Lyme Disease: Molecular and Immunologic Approaches. Edited by S. E. SCHUTZER. Current Communications in Cell and Molecular Biology. Cold Spring Harbor Press. 1992. Price $49.00. ISBN 088779693770.

Lyme disease is the most common and widespread arthropod-transmitted disease affecting humans in Europe, and the second most highly funded area of infectious disease research in the United States. This contribution to the rapidly growing literature on Lyme disease evolved from a Cold Spring Harbor Laboratory Conference and is a compilation of chapters written by the participants, who were invited to update and expand their original presentations. The chapters are arranged under the headings Pathogenesis, Neurologic Aspects, Molecular Biology, Immunology, Animal Models and Vaccines, and Diagnosis. The preface explains that Lyme disease is caused by the spirochaete *Borrelia burgdorferi*, which is transmitted to humans by tick bite, and then goes on to provide a brief description of the course of the disease. It is not always made clear that the information in the book relates to the situation in North America and in some instances may be different for Europe.

The book provides a very useful review of the complex immunological aspects of Lyme disease, including the involvement of immune mechanisms in neuroborreliosis and arthritis. One enigma of Lyme disease is the low numbers of spirochaetes associated with pathogenesis. Possible explanations cover the roles of immune complexes, autoantibodies, cytokines, dendritic and T cells, and host genetics in the development of the disease. Several chapters describe the application of studies on immune complexes found in patients to the understanding of pathogenesis.

The value of such a publication is that new ideas can be developed and comparisons made between systems that could not otherwise be dealt with in published papers. Examples are the chapter comparing the central nervous system involvement in syphilis and Lyme disease, and the fascinating studies on the molecular architecture of spirochaetes and implications *vis-à-vis* immunogenicity. The neuroimmunologic parallels drawn between Lyme disease and Sindbis virus-induced encephalomyelitis are less convincing.

The obvious disadvantage of a book of this kind is that the work can quickly become outdated. This particularly applies to chapters on the genetics of *B. burgdorferi*, and vaccine development. In addition, there are problems in interpreting the significance of experimental data based on artificial inoculation of laboratory-bred animals with high doses of spirochaetes. Studies referred to in the book have revealed a marked difference in immune response of vertebrate hosts infected by the natural route of tick bite compared with the artificial method of syringe inoculation. This observation poses unanswered questions for the chapters dealing with various aspects of pathogenesis, and the development of diagnostic reagents and vaccines, based on artificial inoculation of laboratory-bred animals. Although the role of skin in the pathogenesis of Lyme disease is acknowledged, the part played by the skin-associated lymphoid tissue is not considered.

The book concludes with three chapters on diagnosis, which is currently based on the demonstration of an immune response against *B. burgdorferi*. Problems caused by the high number of false positives and developments to increase the specificity of diagnostic serological tests are discussed. An alternative approach is the use of the polymerase chain reaction but, as very nicely illustrated, this method also is prone to false positives.

The quality of the figures and presentation of tables is generally good, and the style is very readable for those with a basic knowledge of immunology.

On the whole, this book is recommended for an overview of immunological approaches to Lyme disease, but with the above-mentioned provisos.

PATRICIA A. NUTTALL
Institute of Virology and Environmental Microbiology
Mansfield Road
Oxford OX1 3SR

Introduction to Basic Cell Culture: Animal Cell Culture. By S. J. MORGAN and D. C. DARLING. BIOS Scientific Publishers. 1993. 162 pages. Price £15/US $30. ISBN 1 872748 16 3.

This book belongs to the *Introduction to Biotechniques* series, and it covers a wide range of instrumental techniques. Lots of excellent books are already available in this field, but authors recognize the need for an inexpensive, introductory book for the inexperienced cell culture worker. It appears to be aimed primarily at those who are new to cell culture. According to the authors, this book sets out to 'explain why and how the basic techniques are used, and their applications in [modern] cell and molecular biology' – and I feel it has succeeded.

The very useful introductory chapter includes a short overview of the purpose of cell culture, general aspects of cell culture and safety considerations. Originally the major purpose of cell culture was to understand the cells themselves. However, cell culture has become the central technology in not only classical cell biology and molecular biology, but also developmental biology and genetical approaches in animals. Animal cell culture is thus becoming an important tool for a growing number of scientists from diverse branches of biology and medicine.

The initial part describes the basic methodology. Each chapter in this section contains sufficient

theoretical background to give a good level of understanding of the basic methodology. Plenty of photographs will help the inexperienced workers to understand the practical aspects of cell culture.

The second part describes applications in cell and molecular biology. Four chapters cover the isolation of lymphocytes, establishment of lymphocyte lines, cell fusion techniques and cytotoxicity assays. Some techniques described here may not be necessary for all those readers new to cell culture. However, they are very important tools for cell culture workers in some specialized fields including immunology and haematology.

Finally, transfection, a technique that has become one of the most basic and important technologies in most fields of biology, is described. The authors do not intend to cover in detail all the background and protocols for transfection, but electroporation should be emphasized more. Although electroporation has become a major method for introducing foreign DNA into recipient cells, it is not given sufficient emphasis in this chapter. On the other hand, the protocol of the calcium phosphate co-precipitation method is well written, and sufficient to enable the uninitiated to achieve success.

My overall impression of the book is that it is a very useful introduction to basic culture techniques. I would highly recommend this volume for the inexperienced cell culture worker.

KIYOSHI MIYAGAWA
MRC Human Genetics Unit,
Western General Hospital,
Crewe Road
Edinburgh EH4 2XU

Human Gene Mutation. By DAVID N. COOPER and MICHAEL KRAWCZAK. BIOS Scientific Publishers. 1993. 402 pages. Price £49.50/US $99.00. ISBN 1 8872748 41 4.

As the Human Genome Project rolls relentlessly forward, more and more of the estimated 100000 human genes have been characterized. Most of those responsible for high-prevalence Mendelian disorders have already been cloned; in 1993 alone the sequences of the genes for Huntington's disease, X-linked agammaglobulinaemia, Menkes' disease, Friedreich's ataxia and neurofibromatosis type 2 were reported. With a few exceptions the general rule is that these disorders are extremely heterogeneous at the molecular level. Inevitably, therefore, increasing attention has to be paid to the range of mutations that are to be found and the types of assay that have to be used to detect the variable mutant alleles at these loci.

Human Gene Mutation is one of the first books, and undoubtedly the best, to address itself specifically to this subject. It has useful chapters on genetic disease, on the anatomy of the human genome and on linkage analysis. But its substance lies in its coverage of mutation, from history through technology to estimation of mutation rates. The data content is huge and impressive, and the appendices which summarize genetic diseases in which molecular detection is possible, single base-pair substitutions, small deletions and splice-site mutations causing Mendelian disorders, would be worth publishing on their own.

Inevitably a book of this name will date rapidly. Its value depends to some extent on how quickly the publishers can get it on to the bookshelves. Cooper and Krawczak claim that their literature survey is complete to December 1992. I don't know exactly when this was published, but it landed on my desk for review before the end of June. That is very impressive, and I wonder once again why so many other publishers – Cambridge University Press being a particularly bad example – find it so difficult to publish a complete manuscript in under a year. Most would benefit from a refresher course at BIOS Scientific.

DAVID BROCK
Human Genetics Unit
University of Edinburgh

Cystic Fibrosis: Current Topics. Volume 1. Edited by J. A. DODGE, D. J. H. BROCK and J. H. WIDDICOMBE. John Wiley & Sons. 1993. 250 pages. Price £59.95. ISBN 0 471 93 1012.

The publication of a new book on cystic fibrosis is welcome news for those of us with graduate students, new post-docs and clinical fellows in a laboratory investigating the molecular and cell biology of this disease. Until the cloning of the CFTR gene in 1989, new students in the CF field were faced with a mass of literature to wade through that had little real science content.

Cystic Fibrosis: Current Topics thus has the potential to fill a definite gap in the market, that is between the lay books on CF and those written for practising physicians. Its price tag of £60 puts it beyond all but the independently wealthy of students, so the decision to purchase is likely to end up on the table of budget-holders or librarians.

A brief scan of the authors reveals contributions from many of the key players in the CF research field since 1989. The book is divided into three sections on genetics, cell biology and clinical aspects. It opens well with a chapter on the structure of the CFTR gene that gives an insight into the tremendous amount of work that went into the isolation of the CF gene by positional cloning. It describes the problems encountered in constructing a full-length CFTR cDNA clone and examines expression of the CFTR gene. An unusual feature of the CFTR mRNA – that of alternative splicing leading to the production of mRNA lacking specific exons – is explored, though its significance remains obscure. Finally the CFTR gene promoter is discussed, essentially revealing how little