

CONTENTS

Tables and Figures vii

Preface xv

The Author xvii

Acknowledgments xviii

Part 1: Introduction to Emerging Infectious Diseases

Chapter 1: Infectious Diseases Past and Present 3

Major Concepts 4 • History of Infectious Diseases 5 • The Role of Infectious Diseases in the World Today 8 • The Links Between Infectious Diseases, Poverty, and Civil Unrest 10 • Emerging and Reemerging Infectious Diseases 12 • Factors Contributing to the Emergence of New Infectious Diseases and the Spread and Evolution of Older Diseases 15 • Timeline 18

Chapter 2: Of Microbes and Men 27

Major Concepts 28 • Introduction 30 • Infectious Agents: The Enemy Combatants 30 • Genetic Information and the Making of Proteins: Preparing the Armament 36 • The Immune Response: Humans Fight Back, Part One 40 • Antimicrobial Agents: Humans Fight Back, Part Two 46

Part 2: Bacterial Infections

Chapter 3: Lyme Disease 55

Major Concepts 56 • Introduction 58 • History 60 • The Disease 61 • The Causative Agent 63 • The Immune Response 66 • Diagnosis 67 • Treatment 68 • Prevention 69 • Surveillance 71

Chapter 4: Human Ehrlichiosis 75

Major Concepts 76 • Introduction 77 • History 78 • The Diseases 79 • The Causative Agents 88 • The Immune Response 89 • Diagnosis 90 • Treatment 91 • Prevention 92 • Surveillance 92

Chapter 5: *Bartonella* Infections 97

Major Concepts 98 • Introduction 99 • History 99 • The Diseases 101
• The Causative Agents 106 • The Immune Response 109
• Diagnosis 110 • Treatment 111 • Prevention 111 • Surveillance 112

Chapter 6: Group A *Streptococci* 117

Major Concepts 118 • Introduction 119 • History 120 • The Diseases 121
• The Causative Agents 127 • The Immune Response 131
• Diagnosis 132 • Treatment 133 • Prevention 134 • Surveillance 135

Chapter 7: *Escherichia coli* O157:H7 139

Major Concepts 140 • Introduction 141 • History 142 • The Diseases 143
• The Causative Agents 145 • The Immune Response 151
• Diagnosis 152 • Treatment 153 • Prevention 153 • Surveillance 155

Chapter 8: *Helicobacter pylori*, Ulcers, and Cancer 161

Major Concepts 162 • Introduction 163 • History 164 • The Diseases 165
• The Causative Agent 168 • The Immune Response 171
• Diagnosis 172 • Treatment 173 • Prevention 174 • Surveillance 175

Chapter 9: Legionnaires' Disease and Pontiac Fever 181

Major Concepts 182 • Introduction 183 • History 184 • The Diseases 185
• The Causative Agent 186 • The Immune Response 191
• Diagnosis 194 • Treatment 197 • Prevention 197 • Surveillance 199

Chapter 10: Pulmonary Tuberculosis and Multidrug Resistance 205

Major Concepts 206 • Introduction 207 • History 208 • The Disease 209
• The Causative Agents 212 • The Immune Response 213 • Detection and Diagnosis 214 • Treatment and Drug Resistance 216 • Prevention 219
• Surveillance 220

Chapter 11: Emerging Bacterial Drug Resistance 225

Major Concepts 226 • Introduction 227 • History 228 • The Diseases, Causative Agents, and Treatment Options 229 • Mechanisms of Resistance 235 • Diagnosis 239 • Prevention 240 • Surveillance 240

Part 3: Viral Infections**Chapter 12: Marburg and Ebola Hemorrhagic Fevers 247**

Major Concepts 248 • Introduction 249 • History 250 • The Diseases 254
• The Causative Agents 257 • The Immune Response 262 • Diagnosis 263
• Treatment 264 • Prevention 264 • Surveillance 267

Chapter 13: American Hemorrhagic Fevers 273

Major Concepts 274 • Introduction 275 • History 277 • The Diseases 278
• The Causative Agents 282 • The Immune Response 285 • Diagnosis 286
• Treatment 287 • Prevention 287 • Surveillance 288

Chapter 14: Lassa Hemorrhagic Fever 293

Major Concepts 294 • Introduction 295 • History 296 • The Disease 298
• The Causative Agent 300 • The Immune Response 303 • Diagnosis 304
• Treatment 304 • Prevention 306 • Surveillance 308

Chapter 15: Dengue Fever and Dengue Hemorrhagic Fever 313

Major Concepts 314 • Introduction 315 • History 316 • The Diseases 318
• The Causative Agent 321 • The Immune Response 324 • Diagnosis 327
• Treatment 327 • Prevention 328 • Surveillance 329

Chapter 16: The Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome 335

Major Concepts 336 • Introduction 338 • History 339 • The Diseases 341
• The Causative Agent 344 • The Immune Response 350 • Diagnosis and
Detection 355 • Treatment 355 • Prevention 357 • Surveillance 358

Chapter 17: Human Herpesvirus 8 and Kaposi's Sarcoma 365

Major Concepts 366 • Introduction 367 • History 368 • The Diseases 368
• The Causative Agent 373 • The Immune Response 378 • Diagnosis 379
• Treatment 380 • Prevention 383 • Surveillance 383

Chapter 18: Hepatitis C 389

Major Concepts 390 • Introduction 391 • History 392 • The Diseases 392
• The Causative Agent 397 • The Immune Response 399 • Diagnosis 401
• Treatment 402 • Prevention 403 • Surveillance 404

Chapter 19: Epidemic and Pandemic Influenza 409

Major Concepts 410 • Introduction 411 • History 412 • The Disease 414
• The Causative Agent 415 • The Immune Response 421 • Diagnosis 421
• Treatment 422 • Prevention 422 • Surveillance 425

Chapter 20: Hantavirus Pulmonary Syndrome 431

Major Concepts 432 • Introduction 433 • History 435 • The Diseases 435
• The Causative Agents 439 • The Immune Response 444 • Diagnosis 445
• Treatment 446 • Prevention 447 • Surveillance 450

Chapter 21: Severe Acute Respiratory Syndrome 455

Major Concepts 456 • Introduction 457 • History 457 • The Disease 460
• The Causative Agent 461 • The Immune Response 464 • Diagnosis 465
• Treatment 466 • Prevention 467 • Surveillance 469

Chapter 22: West Nile Disease in the United States 475

Major Concepts 476 • Introduction 477 • History 477 • The Diseases 481
• The Causative Agent 484 • The Immune Response 487 • Diagnosis 488
• Treatment 489 • Prevention 490 • Surveillance 493

Chapter 23: Monkeypox 499

Major Concepts 500 • Introduction 501 • History 502 • The Disease 505
• The Causative Agent 508 • The Immune Response 511 • Diagnosis 513
• Treatment 514 • Prevention 514 • Surveillance 516

Part 4: Parasitic Infections

Chapter 24: **Malaria: Reemergence and Recent Successes** 523

Major Concepts 524 • Introduction 526 • History 526 • The Disease 528 • The Causative Agents 529 • The Immune Response 533 • Diagnosis 535 • Treatment and Drug Resistance 535
• Prevention: Failures and Successes 537 • Surveillance 541

Chapter 25: **Babesiosis** 547

Major Concepts 548 • Introduction 549 • History 549 • The Disease 550
• The Causative Agent 553 • The Immune Response 557 • Diagnosis 558
• Treatment 558 • Prevention 560 • Surveillance 560

Chapter 26: **Cryptosporidiosis** 565

Major Concepts 566 • Introduction 567 • History 568 • The Disease 569
• The Causative Agents 570 • The Immune Response 576 • Diagnosis 577
• Treatment 578 • Prevention 580 • Surveillance 581

Chapter 27: **Chagas' Disease and Its Emergence in the United States** 585

Major Concepts 586 • Introduction 587 • History 587 • The Disease 588
• The Causative Agent 591 • The Immune Response 595 • Diagnosis 598
• Treatment 599 • Prevention 600 • Surveillance 601

Part 5: Infectious Proteins

Chapter 28: **Creutzfeldt-Jakob Disease and Other Transmissible Spongiform Encephalopathies** 609

Major Concepts 610 • Introduction 611 • History 612 • The Diseases 613
• The Causative Agents 621 • The Immune Response 625 • Diagnosis 626
• Treatment 627 • Prevention 628 • Surveillance 628

Part 6: Special Issues in Infectious Diseases

Chapter 29: **The Emerging Importance of Infectious Diseases in the Immunosuppressed** 635

Major Concepts 636 • Introduction 637 • Immunosuppressed Populations 637 • Selected Causes of Immunosuppression 638 • Infectious Diseases of the Immunosuppressed 642

Chapter 30: **The Emerging Threat of Bioweapons** 667

Major Concepts 668 • Introduction 669 • History 670 • Bioterrorism Agents and Diseases 671 • The Threat of Agroterrorism 692 • Preparation for Biological Attacks 693 • Protective Vaccines 694

Glossary 701

Index 723