Summary 46

Questions for Further Thought 46

Key Terms 46

Suggested Readings 47

3 EVOLUTIONARY GENETICS 49

- How Genes Work 50
- An Overview of the Human Genome 55
- From Gene to Trait 57
- How Inheritance Works 60
- Contemporary Reflections: What Is Genetic Cloning? 64
- Summary 64
- Questions for Further Thought 66
- Key Terms 66
- Suggested Readings 67

4 THE PROCESSES OF EVOLUTION 69

- Species: The Units of Evolution 71
- Mutations: Necessary Errors 73
- Natural Selection: The Prime Mover of Evolution 75
- Gene Flow: Mixing Populations' Genes 77
- Genetic Drift: Random Evolution 79
- Sickle Cell Anemia: Evolutionary Processes in Action 82
- Contemporary Reflections: Are Humans Still Evolving? 86
- Summary 88
- Questions for Further Thought 89
- Key Terms 90
- Suggested Readings 90

5 THE ORIGIN OF SPECIES AND THE SHAPE OF EVOLUTION 93

- New Species 94
- Adaptive Radiation: The Evolution of Life's Diversity 98
- The Shape of the Family Tree 102
- Evolution Questioned: The Pseudoscience of "Scientific Creationism" 105

<i>Contemporary Reflections: Can We See Evolution in Action?</i>	108
Summary	110
Questions for Further Thought	112
Key Terms	112
Suggested Readings	112

6 A BRIEF EVOLUTIONARY TIMETABLE 115

From the Beginning: A Quick History	116
Drifting Continents and Mass Extinctions: The Pace of Change	122
<i>Contemporary Reflections: Are Mass Extinctions a Thing of the Past?</i>	126
Summary	127
Questions for Further Thought	128
Key Terms	129
Suggested Readings	129

7 THE PRIMATES 131

Naming the Animals	132
Linnaean Taxonomy	133
Cladistics	137
What Is a Primate?	139
The Senses	140
Movement	141
Reproduction	142
Intelligence	143
Behavior Patterns	143
A Survey of the Living Primates	148
Prosimians	149
Anthropoids	151
The Human Primate	157
The Senses	157
Movement	158
Reproduction	158
Intelligence	159
Behavior Patterns	159

*Contemporary Reflections: What Is the Status of Our
Closest Relatives?* 160

Summary 160

Questions for Further Thought 162

Key Terms 162

Suggested Readings 163

**8 PRIMATE BEHAVIOR AND HUMAN
EVOLUTION 165**

Studying Behavior 166

Baboons 171

Chimpanzees 174

Bonobos 179

*Contemporary Reflections: Are Some
Human Behaviors Genetic?* 182

Summary 185

Questions for Further Thought 185

Key Terms 186

Suggested Readings 186

9 STUDYING THE HUMAN PAST 189

Bones: The Primate Skeleton 190

Old Bones: Locating, Recovering, and Dating Fossils 196

How Fossils Get to Be Fossils 203

Genes: New Windows to the Past 207

Contemporary Reflections: Who Owns Old Bones? 210

Summary 212

Questions for Further Thought 213

Key Terms 214

Suggested Readings 214

10 EVOLUTION OF THE HOMININS — 217

- The Origin and Evolution of the Primates 218
- The Early Hominins: Bipedal Primates 225
- The Search for the First Hominins 233
- Bipedalism 238
 - The Benefits of Bipedalism* 238
 - Explaining the Evolution of Bipedalism* 241
- The Hominins Evolve 246
 - More Australopithecines* 246
 - Still More Hominins* 248
- Putting It All Together 252
- Summary 256
- Contemporary Reflections: Is There a "Missing Link"?* 257
- Questions for Further Thought 258
- Key Terms 258
- Suggested Readings 259

11 THE EVOLUTION OF GENUS HOMO 261

- Lumpers and Splitters: An Organizing Plan 263
- The First Members of Genus *Homo* 264
- To New Lands 269
- Big Brains, Archaic Skulls 288
- The Neandertals 295
- Modern Humans 305
- Contemporary Reflections: Who Are the "Hobbits" from Indonesia?* 314
- Summary 316
- Questions for Further Thought 317
- Key Terms 318
- Suggested Readings 318

**12 THE DEBATE OVER MODERN
HUMAN ORIGINS 321**

- The Two Standard Models 323
 - The Recent African Origin (RAO) Model* 323
 - The Multiregional Evolution (MRE) Model* 325
 - The Key Requirements of Each Model* 327
 - The Evidence 328
 - The Fossil and Archaeological Records* 328
 - Genetic Evidence* 331
 - Evolutionary Theory* 337
 - Contemporary Reflections: Is There a Connection between
Modern Human Origins and Race?* 340
 - Mostly-Out-of-Africa: A Model from the Data* 341
 - Summary 345
 - Questions for Further Thought 345
 - Key Terms 346
 - Suggested Readings 346
-

13 THE STUDY OF LIVING PEOPLES 349

- The Bioanthropology of Individuals 350
- Describing Populations 355
- Evolution within Populations 360
- Population Adaptations 365
 - Species Adaptations* 366
 - Variation in Adaptations* 367
 - Are All Variations Adaptively Important?* 370
- Disease and Human Populations 373
- Contemporary Reflections: Where Is
the Population Crisis?* 376
- Summary 381
- Questions for Further Thought 381
- Key Terms 382
- Suggested Readings 382

14 HUMAN BIOLOGICAL DIVERSITY 385

- Sex and Gender 387
- Why Are There No Biological Races within
the Human Species? 392
 - Race as a Biological Concept 392
 - Human Phenotypic Variation 396
 - Genetic Variation 397
 - Evolutionary Theory 400
- What, Then, Are Human Races? 402
- Race, Bioanthropology, and Social Issues 405
- Summary 409
- Contemporary Reflections: Are There Racial Differences in
Athletic Ability?* 410
- Questions for Further Thought 412
- Key Terms 413
- Suggested Readings 413

**15 BIOLOGICAL ANTHROPOLOGY AND TODAY'S
WORLD 415**

- Forensic Anthropology: Reading the Bones 416
- Lessons from the Past 423
- Contemporary Reflections: What Can One Do with a
Degree in Bioanthropology?* 428
- Bioanthropology and Global Issues 428
- Summary 431
- Questions for Further Thought 431
- Suggested Readings 432

Appendix: Genes in Populations 434**Exercises 438****Glossary of Human and Nonhuman Primates G-1**