

CONTENTS

Preface	v
FOUNDATIONS OF MICROBIAL LIFE	1
Chapter 1 Microbiology in the Biological World	3
Chapter 2 Biochemistry of the Molecules of Life	25
Chapter 3 Functional Anatomy of Prokaryotic and Eukaryotic Cells	47
Chapter 4 Dynamics of Microbial Growth under Laboratory Conditions	86
Chapter 5 Dynamics of Microbial Growth in Nature	114
Chapter 6 Control of Microbial Growth	124
Chapter 7 Metabolism	142
Chapter 8 Informational Macromolecules: Function and Synthesis	169
Chapter 9 Microbial Genetics	186
Chapter 10 Regulation of Cellular Activities	222
THE MICROBIAL WORLD	237
Chapter 11 Classification of Microorganisms	239
Chapter 12 Bacteria	251
Chapter 13 Algae	176
Chapter 14 Fungi	289
Chapter 15 Protozoa	304
Chapter 16 The Nature and Study of Viruses	319
Chapter 17 Animal and Plant Viruses	340
MICROBES AND HUMAN BEINGS	353
Chapter 18 Viruses and Cancer	355
Chapter 19 Interactions between Microbes and Human Beings	367
Chapter 20 Immunology: Antigens, Antibodies, and Cell-mediated Immunity	378
Chapter 21 Immunology: Hypersensitivities	406
Chapter 22 Bacteria of Medical Importance	426
Chapter 23 Epidemiology of Infectious Diseases	444
Chapter 24 Skin Infections	457
Chapter 25 Infections of the Upper Respiratory System	472
Chapter 26 Lower Respiratory Tract Infections	483
Chapter 27 Oral Microbiology, Gastrointestinal Infections, and Food Poisoning	499
Chapter 28 Infections of the Genitourinary Tract	522
Chapter 29 Infections of the Nervous System	538
Chapter 30 Wound Infections	551
Chapter 31 Infections Involving the Blood Vascular and Lymphatic Systems	560
Chapter 32 Multicellular Parasites	571
Chapter 33 Antimicrobial Drugs	586

MICROBES AND THE ENVIROMENT	609
Chapter 34 Terrestrial Microbiology	611
Chapter 35 Aquatic Microbiology	635
Chapter 36 The Microbiology of Waste Treatment	651
Chapter 37 The Microbiology of Foods and Beverages	663
Chapter 38 Commercial Applications of microbiology	679
THE CONTINUING FRONTIER	689
Chapter 39 Looking Ahead	691
Appendix I Pathway of Glucose Degradation through the Glycolytic and TCA Cycles	706
Appendix II Classification of Bacteria	708
Appendix III Groups of Animal Viruses	711
Appendix IV Some Immunizing Agents of Major Importance	714
Glossary	717
Index	747