

Book Reviews

Plant molecular biology—a practical approach. C. H. Shaw (ed.). IRL Press, Oxford, Washington DC. 1988. Pp. xx+313. Price £29 HB, £19 PB. ISBN 1 85221 0575 HB, ISBN 1 85221 0567 PB.

Plant molecular biology—a practical approach is the latest addition to the Practical Approach Series, edited by D. Rickwood and B. D. Hames, which includes nearly forty volumes which cover many diverse subjects such as steroid hormones, neurochemistry, electrophoresis and DNA cloning. The beauty of the series is that each volume covers a very specific area and presents the reader with the necessary background information and laboratory protocols to perform research in the area concerned. However, in taking a narrow subject area the reader must refer to less specialized and ubiquitous laboratory manuals for the more common techniques.

Plant molecular biology comprises eleven chapters: Analysis of plant gene expression (by K. H. Cox and R. B. Goldberg), Analysis of plant gene structure (by K. D. Jofuku and R. B. Goldberg), Isolation and analysis of chloroplasts (by C. Robinson and L. K. Barnett) Isolation and analysis of plant mitochondria and their genomes (by W. Schuster, R. Heisel, B. Wissinger, W. Schobel and A. Brennicke), Subcellular localisation of macromolecules using microscopy (by C. Hawes), Foreign gene expression in plants (by L. Herrera-Estrella and J. Simpson), Protoplast isolation and transformation (by R. D. Shillito and M. W. Saul), Transposable elements and gene-tagging (by N. S. Shepherd), Molecular plant virology (by R. H. A. Coutts, P. J. Wise and S. A. MacDowell), Molecular biology of chlamydomonas (by J-D. Rochaix, S. Mayfield, M. Goldschmidt-Clermont and J. Erickson) and the Molecular biology of cyanobacteria (by V. A. Dzelkalns, M. Szekeres and B. J. Mulligan).

The chapters are, in the main, well written with clear protocols to follow and useful notes provided. Sufficient introduction to each protocol is given to provide the reader with the necessary background theory. The precise protocols given very much reflect the personal preferences of the individual authors. For example, in the opening chapter, the guanidinium isothiocyanate method is given for total RNA isolation, with little mention of alternative protocols which may be more suitable for some plant species. Alternative protocols are invaluable to a newcomer to a new subject area/plant species. This limitation is, however, not universal in the book. In chapter 6, on foreign gene expression, for example, several different reporter gene systems are described, with the β -glucuronidase assay detailed in an appendix.

My main criticism of the book is not concerned with the contents of each of the individual chapters them-

selves, but with the original conception of the book and the choice of subjects to be covered. My feeling is that many people who work in the area of plant molecular biology and who buy the book without having a detailed look at it will be disappointed. The preface states the purpose of the book as "to provide the newcomer and the practitioner with clear and sensible protocols to enable them to perform meaningful experiments in plant molecular biology It does not aim to supplant the many excellent practical texts dealing with molecular biology . . . but merely to supplement them, providing plant-specific protocols". This it does, but the various chapters are not consistent on which techniques, which are not specific to plants, are included or excluded. For example, DNA and RNA isolation is covered well, but Southern hybridization is only found in the chapter on cyanobacteria and Northern hybridization is not mentioned.

Who then should buy this book? Established workers researching in a particular area which is covered by the book are unlikely to buy it for a single chapter. An example is the transposon-tagging chapter: anyone embarking on this line of research, in one of the small number of species where it is possible, is likely to be working in an established research group with previous experience. It is not a field for the newcomer on his own. This book is not ideally suited to the novice and in this respect the title is somewhat misleading. Despite these criticisms, the individual chapters provide valuable material on specific subjects and the book would be a welcome addition to University or Department libraries.

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Oxford surveys of plant molecular and cell biology. B. J. Mifflin (ed.). Oxford University Press, Oxford. 1988. Pp. 365. £24.00. ISBN 0 19 854233.

This is the fourth volume in the series Oxford Surveys of Plant Molecular and Cell Biology. In common with its predecessors it contains up to date reviews of a number of areas of contemporary interest in this field. As is usually the case with such publications it covers a diverse range of topics, including resistance to plant viruses, physiology and molecular biology of membrane ATPases and virulence of *Agrobacterium* to name but three from a total of eight reviews. Each is a detailed account of the particular subject in question and as such appears to be very much targeted at the postgraduate

level and beyond. On the whole the reviews are well written but at times the level of detail is somewhat off putting even to the interested layman. For example the article reviewing membrane ATPases gets down to the level of including the exact concentration of trypsin required to digest ATPases prior to amino acid sequencing. This is all very well if planning such experiments oneself but rather unnecessary in the context of a review. However, this is a minor quibble in what is an interesting article in a collection of useful reviews.

Although any volume that covers "state of the art" areas of research always runs the risk of becoming rapidly outdated, I feel that each of the articles in this particular collection will become a useful work of reference for anyone wishing to acquaint themselves with the various areas covered within.

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Evolutionary genetics. John Maynard Smith. Oxford University Press, Oxford. 1989. Pp. xii+325. £16.95. ISBN 0 19 854215 1.

This book is intended as a text for advanced undergraduates and as such it will provide a useful platform for many undergraduate courses. Though the book does require some knowledge of basic genetics, mathematics and statistics, these requirements are minimal and should be consistent with most biologists' general training. It is an extremely well written and presented book with a suitable number of clear diagrams, some of which are comfortably familiar from the author's previous works.

The book is essentially divided into two sections. The first of these takes up the first nine chapters of the book and provides a wide coverage of most of the aspects of genetics and general biology which are necessary to understand the basic mechanism of evolution, ranging from simple models of population growth to aspects of complex structured populations. The chapters in the second section deal with a number of specialized topics ranging from plasmid evolution to speciation. All the topics are neatly and concisely covered with useful detailed examples. In addition there is a wide range of problems and computer projects at the end of each chapter.

If one were to look for specific criticisms it might be argued that the choice of topics covered appears on balance to reflect the author's interests rather than a completely unbiased account of what is admittedly a rather broad subject. In addition the topics are rather too neatly dealt with and are often presented as fairly complete solutions to specific problems. It might be argued that the Red Queen Hypothesis applies to the models themselves in evolutionary genetics and that this might have been made more apparent in the text.

However, within the constraints of a book of this size, some omission is inevitable.

Provided that readers realize that the story is not complete and that there are other views and approaches to the subject, I can strongly recommend this as a stimulating book which will be of interest to a wide range of biologists as well as a useful undergraduate text.

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Genome analysis. K. E. Davies. IRL Press, Oxford/Washington. 1988. Pp. xiv+192 (with index). Price £27.00/\$54.00 HB. £18.00/\$36.00 PB, ISBN 1 85221 109 1 HB, ISBN 1 85221 110 5 PB.

This book is a collection of eight articles on techniques which are of increasing popularity in the analysis of eukaryotic genomes. These are: mammalian gene and chromosome transfer or whole cell fusion techniques, the generation of ordered libraries, double inhomogeneous field pulsed field gel electrophoresis, chromosome jumping, denaturing gradient gel electrophoresis in the detection of single base changes, PCR, DNA fingerprinting, and a description of the background to human genetic mapping. This is a diverse assortment, and while the articles are well written, the book as a whole is somewhat unfocused. However, this is probably an advantage; a definitive treatise on genome analysis would be fairly indigestible. As a collection of topical articles the book is a welcome addition to a good series, but needs to be regarded in that light. It is certainly a useful addition to a molecular biologist's bookshelf or library and is pretty good value for money. If you do decide to buy it I would recommend the soft back version; the hard back version is spiral bound and looks as though it won't stay together very long.

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Theory of Evolution and Dynamical Systems London Math. Soc. Student Texts No. 7. J. Hofbauer and K. Sigmund. Cambridge University Press, Cambridge, Pp 342. Price £10.95. ISBN 0 521 35838 8.

The authors of this book are well known for their contributions to the theory of dynamical systems in the biologi-