Topley and Wilson's Microbiology and Microbial Infections (10th edition): Immunology

S. H. E. Kaufman, M.W. Steward eds. London: Hodder Arnold, 2005. ISBN 9780340885697. 1033 pp. £209.

Topley and Wilson's Microbiology and Microbial Infections has reached its 10th edition and is now of mammoth proportions. There are eight volumes, two each covering virology, bacteriology and medical mycology, with single volumes for parasitology and immunology. This review is confined to Immunology, which is divided into seven parts, each of variable length.

A brief introduction is followed by sections on innate immunity and inflammation, soluble mediators, acquired immunity, infection and immunity, immunopathology and immunodeficiency, and vaccines. Chapters in each section are written by experts in their field, and each chapter has an extensive reference list. The layout of the each chapter is fairly simple, text is not overloaded with diagrams (quite refreshing these days) and the illustrations are mostly in black and white. What this book has is information *en masse* about the immune system and how it works, especially in relation to microbial infection.

A chapter on the history of immunology sets the scene very well for those that follow. Innate immunity is well served, with several chapters devoted to the main cellular players (i.e., macrophages, neutrophils, eosinophils and basophils, and natural killer cells). This section also deals with the ways in which infectious agents are recognised by the immune system, through pattern recognition, showing how this recognition may be essential to host survival.

Complement is dealt with, as expected, but I also liked the inclusion of a chapter on the defensins, reflecting increased interest in these proteins in recent years, and on the acute-phase response. Part III deals with cytokines relevant to immune defence. This is a useful chapter which delineates the roles of the chemokines, pro-inflammatory cytokines, interferons, haematopoietic growth factors, and deals with lymphocyte proliferation and differentiation. This is a useful updating of a topic which moves on rapidly.

Part IV covers acquired immunity. B lymphocytes and antibodies are dealt with as, expected, and a whole chapter devoted to the B-cell receptor is valuable. The complexity of T-lymphocyte responses is discussed in detail, with a good description of antigen processing, and there is a good balance between how they work and their role in eliminating infection (and possibly malignancy). I valued the chapter on the mucosal immune response amid the increasing recognition of its importance in protecting the enormous surface area of mucosal membranes. The relationship between the immune system and the microorganism is maintained, for example, in the coverage on superantigens, and in the chapter on immunogenetics.

Part V covers the mechanisms by which viruses, bacteria and parasites evade the immune response. Although brief compared with that in other sections, the information presented is condensed and informative – I particularly liked the chapter on bacterial evasion.

Immunopathology, in Part VI, covers shock/sepsis, delayed-type hypersensitivity, particularly in relation to TB and schistosomiasis, airway hypersensitivity and autoimmunity. Immunodeficiency looks at the primary deficiencies of innate and acquired immunity and the acquired deficiencies, with emphasis on HIV, although it also covers immunodeficiency arising from HTLV I and measles infections.

This tremendous volume finishes with several chapters on aspects of vaccination, including new approaches to vaccine production and delivery (including mucosal delivery). This section is extensive and comprehensive in its treatment of the many recent developments in vaccine technology.

Overall, I would recommend this volume highly, both to students of immunology and medical microbiology. I am old enough to remember when immunology was confined to one or two chapters in medical microbiology textbooks. However, the reverse is often true today, with texts on immunology having one or two chapters on immunity to microorganisms. What I really like in this text is the balance between the two. I would recommend it for students and staff in relevant university disciplines, as well as for those working in research and pathology laboratories. However, at £209, I am aware that it would be beyond the means of most students.

M Dawson

Topley and Wilson's Microbiology and Microbial Infections (10th edition): Parasitology

F. E. G. Cox, D. Wakelin, S. H. Gillespie, D. D. Despommier eds. London: Hodder Arnold, 2007. ISBN 9780340885680. 912 pp. £187.

It would be difficult to find a diagnostic microbiology laboratory in the country that does not have at least one edition of this famous textbook, and many of us will have cut our teeth on former editions. It is particularly pleasing, therefore, to be asked to review one volume of the latest edition. The 10th edition can be purchased as separate volumes, and that covering Parasitology is reviewed here.

Laboratories and libraries will be the main purchasers of this reference work, and more than likely will acquire the entire eight volumes, but this single-theme component stands perfectly well by itself for the specialist laboratory that has little space or cash for the entire set.

As with all large reference works updated as new editions, the prospective purchaser needs to know whether or not it differs significantly from the previous edition. The size has increased only moderately (41 chapters over 881 pages, compared to 35 chapters in 701 pages in the ninth edition) and the Preface reassures that most of the same authors are involved, although I would have felt a greater sense of anticipation if a new set of experts was involved. Different perspectives would surely have made the new version compulsive reading. Instead, 25 of the chapter titles and authors from the ninth edition are maintained. Three have been divided into separate (and therefore new) chapters, and a couple of new ones have been added. Therefore, owners of the ninth edition will feel in familiar territory,

with the new information simply incremental to the chapters written previously.

The multinational author panel has resulted in mixed spellings, so that 'amoebae' in one chapter are 'amebae' in the next. The figures are generally excellent (some appear sharper than in the previous edition) but a few photomicrographs appear either dark or pale on the page, but look fine on the CD. The colour photographs are now interspersed in the chapters, rather than being collected in colour plates as they were previously.

Some of the histological photomicrographs are not particularly illuminating. Single protozoan parasites in tissues are too similar in size to the surrounding cells, so they are almost indistinguishable when presented in black and white (even when an arrow is pointing to them!). As the images are reproduced on the accompanying CD, it would have been an opportunity to reproduce them in colour. Overall, however, the appearance and quality of the paper and images is improved.

For microbiologists with predominantly bacteriological or virological skills, it would have been helpful to have more explanation of the specialised terms for the stages of the different parasites. If nothing else, a glossary would have been most useful. It seems that reference texts are now promoted on the inclusion of the very latest advances in research.

For the author writing on his specialist topic, emphasis will compete with space for explanations of the organism's biology. So, if the reader is puzzling over the meaning of the terms endodyogeny, endopolygeny and schizogony, they will probably have to look elsewhere. It appears to this reviewer at least that the change of title does indeed reflect the change in content. Topley and Wilson's original book was called *Principles of Bacteriology and Immunity* and contained both applied and fundamental bacteriology. Having been included only since the ninth edition, Parasitology concentrates more on applied clinical aspects and does not cover sufficiently the basic biology.

Such views need to be put in perspective, however. This is a magnificent book and maintains the reputation of former editions. It is probably unrealistic to expect comprehensive coverage from a single volume, and its clinical leanings reflect the fact that the book was written originally for diagnostic medical laboratories.

Therefore, if the ninth edition is not on your shelf, the latest edition is an essential purchase and will repay the time spent studying it handsomely. As the book comes with the entire content on a CD, studying now accompanies the laptop and the problems of carrying heavy tomes around are eliminated. The authors and publisher should be proud.

S Hardy

Endothelial Dysfunctions and Vascular Disease

R. De Caterina R. P. Libby P eds. Oxford: Blackwell, 2007.
ISBN 978-1-4051-2208-5. 416 pp. £74.99.

The past few decades have seen the development of the concept that the endothelium (collectively, those cells which line the inside of blood vessels – the intima) is of such importance and complexity that it can be considered an organ in its own right. This beautifully collated reference work celebrates this concept in 26 very well written, referenced and illustrated chapters. These chapters are brought together in four sections – the basis of endothelial involvement in vascular diseases, the endothelium and cardiovascular risk factors, diagnostic tools and markers of endothelial functions, and endothelium-directed prevention and therapy.

The first section sets the scene with four chapters that together review endothelial cell function (and therefore dysfunction) and its role in the development of atherosclerosis, from plaque progression to occlusive atheroma, that produces the life-threatening (and often terminating) major events of heart attack and stroke. The final chapter is a nod to the most recent aspect of vascular biology, namely angiogenesis.

The second section of eight chapters effectively is a role-call of risk factors for cardiovascular disease, and how they influence the endothelium. Thus, although the expected dyslipidaemia, diabetes and hyperhomocyteinaemia are included, it is perhaps surprising to see (in this section) no chapters dedicated to hypertension (see below) and smoking. Instead, there are chapters on the more contentious areas of oxidative stress and the role of inflammation.

The third section on diagnostic tools and markers of the endothelium comprises seven chapters, most of which consider hypertension, often as a consequence of the inability of damaged endothelium to regulate vasodilatation and vasoconstriction correctly. The topics of dyslipidaemia and diabetes are revisited and there is also a chapter on soluble adhesion molecules (e.g., E selectin) as markers of vascular perturbation.

The final section completes the journey from pathophysiology to applied (clinical) treatment in eight chapters. These include ones directed towards classical risk factors (e.g., statins for hypercholesterolaemia, ACE inhibitors and angiotensin receptor blockers for hypertension, and PPARs generally for diabetes), while others look at roles for omega-3 fatty acids and antioxidants. As post-menopausal women are at particular risk of cardiovascular disease, one chapter examines the possible role of hormone replacement therapy (HRT). At first sight this seems highly controversial, given the likelihood that HRT contributes to venous thromboembolism. On close scrutiny, however, the authors point out that clinical evidence indicates that steroid hormones may protect against cardiovascular disease, provided that they are given at the right time and in appropriate formulations. The book and section concludes with two chapters on the latest and perhaps most exciting new area, that of stem cells.

If there are faults with this volume they will lie with the title, which really should include the words Cardiovascular Disease, rather than just Vascular Disease, and with its scope, lacking as it does a section on other diseases in which the endothelium is important (i.e., cancer and the connective tissue diseases such as rheumatoid vasculitis). Nonetheless, I rate the volume as excellent. Accordingly, I will be recommending it in my teaching. The book will be most attractive to students of vascular biology, at any stage in their career, from postgraduate researcher to professor.

A D Blann