Genetic Engineering: Principles and Methods, edited by JANE K. SETLOW, Plenum Press, New York and London, 1997. Volume 19, pp. xiv + 309. ISBN 0-306-45681-8.

This book is the latest in a long and distinguished line of texts going back to 1979. It is very interesting to look back to the first volume in the series [1]. Most of the chapters were in the 'how-to-do-it category', for example *Cloning of double-stranded cDNA* and *Transformation of yeast*. For plants it was not even certain that it could be done, as evidenced by the chapter entitled *Agrobacterium tumour-inducing plasmids: potential vectors for the genetic engineering of plants*. How things can change in half a generation! Eighteen years on, the emphasis is not on how to do it or whether it can be done but on what has been done and what we can plan to do. Further, when the techniques of genetic engineering were first invented in the early 1970s, the possible commercial applications of these techniques were readily imagined (and for the genetic engineering of bacteria, very soon to be realised). As long ago as 1976 I predicted that plants would be genetically engineered in order to increase their agronomic and commercial value [2]. However, what I and many other commentators had not predicted was the explosion of knowledge in molecular biology that would come from application of recombinant DNA technology to the study of genes and of gene expression. In some ways the commercial applications of genetic engineering are only a minor part of the field (even though it is the non-squashy tomatoes or herbicide-resistant soya beans which make the headlines). This evolution of the subject is very clearly seen in this volume, number 19 in the series.

Turning to the book itself, I need to make it clear that any reader expecting to find it full of methods (as indicated by the general title of the series) will be disappointed. There is very little methodological detail in the book. What the book contains is a series of reviews of particular aspects of molecular biology in which the key role of recombinant DNA technology in the attainment of knowledge is very apparent. The editor has assembled a group of distinguished authors (nearly all from labs in the USA) who write with authority about their particular fields. Nine of the 15 chapters deal mainly or exclusively with plants, covering the following topics: Engineering disease resistance, Plant gene promoters, Cellulose synthesis, Protein degradation, Genetic engineering of oilseeds, Switching on gene expression, Nucleic acid transport in plant-pathogen interactions, Leaf senescence and Recognition and signalling in plant-pathogen interactions. There is some overlap between some of the chapters but nevertheless the book gives very useful coverage of some interesting and important areas of plant molecular biology. In a small proportion of these chapters there is a specific emphasis on how plants have been and will be engineered for commercial use (for example, the chapters on Engineering disease resistance and Genetic engineering of oilseeds). However, in most of the chapters, this aspect forms only a small part of the material which is covered.

The other six chapters deal with a very diverse group of topics in molecular biology: Plasmid stabilisation by post-translational killing, Conjugative transposons, Termination of DNA replication in prokaryotes, Receptor tyrosine kinase signalling pathways in *Drosophila*, Transgenic mice containing yeast artificial chromosomes and Genes for polycyclic aromatic hydrocarbon degradation. Again the main emphasis here is on the molecular biology *per se*, although the chapter on plasmid stabilisation has a significant amount of practical detail and the chapter on yeast artificial chromosomes in mice is almost entirely practically oriented. Again, the possible commercial applications receive relatively little attention although this theme runs as a *continuo* through the chapter on degradation of polycyclic hydrocarbons. One slightly chilling comment on the applications of bacterial genetic engineering comes in the chapter on conjugative transposons where the authors state 'there is no such thing as a safe plasmid'.

Overall I found this to be a useful and interesting book. All of the chapters are informative; references are cited up to 1996 and where more recent unpublished work has been cited the information is even more up-to-date. There are, inevitably, differences in writing style between the chapters but they are nearly all very readable. From the point of view of someone like myself who, in order to review the book, read it straight through, it is unfortunate that the first chapter is the hardest to read, at least partly because the authors are much given to coining and then using new abbreviations.

One slightly odd feature of the book is that there has been no attempt to group the chapters according to subject matter. For example, the three chapters covering different aspects of plant-pathogen interactions are the 1st, 11th and 16th; the two chapters that deal with plant gene transcription and its control are the 2nd and 10th. My final comment concerns the overall balance of the book. As I have already indicated, I found something of interest in every chapter. However, readers who wish to confine their interest to plants may feel that a book in which only about 55% of the text deals with plant molecular biology is an expensive luxury. Nevertheless they should persuade their libraries to buy it!

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REFERENCES

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2. Bryant, J. A. (ed.) *Molecular Aspects of Gene Expression in Plants*. Academic Press, London and New York, 1976.

Polyamine Protocols—edited by David M. L. Morgan, in the series *Methods in Molecular Biology*, Vol. 79, Humana Press, Totowa, New Jersey. 1998. 186 pp. $59.50. ISBN 0–89603–448–8.

In the first chapter of this compilation of polyamine methodology, the editor gives an excellent overview of the present status of polyamine research, supported by 147 references. Regrettably for readers of *Phytochemistry*, the emphasis throughout this book is on animals and micro-organisms; even so, many of the pathways and structures which are described occur ubiquitously in living cells, indicating their universal importance.

For ornithine decarboxylase assay, very sensitive techniques based on the use of labelled ornithine are described by Tabib, and by Coleman and Pegg. Methods for the assay of arginine decarboxylase, an important plant enzyme, are not given, though similar principles may be used for the assay of this enzyme. The possibility of artefactual CO_2 generation in plant systems from carboxy-labelled ornithine by an oxidative process without the formation of putrescine is very important in plant extracts, but is barely mentioned in the text. Contributions by Shantz, Wiest and Pegg consider the generation of the aminopropyl group from *S*-adenosylmethionine, and the subsequent formation of spermidine and spermine. Chapters by Wallace, Evans and Blankenship describe the assay of enzymes concerned with *N*-acetyl polyamine derivatives, which are principally found in animals. The polyamine-coumaric acid amides which occur widely in plants are not considered in this book. Assay methods for di- and poly-amine oxidation systems which depend on peroxide and pyrroline generation are described by Storer and Ferrante, and David Morgan gives assay methods for the enzymes (principally mammalian) which oxidatively convert spermine to spermidine and on to putrescine. HPLC separation of the benzoylated and dansylated polyamines are described by Morgan and Hunter. Post-column derivatization with fluorescamine is used for the HPLC determination of amines and amino acids by Hunter and Fairlamb, and Madhubala gives the now well-established dansylation method for polyamine analysis by TLC. In the next chapters, measurement of polyamine transport is described by Morgan and by Le Quesne and Fairlamb, while polyamine efflux, effects on cell growth, and the tetrazolium assay for cell viability are considered in the last three chapters by Wallace and Mackarel, Denton and Morgan.

The index is very brief, but otherwise the presentation is good. This is a book written principally by and for animal biochemists, and for this purpose it must be a great success. The observation of Coffino, quoted by Morgan, that "polyamines are doing some important things, but we do not know what they are" must also be true in plants. Many of the techniques described here should also be useful for plant biochemists who are interested in discovering what these "important things" might be. For any workers aspiring to study these compounds in plants, this book could provide a useful source of new ideas.

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Insecticides of Natural Origin by SUKH DEV and OPENDER KOUL, Harwood Academic Publishers, Australia, 1997, pp. 365. £78. ISBN 3–7186–5913–1.

Natural insecticides are of academic interest in that their occurrence in plants suggests that they may be accumulated by plants in response to insect herbivory. Commercially, they are of continuing interest as lead compounds for the synthesis of more potent and environmentally friendly pesticides. That this is so is apparent from the great success of the synthetic pyrethroids, which today command some 30–35% of the world market in agricultural insecticides. A book listing most of the known plant insecticides must therefore be a welcome addition to the plant science literature. Unfortunately, this volume under review does not come up to the highest standards in terms of information and useability.

The book opens with a brief introductory chapter, reviewing the main classes of insecticide and their natural sources. The rest of the book lists the 200 or so known natural insecticides, including those from higher plants, micro-organisms and marine organisms. For each entry, there is a name, a chemical structure, a source, a profile for insecticidal activity and a few key references. So far so good, but it is not immediately clear in which order the compounds are listed. In fact, close inspection shows that they are in sequence according to biosynthetic origin, with hydrocarbons being followed by terpenoids of increasing complexity, etc. This important piece of information is nowhere revealed in the text, so that it is unclear how to access the information. This was realised after the book was put into production, so that an index to chemicals and organisms is inserted behind the back cover. Unfortunately, this must have been done in a hurry, since it is incomplete and it is impossible to locate the entry for compounds beginning with the letter N, e.g. nicotine, in the main section. It is also a pity that plant families are not included in the main part of this dictionary, although the authors in the introduction point to the richness of natural insec-