well-described from a strategic point of view. *Agrobacterium* is treated in depth and eucaryotic microorganisms are represented by *Aspergillus nidulanus* and by *S. cerevisiae* for which chromosomal metabolism is used as a peg on which to hang genetics and justify yeast as a model eucaryotic organism. Addenda provide a useful means of including topics not easily integrated within articles; these include 'tricks of the trade' applied to yeast genetics and fungal fermentation.

The wealth of information is reflected in the excellent 18 page index but has also resulted in a type format that, at ca. 900 words per page induced eye-strain in this reader. Illustrations are plain and clear although not always profuse enough. A knowledge of basic microbial genetics and elementary molecular biology is assumed. Despite the rather short-sighted title, if you are interested in or teach Microbial Genetics, this will be a useful and convenient book.

P.R. Brown

Genetically-Engineered Proteins and Enzymes From Yeast: Production Control; Edited by A. Wiseman; Ellis Horwood; New York, 1991; 203 pages, £35.00.

The stated aim of this book is to provide information from several sources on the techniques and procedures currently used in the transfer of mammalian, particularly human, genes into yeast cells and the factors regulating the expression of these genes. This objective is certainly achieved but the book provides rather more than the essentials for genetic engineering. The opening chapter presents a concise but comprehensive account of the basic principles of yeast genetics including the contruction of genetic maps from linkage data, tetrad and random spore analysis, recombination by protoplast fusion, the development of industrial strains and a lucid account of the mitochondrial genetic system. In a book on biotechnology this is unexpected but a most welcome inclusion particularly for biochemical engineers.

A second chapter describes how to make yeast vectors and the transformation procedures and gives a graphic description of the mechanism of integration of heterlogous DNA into host chromosomes. This is followed by an extensive treatise on the intricacies and pitfalls in the computer control of fermentation in which the timing of the induction of enzymes seems to be all important for the successful harvesting of relevant proteins.

A final chapter deals with the molecular biology of gene expression with special attention to a variety of promoter elements in the induction of heterologous proteins. Apart from standard inducing agencies such as catabolite derepression and manipulation of cyclic AMP levels, heat shock promoters are given a special mention being the main field of investigation of the authors (Piper and Kirk). Transcription initiation sequences, particularly the ADH2 promoter region, are described in detail from their incorporation into vectors to their function in transformation.

The book has a well-filled index.

Although publications are becoming quite numerous describing and extolling the virtues of the eukaryotic yeast cell, both *Saccharomyces* and *Schizosaccharomyces*, as the ideal system for the expression of human genes, this handy-sized book is a welcome addition to the literature providing much of the essential information for genetic manipulation. It would be a useful acquisition for those with commercial interests and for reference in the laboratories of academics working in the field.

D. Wilkie

Essential Molecular Biology: A Practical Approach, Volume II; Edited by T.A. Brown; IRL Press at Oxford University Press; Oxford, 1991; xx + 296 pages. £22.50

This is the second helping of *Essential Molecular Biology* from the excellent *Practical Approach* series. In common with *Essential Molecular Biology Volume I*, it is written for those beginning work in the field of Molecular Biology and the methodology is presented in a form that is easy to follow; however, the book should also be of interest to the more established molecular biologists. The ten chapters of the book are written by different authors (including the editor) and cover different aspects of gene cloning and analysis as well as gene expression. Following a general first chapter on gene cloning and analysis, chapters 2 and 3 deal with the construction of genomic and cDNA libraries in cosmids and bacteriaphage λ. Chapters 4 and 5 discuss the radioactive and non-radioactive labelling of nucleic acid probes, the immobilization of nucleic acids to different types of solid support and their use in hybridization experiments. The next chapter presents methods for DNA sequencing and includes useful sections on analysis of data and problem solving. Chapter 7 is a brief introduction to the polymerase chain reaction (PCR) which is very adequate for the beginner but for the more experienced molecular biologist another book in the same series entitled *PCR: A Practical Approach* (Eds. M.J. McPherson, P. Quirke and G.R. Taylor) would be a better investment. The next chapter presents various methods employed for the analysis of DNA–Protein interactions. Chapter 9 deals with the sequencing of RNA whilst chapter 10 describes methodology for the mapping of transcribed sequences. Appendices 1 and 2 give details of the widely used strains of *Escherichia coli* and a collection of media recipes and general procedures. Appendix 3 contains a series of computer-generated figures showing the patterns seen in 1.4% agarose gels for 148 different restriction enzyme digests of each of six different

DNAs (bacteriophages ΦX174, M13mp8 and λ, plasmid pBR322 and the animal viruses SV40 and Adenovirus-2). A brief list of DNA and RNA modification enzymes is presented in Appendix 4 while Appendix 5 gives a list of commercial suppliers of equipment and consumable materials.

Although a large number of excellent Molecular Biology Manuals are already available, this reviewer considers that this member of the *Practical Approach* series will find favour in a large number of laboratories especially the ones with aspiring or less experienced molecular biologists. The book has been written with the care and attention expected from this well-known series of laboratory books.

Demetris Savva

Oligonucleotides and Analogues: A Practical Approach; Edited by F. Eckstein; IRL Press at Oxford University Press; Oxford 1991; xxiv + 313 pages. £22.50

Chapter 1 entitled 'Modern machine aided methods of oligodeoxyribonucleotide synthesis' sets the scene for the entire volume. It explains the basic chemistry behind oligonucleotide synthesis, containing both an informative description and commentary on how the technique has evolved from earlier beginnings to make the chemistry simpler and more efficient, and generally less hazardous. A section described as 'a practical guide to automated DNA synthesis' is what a book of this type is all about and provides plenty of the necessary 'What to do...' instructions. The final section discusses limitations of solid phase deoxyribonucleotide synthesis and draws attention to the effects of the various side reactions that can occur during the process and emphasizes the need to purify rigorously the final, desired reaction product.

A subsequent description of the synthesis of oligoribonucleotides complements this beginning and discusses the difficulties of coping with the extra 2'-hydroxyl group on the ribose. A number of chapters then go on to describe the synthesis of oligonucleotides with modifications to the phosphodiester backbone, the bases or the sugar residues and numerous examples are given of the chemical properties and usefulness, both real and potential, of the different molecules considered. Some of the advantages are general, such as being resistant to nucleases, whereas others are more specific. For example, DNA-RNA duplexes containing 2'-*O*-methyl oligoribonucleotides are not a substrate for RNase H and oligonucleotide phosphorodithioates are stereospecific achiral molecoles, whereas phosphorothioates, phosphoramidates and methyl phosphonates are all phosphorus chiral, so that a number of non-resolvable diastereoisomers results during their synthesis. The list of proposed functions for such molecules in biological research is impressive and includes studies on enzyme biochemistry, autolytic processing of RNA (ribozymes), interactions with proteins, oligonucleotide-directed mutagenesis, affinity chromatography and antisense molecules, these having considerable potential value for therapeutic use.

The later sections in this volume discuss the attachment of various reporter groups to the oligonucleotide. These are usually non-isotopic and facilitate detection by fluorescent, chromophoric or chemiluminescent methods. Procedures are given for attachment of appropriate ligands to various parts of the oligonucleotide. Modification of the 5'-terminus leaves the 3'-terminus free for enzymic manipulations as required for Sanger sequencing and for PCR amplification applications. Site specific attachment of reporter groups to the phosphodiester backbone is also possible and an example is given of the preparation of site-specifically labelled tryptophan operator oligonucleotides used to examine binding of repressor protein. The use of reporter groups throughout the oligomer by attachment to bases has created hybridization probes with detection sensitivities exceeding those of ^{32}Phosphorus. Finally, the use of DNA intercalators and photoreactive agents as ligands allows some desired chemical change to be effected at specific target sites.

The value of oligonucleotides is thus now well established and as to future developments it is clearly a case of 'watch this space'.

This is an excellent update on the 1984 Gait publication in the series offering much, not only for the experienced hand, but also for the newcomer who may not be aware of the variety of oligomers that can now be made or the uses to which they can be put. As practical manual, however, its true worth cannot be known until people attempt to follow the instructions contained within it.

Colin K. Pearson

Making Monoclonals; By D.G. Newell, B.W. McBride and S.A. Clark; Public Health Service Laboratory (distributed by Cambridge University Press); London, 1991; viii + 94 pages. £10.00 (pb)

With the production of monoclonal antibodies having become an industry rather than an art an inevitable consequence has been a range of publications decribing both the method itself and its associated techniques. These vary from comprehensive protocols as found in immunological compendia such as Harlow and Lane's 'Antibodies: A Laboratory Manual' (Cold Spring Harbor Lab., 1988) to several detailed beginner's guides. The small volume by Newell et al. is one of the latter and from the first page the authors make it clear that their aim is to aid the novice in producing monoclonal antibodies specifically to infectious agents for subsequent use in immunodiagnostics.

The book has six chapters covering each stage of the process in

Molecular neurobiology: A practical approach: edited by J. Chad and H. Wheal, Oxford University, Press/IRL Press, 1991. Â£19.50, Â£30.00 (xx + 236 pages) ISBN 0 19 963109 3 pbk, 0 19 96308 5 hbk. @article{Deriemer1992MolecularNA, title={Molecular neurobiology: A practical approach: edited by J. Chad and H. Wheal, Oxford University, Press/IRL Press, 1991. Â£19.50, Â£30.00 (xx + 236 pages) ISBN 0 19 963109 3 pbk, 0 19 96308 5 hbk}, author={Susan A. Deriemer}, journal={Trends in Neurosciences}, year={1992}, volume={15. }, pages={312-313} }. Susan A. Deriemer. View on Elsevier. Alternate Sources. Essential Molecular Biology: A Practical Approach, Volume II; Edited by T.A. Brown; IRL Press at Oxford University Press; Oxford, 1991; xx + 296 pages. f22.50. This is the second helping of Essenriaf Molecu!ur Biology from the excellent Prac~icafApproachseries. In common with Essenrial Molecular Biology Volume I, it is written for those heginningwork in the field of Molecular Biology and the methodology ispresented in a form that is easy to follow; however, the book should also be of interest to the more established molecular biologists. The ten chapters of the book are written by different au