

Book reviews

Introduction to Molecular Cloning Techniques. G. Lucotte and F. Baneyx. VCH, Weinheim. 1993. Pp. 298. Price £32.50, hardback. ISBN 3 527 89613 9.

In vitro manipulation of genetic material has proven to be a powerful method of genetic analysis and is the basis of a host of research and industrial processes across a wide spectrum of biological fields. This diversity of applications, from agriculture to medicine, has led to refinements and modifications of techniques with relevance to particular needs yet the basic principles remain unchanged and are fundamental to the discipline of genetic engineering. The currently available literature reflects this diversity of applications but for the intrepid beginner, such directed texts are often confusing and omit the grounding on which the methodology is based. This book offers a simplified summary of the basic principles and techniques of genetic engineering.

The book is divided into six parts covering the fundamentals of the host (*E. coli*), restriction enzymes, cloning vectors, DNA and RNA preparation, cloning techniques and libraries. Individual chapters are structured, commencing with a concise introduction followed by examples of the most routinely used methods and concluding with a series of problems taking the reader from theory to practicality and hopefully ending with a measure of understanding.

Introductions are short, but easily digested, and contain enough relevant information to convey the principle. Access to more detailed information is provided through reference listings at the end of the book. The text itself is easy to read because much of the more weighty information, such as vector maps and enzymatic actions, is contained in extensive appendices and this prevents the reader from becoming overwhelmed.

Throughout the book, the coverage of experimental procedures is variable. In many cases it is comprehensive, but sometimes the text fails to convey small but essential details. For example, we are told that 'proteinase K is first heated to eliminate all traces of DNAase activity', but we are not told for how long or at what temperature. However, I do not feel that the authors intended the book to act as an essential methods book but rather as an insight for the beginner to the complexities involved in laboratory procedures. Many methods would have benefited from being presented in a more stepwise fashion rather than in essay form.

Probably the best feature of the book is the problem sections. These include a series of both practical and theoretical predicaments based on the preceding text, and answers are given later in the book. The questions raised require an understanding of the theory and not merely the ability to look back for the relevant phrase or statement.

The text of the book is supported throughout by a large number of illustrations, many of which are photographic

reproductions of autoradiographs and agarose gels. Unfortunately, some of these are very poor and difficult to decipher and could have benefited from accompanying illustrative explanations.

Overall, *Introduction to Molecular Cloning Techniques* achieves its aim inasmuch as it is a concise summary of the basic principles and methods used in genetic engineering. Its target readership is probably students and research technicians, and this is appropriate. The text is easily understood and the reader is taken progressively through both theory and methodology. The book is ideal for those starting out in genetic engineering, whatever the biological field. It does not pretend to be the only text you'll ever need, but is an ideal stepping stone into a rapidly developing area of science.

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Statistical Analysis of Regional Yield Trials (AMMI Analysis of Factorial Designs). H. G. Gauch. Elsevier, Amsterdam. 1992. Pp. 278. Price £120.00, hardback. ISBN 0 444 89240 0.

Dr Gauch ends his book with a confident prediction of the benefits in increased crop performance that would result from universal adoption of the AMMI methodology in plant variety selection. "After a decade, about 4% of the world's food production would be attributable to AMMI analysis. This is a lot of food. It would be enough to feed over half of the United States or about a third of Africa." Such a dramatic claim needs sober evaluation.

Series of variety trials aimed at predicting future performance of new varieties in a specified region are usually analysed in two stages. Variety means are first calculated for individual trials and summarized in a variety-by-trials table; this is then submitted to an across-trials analysis to provide overall measures of variety performance for recommendation purposes. The design and analysis of an efficient trial system should therefore take account of several components of variation in variety performance: variation within a trial due to local factors such as trends in soil fertility, and the invariably much larger variation between trials due to environmental differences in locations and years.

AMMI stands for Additive Main Effects and Multiplicative Interaction and provides a nested sequence of models for analysing two-way variety by environment tables. The additive terms in the model represent the overall perform-