BOOK REVIEWS

Molecular Bacteriology: Protocols and Clinical Applications Methods in Molecular Medicine, volume 15

Edited by NEIL WOODFORD and ALAN P. JOHNSON. 1998. ISBN 0-89603-498-4. Humana Press, New Jersey. Pp. 682. \$99.50.

This book aims to provide insight into molecular methods that may be useful in modern medical bacteriology. It consists of two main parts; the first contains chapters discussing the range of methods that are available, e.g., DNA amplification and pulsed-field gel electrophoresis. These chapters not only present an overview of such methods, but also discuss their application with examples. The second part of the book deals with the use of methods in detecting specific organisms, virulence factors, typing and mechanisms of antibiotic resistance. Identification of streptococci, detection of *Corynebacterium diphtheriae* toxin, typing salmonellae and detection and characterisation of β -lactamases are among topics covered. There are detailed and clearly written protocols for the methods described in each chapter. Useful hints and information are provided at the end of each chapter, so that investigators should in most cases be able to get the methods working using this book alone. Most of the methods described are based on molecular biology; however, some phenotypic methods are provided, e.g., iso-electric focusing of β -lactamases, or analysis of peptidoglycan precursors.

The book is authoritative, as its many contributors are all experts in their fields; their contributions have been well coordinated by the editors, resulting in a unified work. Judicious use of tables and diagrams illustrate the book. Figures show the perfection of results for which the readers should be striving. The book is sturdily bound in hardback to withstand the considerable use it deserves and will undoubtedly get. It represents very good value and I recommend that all laboratories interested in molecular diagnosis in bacteriology should buy a copy of it.

M. J. GILL

Urinary Tract Infections

Edited by WILLIAM BRUMFITT, JEREMY M. T. HAMILTON-MILLER and ROSS R. BAILEY. 1998. ISBN 0-412-63050-8. Chapman and Hall, London. Pp. 350.

This comprehensive review is a multi-author text with contributions from the UK, Europe, North America and Australia. Despite the numerous authors and individual styles, there is generally a consistency of style and approach throughout. A welcome feature of this book is the extensive bibliography at the end of each chapter and in particular the inclusion of many references going back 30 years or more. Although the order of chapters is not perhaps altogether logical (e.g., the first chapter deals with laboratory methods and the last considers the pharmacokinetics of antibacterial agents after treatment and prevention have been reviewed), the pathogenesis, epidemiology, clinical features, screening and investigation of urinary tract infection are all well covered. Strong features of the book are its detailed coverage of urinary tract infection at different ages in life, specific clinical areas such as the urethral syndrome and the investigation of urinary tract infection.

The highlights of the book for me are those sections covering diagnostic imaging, prostatic infection, urinary tract infection during childhood and catheter care. Common sense together with a comprehensive but rational review of the literature characterise these contributions. Inevitably, there are one or two minor quibbles. In many chapters, especially those covering clinical aspects, there is a section on epidemiology, investigations to localise infection and approaches to therapy, which are all very similar, and after a while are repetitive. It is surprising that there are not any colour plates in this book and, therefore, those illustrations covering pathological aspects of urinary tract infection are somewhat unsatisfactory. The strong North American presence amongst the list of contributors means that, inevitably, trimethoprim-sulphamethoxazole rather than trimethoprim alone figures prominently in the list of first line therapeutic options. However, giving the importance of urine specimens in the routine work of most microbiology laboratories and the extensive up-to-date coverage of the subject, this excellent book will be of interest to many, if not all microbiologists. It will also be of considerable interest to infectious disease physicians, urologists and genito-urinary physicians. Finally, it is well deserving of a place on most medical library bookshelves.

H. HUMPHREYS

Clinical Tuberculosis, 2nd edition

Edited by P. D. O. DAVIES. 1998. ISBN 0-412-80340-2. Chapman and Hall, London. Pp. 711. £99.00.

This book provides an excellent review of tuberculosis at the close of the 20th century. One of the aims stated in the preface is to provide more than just a view of tuberculosis in the developed nations. It succeeds in this aim in the final section, which contains chapters written by authors practising in many areas of the developing world. These chapters make fascinating (and depressing) reading.

The main sections of the book cover history and epidemiology, laboratory diagnosis, pathology, clinical aspects, treatment, prevention, control and related mycobacterial disease. Various chapters deal with new laboratory techniques, including DNA fingerprinting and PCR methods for epidemiological studies and rapid diagnosis, although the amount of detail given in these chapters is variable. Serological tests for tuberculosis are also included. The chapter on immunopathophysiology is one of the clearest explanations on the pathology of tuberculosis I have read.

The clinical section covers the different forms of respiratory and extra-pulmonary tuberculosis, including a separate chapter dealing with tuberculosis in children. A chapter on the clinical pharmacology of tuberculosis drugs is followed by the use of different regimens to treat tuberculosis in different situations (smear positive, smear negative), including data about newer drugs such as fluoroquinolones and rifamycins. This inevitably leads on to a discussion of drug-resistant tuberculosis and an excellent chapter on surgical treatment.

The importance of HIV infection is stated in many chapters throughout the book, but specific chapters cover the

interaction between tuberculosis infection and HIV infection in both developing and industrialised countries.

Preventive therapy and the place of BCG vaccination are discussed and control strategies for high- and low-prevalence areas are covered. Directly observed therapy is now being rediscovered as an effective means of treating patients where compliance is a problem either due to lifestyle (homelessness, drug addiction, alcoholism, etc.) or geography (rural areas in developing countries). The success achieved with this strategy in both developing and industrialised countries is one of the great hopes for the future.

Many chapters contain summaries in the form of 'Learning points' which are very helpful. Some of the chest radiographs do not reproduce well and there are a few typographical errors which have escaped the editorial red pen! However, this book would make an excellent addition to any bookshelf, and I would happily use it as my main reference source for tuberculosis.

H. MORRISON

Mycoplasma protocols: Methods in Molecular Biology, volume 104

Edited by ROGER MILES and ROBIN NICHOLAS. 1998. ISBN 0-89603-525-5. Humana Press, New Jersey. Pp. 330. \$79.50.

Although part of a series covering methods in molecular biology, about half of this 33-chapter volume is actually directed at the laboratory isolation, propagation and identification of mycoplasmas of medical and veterinary interest. Media formulations and the treatment of specimens are explained simply and in great detail. This will be useful to laboratories carrying out the routine examination of submitted material or to laboratories with a limited knowledge of mycoplasmaology, planning to introduce a diagnostic service. Of particular interest is the chapter on quality control testing, a subject often overlooked in many laboratory manuals.

Following the established form of the series, each chapter consists of a brief introduction to the technique, followed by a list of materials including the names of manufacturers, a methods section and, finally, of particular value, notes in which the authors give tips and point out pitfalls based on their practical experience.

To me, a number of chapters stand out as being especially interesting. Chapters 10 and 11 cover methods by which the metabolic activities of mycoplasmas may be studied. In the light of the recent publication of complete genome sequences for *Mycoplasma genitalium* and *M. pneumoniae*, the relevance of comparative genomic analysis to metabolic function is explained, together with some interesting examples. As more genomes are sequenced and become available, this new field is certain to expand.

The middle section of the book from chapters 12 to 16 provides detailed methodologies for some of the more specialised immunodiagnostic techniques which are not often performed but which can provide useful confirmatory tests in

laboratories specialising in mycoplasmas. These include antigen detection with immune sera and monoclonal antibodies as well as in-situ immunohistochemical staining.

Chapters 17–22 deal with the characterisation of mycoplasmas by nucleic acid techniques. Methods based on the PCR include 16S rDNA sequencing, RAPD and RFLP fingerprinting. The latter two protocols are specifically aimed at the *M. mycoides* 'cluster' and may require some adjustment for use with other species. Although the preparation steps and precautions described are in most circumstances applicable to all PCRs, there could have been a more general approach, particularly with regard to alternative methods for the preparation of clinical samples, avoidance of contamination and removal of inhibitors. Chapters on DNA-DNA hybridisation and insertion sequence analysis are well covered but, surprisingly, pulsed-field gel electrophoresis either for strain characterisation or genome size determination is not included.

Some of the more specialised DNA research techniques are given a detailed treatment in chapters 25–29. These methods are currently used on a regular basis in only a few specialist research departments. Perhaps these chapters will encourage more laboratories to attempt them.

Transformation in mycoplasmas is rarely achieved and in species where it is recognised, only low transformation frequencies are obtained and these may be very dependent on the method used. Chapter 25 gives four different methods. Similarly, transposon mutagenesis has rarely been successful with mycoplasmas and chapter 26 is particularly focused on the most successful system so far – the transfer of Tn916 from donor strains of *Enterococcus faecalis* to several species of mycoplasmas.

The detection of extrachromosomal elements in mycoplasmas is covered in chapter 27, and although this is another rare event, it may be necessary to rule out the presence of plasmid or bacteriophage in certain circumstances.

One of the major problems facing the study of mycoplasmas is the inability to express gene products in the usual vector systems. This is largely due to the atypical codon usage of mycoplasmas. Chapters 28 and 29 describe some of the more recent methods for expressing mycoplasmal genes which have achieved some success.

The final three chapters deal with aspects of protein characterisation with particular emphasis on adhesins and surface antigens, including general methods for electrophoresis, Western blotting, screening expression libraries, monoclonal antibody production, labelling techniques and electron microscopy.

The value of this book lies in the amount of technical detail provided. Ideally, this should enable the interested investigator to carry out the protocols described without recourse to other publications. Although this may be an optimistic viewpoint, I feel that at least the reader will be encouraged to have a go.

D. PITCHER