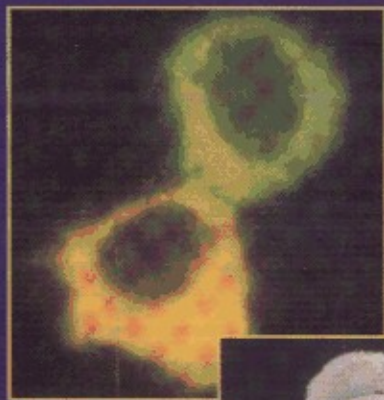


SIXTEENTH EDITION

Medical Microbiology

A GUIDE TO
MICROBIAL INFECTIONS:
PATHOGENESIS, IMMUNITY,
LABORATORY DIAGNOSIS
AND CONTROL



Edited by
David Greenwood
Richard C. B. Slack
John F. Peutherer



CHURCHILL
LIVINGSTONE



CONTENTS



PART 1 MICROBIAL BIOLOGY

- 1 Microbiology and medicine 2
D. Greenwood
- 2 Morphology and nature of micro-organisms 9
M. R. Barer
- 3 Classification and identification of micro-organisms 25
T. L. Pitt
- 4 Bacterial growth and physiology 37
M. R. Barer
- 5 Antimicrobial agents 46
D. Greenwood and M. M. Ogilvie
- 6 Bacterial genetics 61
K. J. Towner
- 7 Sterilization and disinfection 73
R. A. Simpson and R.C.B. Slack
- 8 Bacterial pathogenicity 83
D. Ala'Aldeen
- 9 Virus-cell interactions 93
M. Norval



PART 2 INFECTION AND IMMUNITY

- 10 Immunological principles: antigens and antigen recognition 110
J. Stewart
- 11 Innate and acquired immunity 121
J. Stewart
- 12 Immunity in viral infections 146
J. Stewart
- 13 Parasitic infections: pathogenesis and immunity 154
J. Stewart

- 14 Immunity in bacterial infections 161
J. Stewart



PART 3 BACTERIAL PATHOGENS AND ASSOCIATED DISEASES

- 15 *Staphylococcus* 168
Skin infections; osteomyelitis; food poisoning; foreign body infections
H. Humphreys
- 16 *Streptococcus* and *enterococcus* 174
Pharyngitis; scarlet fever; skin and soft tissue infections; streptococcal toxic shock syndrome; pneumonia; meningitis; urinary tract infections; rheumatic fever; post-streptococcal glomerulonephritis
M. Kilian
- 17 *Coryneform* bacteria, *listeria* and *erysipelothrix* 189
Diphtheria; listeriosis; erysipeloid
J. McLauchlin and P. Riegel
- 18 *Mycobacterium* 200
Tuberculosis; leprosy
J. M. Grange
- 19 *Environmental mycobacteria* 215
Opportunist disease
J. M. Grange
- 20 *Actinomyces*, *nocardia* and *trophyryma* 221
Actinomycosis; nocardiasis; Whipple's disease
J. M. Grange
- 21 *Bacillus* 225
Anthrax; food poisoning
R. C. B. Slack
- 22 *Clostridium* 231
Gas gangrene; tetanus; food poisoning; pseudomembranous colitis
T. V. Riley

CONTENTS

- 23 **Neisseria and moraxella** 242
Meningitis; gonorrhoea; respiratory infections
R. C. B. Slack
- 24 **Salmonella** 250
Food poisoning; enteric fever
H. Chart
- 25 **Shigella** 260
Bacillary dysentery
H. Chart
- 26 **Escherichia** 265
Urinary tract infection; travellers' diarrhoea; haemorrhagic colitis; haemolytic uraemic syndrome
H. Chart
- 27 **Klebsiella, enterobacter, proteus and other enterobacteria** 275
Pneumonia; urinary tract infection; opportunist infection
H. Chart
- 28 **Pseudomonads and non-fermenters** 282
Opportunist infection; cystic fibrosis; melioidosis
J. R. W. Govan
- 29 **Campylobacter and helicobacter** 288
Enteritis; gastritis; peptic ulcer
M. B. Skirrow
- 30 **Vibrio, mobiluncus, gardnerella and spirillum** 296
Cholera; vaginosis; rat bite fever
H. Chart
- 31 **Haemophilus** 304
Respiratory infections; meningitis; chancroid
M. P. E. Slack
- 32 **Bordetella** 311
Whooping cough
N. W. Preston and R. C. Matthews
- 33 **Legionella** 318
Legionnaires' disease; Pontiac fever
J. Hood and G. F. S. Edwards
- 34 **Brucella, bartonella and streptobacillus** 322
Brucellosis; Oroya fever; trench fever; cat scratch disease; bacillary angiomatosis; rat-bite fever
M. J. Corbel
- 35 **Yersinia, pasteurilla and francisella** 329
Plague; pseudotuberculosis; mesenteric adenitis; pasteurellosis; tularaemia
M. J. Corbel
- 36 **Non-sporing anaerobes** 337
Wound infection; periodontal disease; abscess; normal flora
R. P. Allaker and J. M. Hardie
- 37 **Treponema and borrelia** 343
Syphilis; yaws; relapsing fever; Lyme disease
A. Cockayne
- 38 **Leptospira** 352
Leptospirosis; Weil's disease
T. J. Coleman
- 39 **Chlamydia** 358
Genital and ocular infections; infertility; atypical pneumonia
M. E. Ward
- 40 **Rickettsia, orientia, ehrlichia and coxiella** 369
Typhus; spotted fevers; scrub typhus; ehrlichioses; Q fever
D. H. Walker and Xue-Jie Yu
- 41 **Mycoplasmas** 379
Atypical pneumonia; genital tract infection
D. Taylor-Robinson



PART 4 VIRAL PATHOGENS AND ASSOCIATED DISEASES

- 42 **Adenoviruses** 392
Respiratory disease; conjunctivitis; gut infections
J. S. M. Peiris and C. R. Madeley


- 43 **Herpesviruses** 399
Herpes simplex; varicella and zoster; infectious mononucleosis; B cell lymphomas; cytomegalovirus disease; roseola infantum; Kaposi's sarcoma; herpes B
M. M. Ogilvie
- 44 **Poxviruses** 421
Smallpox; molluscum contagiosum; parapoxvirus infections
T. H. Pennington
- 45 **Papovaviruses** 429
Warts: warts and cancers; progressive multifocal leuco-encephalopathy
H. Cubie
- 46 **Hepadnaviruses** 438
Hepatitis B infection; deltavirus infection
P. Simmonds and J. F. Peutherer
- 47 **Parvoviruses** 448
B19 infection; erythema infectiosum
H. A. Cubie
- 48 **Picornaviruses** 455
Meningitis; paralysis; rashes; intercostal myositis; myocarditis; infectious hepatitis; common cold
S. M. Burns
- 49 **Orthomyxoviruses** 468
Influenza
S. Sutherland
- 50 **Paramyxoviruses** 475
Respiratory infections; mumps; measles
J. S. M. Peiris and C. R. Madeley
- 51 **Arboviruses: alphaviruses, flaviviruses and bunyaviruses** 484
Encephalitis; yellow fever; dengue; haemorrhagic fever; miscellaneous tropical fevers; undifferentiated fever;
A. D. T. Barrett and S. C. Weaver
- 52 **Togavirus and hepacivirus** 501
Rubella and hepatitis C viruses
P. Morgan-Capner and P. N. Simmonds
- 53 **Arenaviruses and filoviruses** 513
Lassa, Junin, Machupo, Sabia and Flexal virus haemorrhagic fevers; Marburg and Ebola Fevers
C. A. Hart
- 54 **Reoviruses** 521
Gastroenteritis
U. Desselberger
- 55 **Retroviruses** 527
Acquired immune deficiency syndrome; lymphoma
P. Simmonds and J. F. Peutherer
- 56 **Caliciviruses and astroviruses** 539
Diarrhoeal disease
D. Cubitt
- 57 **Coronaviruses** 546
Upper respiratory tract disease
J. M. Darville and E. O. Caul
- 58 **Rhabdoviruses** 551
Rabies
S. Sutherland
- 59 **Transmissible spongiform encephalopathies (prion diseases)** 558
Scrapie; BSE; Creutzfeldt-Jakob disease; variant Creutzfeldt-Jakob disease
J. W. Ironside



PART 5 FUNGAL PATHOGENS, PARASITIC INFECTIONS AND MEDICAL ENTOMOLOGY

- 60 **Fungi** 568
Thrush; ringworm; subcutaneous and systemic mycoses
E. G. V. Evans
- 61 **Protozoa** 589
Malaria; toxoplasmosis; cryptosporidiosis; amoebic dysentery; sleeping sickness; Chagas' disease; leishmaniasis; giardiasis; trichomoniasis
D. Greenwood

CONTENTS

- 62 **Helminths** 601
Intestinal worm infections; filariasis;
schistosomiasis; hydatid disease
D. Greenwood
- 63 **Arthropods** 615
Arthropod-borne diseases; ectoparasitic
infections; allergy
D. Greenwood
- 
- PART 6**
DIAGNOSIS, TREATMENT AND CONTROL OF
INFECTION
- 64 **Infective syndromes** 624
R. C. B. Slack
- 65 **Diagnostic procedures** 635
R. C. B. Slack
- 66 **Strategy of antimicrobial
chemotherapy** 642
R. C. B. Slack
- 67 **Epidemiology and control of community
infections** 653
D. Reid
- 68 **Hospital infection** 662
R. C. B. Slack
- 69 **Immunization** 670
R. C. B. Slack
- INDEX** 680