

## Book reviews

**Methods in Molecular Medicine. Molecular Pathology Protocols.** Killeen AA, ed. (\$125.00.) The Humana Press, 2000. ISBN 0 896 03681. (*J Clin Pathol: Mol Pathol* 2001;54:55–56)

When David Burnett and I founded *Molecular Pathology* six years ago, it was partly in the belief (which I am sure is correct) that pathologists, whether they work in haematology, oncological pathology, microbiology, or whatever, speak the same language in molecular terms. The publication of this book underlines that fact, and although my interest is, of course, largely in lymphoma pathology, there are many chapters in this publication that are of interest to me, not only on the technical side. For example, those with an interest in Epstein-Barr virus would also benefit from reading the sections on papilloma virus, human herpesvirus 8, cytomegalovirus, and, of course, the detection of translocations and so on in various leukaemias and lymphomas. However, interest does not stop at this level because surely to most of us telomerases and microsatellite instability are of fundamental interest. Also, for example, in our hospital we have studies under way on molecular aspects of thrombotic disorders and haemochromatosis. These comments serve to underline, on a somewhat personalised basis, the broad overlap between what would appear to be highly specialised contributions in this volume. At the beginning of the book there are three essential chapters on DNA and RNA extraction from wax embedded or frozen tissue, which should be read by all in this field. Furthermore, with the increase in frequency of mycobacterial disease worldwide, the section on the detection and speciation of mycobacteria in formalin fixed, wax embedded tissue sections is surely a taste of the future when—for example, staining of sections with the Ziehl-Neelsen technique will surely become a technique of the past.

Thus, although on initial scan of the contents of this book, it would appear to be the case that any one individual might find, say, only three or four chapters of relevance or interest, I do not feel that this is the case and I would recommend any pathologist (with a capital P!) to dip into this book because they are sure to benefit from it.

J CROCKER

**T Cell Protocols: Development and Activation.** Kearsse KP, ed. (\$99.50.) Humana Press, 1999. ISBN 0 89603 810 6.

This book is part of the “Methods in Molecular Biology” series and focuses on two main areas: thymic education and T cell signalling.

The book gets off to a lively start from the editor who states that the motivation behind the project was the desire to create a valued reference book of the style that he experienced as a graduate student. It is possible that he may have succeeded—but for a rather limited audience.

The author list is impressive and one excellent feature of the book is the inclusion of two reviews to introduce the main sections.

These are lucid and the review of T cell development using transgenic and knockout mice is extremely comprehensive.

There are 27 technical chapters that focus on experimental techniques with clear and annotated recipes. The choice of subject for these is necessarily rather arbitrary and some are quite esoteric. Nevertheless, if issues such as “analysis of CD4/8 lineage commitment by pronase treatment and reexpression assay” are what you want then you will not be disappointed.

The second section is concerned with details of T cell signal transduction. The introduction by John O’Shea is extremely readable and serves as a gentle aperitif to some heavyweight techniques.

Techniques books are notoriously vulnerable to a short shelf life as a result of technical advances but the book appears referenced to 1998. As a human immunologist I felt somewhat marginalised by the murine bias in the book. Nevertheless, the volume is scholarly and has many useful tips. It is definitely worth at least a look for those with laboratory interests in the two main areas of interest. General immunologists need not apply.

P MOSS

**Cellular Microbiology. Bacteria-Host Interactions in Health and Disease.**

Henderson B, Wilson M, McNab R, *et al*, eds. (£29.95.) John Wiley and Sons, 1999. ISBN 0 471 98681 X.

Bacteria remain the dominant life form on this planet by virtue of their inherent adaptability and rapid evolutionary potential; this has allowed bacteria to colonise every ecological niche of the planet and multicellular eukaryotes are merely a specialised niche to be exploited. Within the human ecological niche arise specialised environments and aggressive defence systems to prevent overexploitation or disease, but ironically the healthy human body supports many more bacterial cells than host cells without an adverse outcome and with much benefit. This interplay between bacteria and multicellular eukaryotes represents the newly identified scientific discipline of “cellular microbiology”, which formerly was fragmented into different areas including microbiology, immunology, physiology, biochemistry, pharmacology, and histopathology. This book claims to be the first to bring this diversity into a single volume in a cohesive manner. The book is divided into two parts: part 1 introduces certain key concepts of prokaryotic and eukaryotic cell biology, cell signalling mechanisms, and current molecular biological techniques used in cellular microbiology. These concepts are necessary to understand part 2 and, to that extent, it successfully achieves that goal. However, the introductory chapter is vague and confusing and one paragraph on mutualism, commensalism, and parasitism is inadequate. All forms of exploitation require adaptation and competitive fitness; the unique adaptability of bacteria and the mechanisms they use are essential to the understanding of this life form, and require due attention. Part 2 describes the interaction of prokaryotes with host eukaryotes during infection and describes in careful detail both the mechanisms used by bacteria in attack and the host defence strategies. The approach is comprehensive and detailed, describing the battle from the initial skirmishes until the final outcome. In that context, and in my experience, this book is unique. The text

describes how bacterial attack strategies have been used as important tools for “understanding how the eukaryote cell works”. Part 2 closes with an uplifting chapter on future developments in cellular microbiology, in particular those areas that are in the early stages of development—for example, commensalism, idiopathic diseases, and novel therapeutic agents. This book is the product of an ambitious goal and, in those terms, is eminently successful. Unfortunately, in such a rapidly changing scientific discipline, it is already out of date as a reference source (most of the references are 1997 or earlier). However, as a textbook for understanding the fundamentals of the science, it will achieve longevity. Overall, a highly stimulating book, which should be regarded as essential reading for all postgraduates in the biological sciences.

D COLEMAN

**Stem Cell Biology and Gene Therapy.**

Quesenberry PJ, Stein GS, eds. (£65.00.) Wiley, 1998. ISBN 0 47114 656 0.

The importance of stem cell and gene therapy has been evident both to scientists and clinicians for some time, but increasingly it has become a very live issue for the general public. It is the focus of enormous investment by pharmaceutical and biotechnology companies the world over, reflecting the novelty and the power of techniques that allow us to reach within the tissue or the genome itself to correct defects in a way never previously imagined possible.

Ethical debate is rightly vigorous and the advance of the new technology is raising new issues seemingly daily. The US congress is holding hearings to discuss legislation that would allow federally funded scientists to derive human embryonic stem cell lines, one of the basic requirements for stem cell therapy. With views ranging between Christopher Reeves’s: “is it more ethical for a woman to donate unused embryos or let them be tossed away as garbage” to accusations of Nazi experimentation, the debate is heated, ethically complex and, importantly, commercially highly sensitive. The case of Adam Nash, the baby whose stem cells have been used in an attempt to save the life of his sister with Fanconi’s anaemia, is featured in my copy of the Sunday paper today, and raises even more questions about the use of prenatal selection for stem cell therapeutic purposes.

The prospects for novel therapeutic approaches to a range of diseases ranging from congenital gene deficiencies to neoplasia have never been brighter, and despite the rather disappointing results of gene and stem cell therapy to date, improvements in our understanding of the biology of stem cells and control of stem cell gene expression offer the brighter, in this author’s personal opinion, even the brightest prospects of all. It is always gratifying to see one’s own prejudices shared by others and certainly in this book the emphasis on the understanding of stem cell biology and the control of gene expression underlines the power of the stem cell approach to gene therapy, which in other collections of this sort are often neglected in favour of the technical problems and approaches to gene delivery and tissue targeting. This is not to say, however, that these important areas have been left out of this volume and they are admirably covered by experts in the fields; the approaches discussed include adenovirus, adeno associ-

ated virus, herpes simplex virus, retroviruses, and direct DNA delivery. The book contains excellent chapters on the use of ribozymes in IRV therapy by Wong-Staal and co-workers, and DNA vaccines, an increasingly important technology. Both these chapters and those on the delivery systems are excellent and for the most part critical and realistic about the problems with our existing delivery methods; given the hype in the field (often generated by commercial interests), this is refreshing. But for me the star chapters are those considering the control of stem cell proliferation and differentiation—a tour de force by Stein and co-authors—and the detailed chapters on the control of haematopoietic stem cell proliferation and its extrinsic and intrinsic control mechanisms.

The book is rounded off by a set of chapters on particular clinical applications of gene therapy, considering haematopoietic defects, cancer, cardiovascular disease, and neurological diseases. These offer a sound and well balanced view of successes to date and indications for future therapeutic routes. I was however somewhat disappointed at the dominance of the haematopoietic system in the book. To a great extent this inevitably reflects the historical development of the field and seems at the outset to be the most tractable system for stem cell and gene therapy, but I would have thought that the inclusion of muscle stem cell therapy—for example, would have been useful, and its omission leaves the book rather incomplete.

A more serious omission still is the lack of a chapter on embryonic stem cell manipulation and differentiation, which even when the book was written—given the inevitable delay between writing and publication—

would still have merited one or two chapters. It is clear that embryonic stem cell manipulation, and the avenues it opens up, are going to be vital routes to gene delivery and stem cell repopulation in many disorders.

One is often stung by referees' comments, which carp about experiments not attempted, rather than the data actually presented, and I would not like to criticise this excellent volume by emphasising too much the omissions. The editors comment in the preface that their aim was not to be inclusive, and indeed this would have increased the size of the task enormously. As a summary of the field and (almost, given the publication date) a state of the art review, I can recommend this book highly and hope that a second volume might be produced in the same enlightened way, including some of the newer approaches to stem cell therapy via the manipulation of both embryonic and adult stem cell populations of other tissues in addition to those of the blood.

P SCHOFIELD

**Programmed Cell Death in Animals and Plants.** Bryant JA, Hughes SG, Garl JM, eds. (£67.50.) BIOS Scientific Publishers, 2000. ISBN 1 859 96167 3.

Having been involved in the field of apoptosis for the past five or so years, I was pleased to receive a copy of this book for review. It has been interesting to observe the progress of apoptosis as an electron microscopic curiosity described nearly 30 years ago to its appearance and evolution as a pivotal factor in both normal physiology and pathological conditions. The complexity and scope of

apoptosis impinges on oncogenes, surface receptors, growth factors, and cell signalling. Indeed, even senescence and immortalisation are involved in this process and, on a day to day basis, any lymphoma pathologist would be aware of the value of examining sections for the bcl-2 oncoprotein as a means of distinguishing reactive and malignant lymphoid follicles.

The central importance of apoptosis in normal disordered growth and death is underlined by the fact that this book exists. Thus—for example, I would not have expected in general to have scientific books on my shelves that involve botanical studies. It seems likely that the more conserved a molecule, group of molecules, or process is, then the more centrally important it is and, indeed, this is borne out in the field of programmed cell death. The chapters here range from plant cell death to cytokines and inflammation in humans and to carcinogenesis. The importance of apoptosis in viral cytopathic effects is included, as are—for example, the generation of increased permeability in mitochondria and so called “death receptor signalling”. The first chapter includes in its title “from worms to wombats” and this says much about this book; indeed, we even have contributions on Brassica!

Inevitably, I would recommend this book to anyone involved in work on the cell cycle and, of course, cell death and I think only the most narrow minded of pathologists would not enjoy the chapters on botany and lower organisms in general. Many of the references are from 1999 and this book and its contributors and editors are to be commended for keeping such specialised text up to date.

J CROCKER



## Cellular Microbiology. Bacteria–Host Interactions in Health and Disease :

D Coleman

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