discussed with respect to pharmacokinetics, nephrotoxicity dose and infusion-related adverse events and idiosyncratic toxicities and the newer modalities and combination therapy are also reviewed. The triazole drugs are covered in a similar way, discussing the mode of action, pharmacokinetics, side effects, clinical uses, sensitivity testing, combination therapy, interactions and development of resistance. There are chapters on empirical therapy, outlining the evidence for improvement in prognosis with empirical antifungal therapy, and on the so far limited but promising use of cytokines, including growth factors, interleukins and interferon, for prophylaxis in cancer patients. The poor prognosis of cancer patients with fungal infections has led to development of antifungal prophylaxis and this controversial area is well covered with unresolved questions highlighted.

The final chapter covers aspects of fungal infections in children. There has been a vast increase in survival of children with malignancy and the authors look at the risk factors and special clinical features of these patients. Diagnostic methods for fungal infections, particularly serological tests, computerised tomography, ultrasound scans, X-rays and biopsies, and bronchoscopy are put in context, as are treatment with amphotericin B and triazoles and the prevention of fungal infections.

This comprehensive a book is recommended to clinicians and scientists involved in the diagnosis and treatment of fungal infection.

G. SHANKLAND

Environmental Microbiology. A Laboratory Manual

I. L. PEPPER, C. P. GERBA and J. W. BRENDENCKE. 1995. ISBN 0-12-550655-4. Academic Press, San Diego. Pp. 175. \$29.95.

All three authors are environmental microbiologists from the USA and in the preface they inform us that it has been written for students in the 'upper division and/or graduate-level.' Indeed the preface itself is a model of clarity explaining what the manual contains and how it should be used. This is very much a 'hands-on' text and can be inserted into a ring-binder to lessen wear and tear, which is advisable, given the absence of a hard cover or strong binding. Still, it represents reasonable value at this price.

The manual is laid out in sections, e.g., soil, water etc., containing a series of experiments of increasing complexity. Each experiment or assignment includes details outlining the theory, the procedure itself with a full list of materials, and finally, some questions which enable the student to assess his or her comprehension of what has been done. The quality of the line drawings and figures, e.g., the illustration of the dilutions required to carry out algal counts, is impressive and there is a small number of black and white photographs. The margins are used to emphasise points and highlight safety issues (one of which, 'You should wear gloves when performing a gram stain', will be of interest to many!). I found the experiments on the detection of enteric viruses and parasites in water especially interesting and the explanation of the principle of the polymerase chain reaction for a student audience one of the best I have read. Finally, the appendices contain additional information such as significant figures and calculations.

I found fault with very little in this manual apart from one table where the spectrum of cephalosporins was stated to be gram-positive bacteria and *Neisseria*, and in the glossary where the results of the gram's stain are given the wrong way around (hopefully, a typographical error). However, this

book will hardly be required reading in medical schools, but sections might be of interest to those organising courses in life sciences or environmental studies. Nonetheless a lasting impression is the focused and succinct approach which could be emulated by many others preparing teaching materials.

H. HUMPHREYS

Cap-Independent Translation

Edited by P. SARNOW. 1995. ISBN 3-540-59121-4. Springer-Verlag, Berlin. Pp. 183. DM165.00 (Hardback).

This book, number 203 in the series of reviews in *Current Topics in Microbiology and Immunology*, reviews the mechanism(s) of cap-independent translation of viral and cellular mRNA molecules.

Most or all mRNA molecules in eukaryotic cells contain a 5' terminal m⁷GpppG dinucleotide cap structure which mediates their resistance to exoribonucleases, facilitates their transport from the nucleus to the cytoplasm and binds eIF-4, a necessary step in the binding of mRNA to the 43S initiation complex required for initiation of cap-dependent translation. However, some viral mRNAs, such as those of picornaviruses, lack a 5' terminal cap structure while other viral mRNAs (e.g., adenoviruses) and some host mRNAs (e.g., the immunoglobulin heavy chain binding protein, BiP) contain a cap structure but still require little or no eIF-4 for efficient translation, i.e., these mRNAs may be translated by a cap-independent mechanism. The mechanism(s) involved in cap-independent translation is the subject of this book.

In the first chapter, R. J. Jackson and colleagues give an overview of the subject outlining the methods used in such studies. The next four chapters describe cap-independent translation by internal ribosomal binding as occurs in encephalomyocarditis virus (C. U. T. Hellen and E. Wimmer), polioviruses (E. Ehrenfeld and B. L. Semler; G. J. Belsham and colleagues) and hepatitis C virus (C. Wang and A. Siddiqui). Four chapters on a similar topic necessarily leads to some repetition but this is no bad thing since it gives different perspectives on the problem. For example, after reading the chapters by Ehrenfeld and Semler and Belsham and colleagues, one realises that the predicted stem-loop structures in the poliovirus 5' NCR is a consensus on which not all authors agree.

Some capped mRNAs can still be translated in the presence of cap analogues and these are thought to require only low amounts of eIF-4. One explanation for a low requirement for eIF-4 is that these mRNAs contain unstructured 5' NCRs that can bind 43S subunits in the absence of significant amounts of eIF-4. The late leaders of adenovirus mRNAs (R. J. Schneider) and heat shock mRNAs (R. E. Rhoads and B. J. Lamphear) are discussed in this context in chapters 6 and 7. Alternatively, some cellular mRNAs may allow internal ribosome binding as discussed in the final chapter by N. Iizuka and colleagues.

While these chapters will appear primarily to specialists, they were sufficiently well written and comprehensible to someone non-expert in this area to stimulate interest and understanding. There were pleasantly few typographical errors, perhaps one benefit of IT technology. However, it is likely that this book will be purchased by libraries rather than individuals.

C. SWEET