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 Book reviews
 

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**Osterman, L.A.: Methods of Protein and Nucleic Acid Research. 1. Electrophoresis, Isoelectric Focusing, Ultracentrifugation.** Berlin, Heidelberg, New York, Tokyo: Springer 1984. x + 342 pp., 102 figs. Hard bound DM 156,-.

Professor Osterman of the Institute for Molecular Biology in Moscow, USSR, has prepared in this book a detailed and up-to-date account of the techniques of electrophoresis, isoelectric focusing and ultracentrifugation as applied to protein and nucleic acid research. The book is extremely well illustrated with line drawings and chemical formulae, and in fact contains everything one needs in the way of instruction and advice for the novice to enter this field.

By far the largest section of the book deals with gel electrophoresis of proteins and nucleic acids. The coverage of this topic is thorough and goes through all the theory of the polymerization process of acrylamide gels and the equipment necessary for the successful electrophoretic separations. The author deals at length with buffers, loading techniques, urea gels, tracking dyes. SDS gels, the popular Laemmli system, disc gels, affinity gels, staining dyes, autoradiography and fluorography, all necessary for protein separation methods. Nucleic acid separation by gel electrophoresis is also dealt with fully and many examples given, down to, for example, the separation of Okasaki fragments from total cell lysates.

This largest section is followed by coverage of isoelectric focusing. The principles of this method are given, the ampholyte material discussed and the variety of equipment which has been used for this procedure. The narrative then naturally proceeds to a coverage of two-dimensional fractionation of proteins, especially that of O'Farrell.

The final section of this volume covers ultracentrifugation, its concepts, equipment, including rotors and tubes, and a detailed treatment of differential centrifugation, rate-zonal centrifugation and equilibrium or isopycnic centrifugation. The book has a large bibliography, a useful index, as well as some useful nomograms at the end for calculation of centrifugation time.

This book is a must for the bookshelf of any biochemical laboratory, be it undergraduate or the research laboratory.

J. F. Jackson, Glen Osmond

**Dodds, J. H. (ed.): Tissue Culture of Trees.** Croom Helm: London, Canberra/The Avi Publishing Co. Inc.: Westport (USA) 1984. 147 pp., several figs. and tabs. Hard bound £ 15.95.

The techniques of plant cell and tissue culture are an integral and important part of modern biotechnology. There is much interest and enthusiasm about the potential uses of this technology in the genetic modification and improvement of plants. One of the most successful practical applications of these techniques has been in the large scale and rapid clonal propagation of plants now practiced widely in the horticultural industry. In most cases this has been restricted to herbaceous species because the woody or tree species have been difficult to regenerate from tissue cultures. However, lately, success has been achieved in the production of shoot buds on cultured cotyledon explants of several coniferous species, and in a few cases angiosperm species have also been regenerated from tissue cultures. Such success is of obvious importance to forestry. Nevertheless, major problems remain. For example, it is not yet possible in most cases to obtain plant regeneration from mature tissue explants, nor to induce morphogenesis in callus cultures. Furthermore, the techniques of protoplast culture, somatic hybridization, mutant selection, and genetic transformation, that have made important strides with herbaceous species and are amongst the most powerful tools of modern biotechnology are not yet applicable to woody species. These problems, along with highlights of recent successes, have been discussed in detail at many international meetings and in several excellent review articles and books. The present collection of articles neither improves upon nor adds anything new to the existing literature. Most of the chapters treat the subject in a rather superficial manner, lack detail and insight, and cannot be considered authoritative. This is probably due to the fact that many of the authors have not had extensive experience with tissue culture propagation of forest trees and have therefore had to rely entirely on the published literature in the preparation of their articles. The second hand nature of the articles is illustrated by the fact that several of the chapters do not list even a single original research publication by their authors. The volume is also not very current in that although it was published in 1983, it does not refer to some of the important recent publications on the subject. Neither basic physiological and developmental aspects of morphogenetic controls *in vitro* nor practical aspects of large scale clonal propagation are covered in depth. Such a collection of articles cannot be useful to those who are actively engaged in research in this field, and at best will be of rather limited use to those who newly enter this important field of research.

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