Contents

List of contributors vii
Preface to the eighth edition ix
Preface to the first edition x

Part 1 Biology of microorganisms 1
1 Introduction to pharmaceutical microbiology 3
   Norman Hodges
2 Fundamental features of microbiology 9
   Norman Hodges
3 Bacteria 24
   David Allison
4 Fungi 44
   Kevin Kavanagh and Judy Kelly
5 Viruses 59
   Jean-Yves Maillard
6 Protozoa 84
   Tim Paget

Part 2 Pathogens and host responses 107
7 Principles of microbial pathogenicity and epidemiology 109
   David Allison and Andrew McBain
8 Microbial biofilms: consequences for health 121
   Howard Ceri, Sean P. Gorman and Brendan F. Gilmore
9 Immunology 131
   Mark Gumbleton and Mathew W. Smith
10 Vaccination and immunization 151
    Andrew McBain and David Allison

Part 3 Prescribing therapeutics 167
11 Antibiotics and synthetic antimicrobial agents:
   their properties and uses 169
   Norman Hodges
12 Mechanisms of action of antibiotics and synthetic anti-infective agents
   Peter Lambert
   200

13 Bacterial resistance to antibiotics
   Anthony W. Smith
   217

14 Clinical uses of antimicrobial drugs
   Hayley Wickens and Roger Finch
   230

15 Antibiotic prescribing and antibiotic stewardship
   Norman Hodges
   248

16 Public health microbiology: infection prevention and control
   Brian I. Duerden
   257

Part 4  Contamination and infection control

17 Microbial spoilage, infection risk and contamination control
   Rosamund M. Baird
   271

18 Laboratory evaluation of antimicrobial agents
   Brendan F. Gilmore, Howard Ceri and Sean P. Gorman
   273

19 Chemical disinfectants, antiseptics and preservatives
   Sean P. Gorman and Brendan F. Gilmore
   293

20 Non-antibiotic antimicrobial agents: mode of action and resistance
   Stephen P. Denyer and Jean-Yves Maillard
   312

21 Sterilization procedures and sterility assurance
   Stephen P. Denyer, Norman Hodges and Catherine Talbot
   334

Part 5  Pharmaceutical production

22 Sterile pharmaceutical products
   James L. Ford and Robert W. Jones
   352

23 Principles of good manufacturing practice
   Robert W. Jones, Shaqil Chaudary, Touraj Ehtezazi and James L. Ford
   381

24 The manufacture and quality control of immunological products
   Michael Corbel and Dorothy Xing
   402

25 Recombinant DNA technology
   Miguel Cámara and Stephan Heeb
   416

Part 6  Current trends and new directions

26 The wider contribution of microbiology to the pharmaceutical sciences
   Mathew W. Smith, James C. Birchall and Sion A. Coulman
   435

27 Alternative strategies for antimicrobial therapy
   Geoffrey Hanlon
   451

Index
   495