

Book Reviews

Practical Isozyme Genetics. N. Pasteur, G. Pasteur, F. Bonhomme, J. Catalan, J. Britton-Davidian (M. Cobb, translated from French) Ellis Horwood, Chichester, 1988. Pp. 215 Price: £29.95. ISBN 0-745-80501-9

To judge by the frequent requests I receive to recommend a good general introduction to isozyme techniques, there is clearly a great demand for such a book. The question is does this book, "Practical Isozyme Genetics" a new volume in the Ellis Horwood series in Gene Technology, meet the demands of the wide audience ("biologists, agronomists, anthropologists, hospital doctors, health inspectors, forensic scientists and all those individuals and agencies involved in the preservation, management, and improvement of animal and plant stocks") to which the authors direct the work in the preface. In general, the authors meet these wide demands as well as might be expected from a 215 page book on this complex subject. However, there are several cautionary notes that must be added to my general enthusiasm for this book.

The eleven chapters are divided into three main sections covering "Methods", "Laboratory Techniques" and "Data Analysis" and provides a fairly comprehensive account of the procedures involved. However, the divisions are not entirely comfortable—for example, the chapter on genetic interpretation of gels would be better as part of the data analysis section. The authors are particularly good at providing just the required amount of methodological background for the novice. The book is well illustrated with photographs and diagrams which are essential in a practical guide of this type. The chapter on general experimental procedures is particularly well illustrated with a clear series of pictures taking the reader through the process of making and running gels. However, while acknowledging that starch gels are notoriously difficult to photograph, I found the quality of some of the photographs, used as a guide to interpreting gels, left much to be desired. In such an introductory book this might well lead inexperienced workers to over-interpret their gels with serious consequences. In addition, in a chapter on genetic interpretation of gels I find it amazing that the authors fail to stress the importance of performing a range of controlled crosses to analyse the genetic control of isozyme systems. Though appreciating the difficulty with many species of such an approach it forms the basis of proper genetic analysis and must be performed if at all possible.

The staining protocols are well presented with a clear description of each staining reaction followed by the protocol in a format suitable for photocopying to keep on the laboratory bench. In general the protocols are correct and logically set out though there are some minor points of irritation. I see no good reason to make up 2 litres of 2M sodium malate, which is a rather hazardous

operation, when a much smaller volume of stock solution would suffice. In addition, there are some inaccuracies in the authors descriptions of certain chemical compounds e.g. "malic" acid for sodium malate and the omission of necessary detail of which particular salts are used for many of the substrates, such as fructose-6-phosphate, which could lead to considerable confusion if the reader uses alternative suppliers.

Though the authors correctly stress that a "trial and error" approach may be required to adapt the methodology to new species I do feel that they might have suggested some appropriate strategies, identifying, for example, some of the key areas, such as the choice of extraction buffer or stain pH, which can be systematically explored.

The section on data analysis is fairly complete and is at the appropriate level for a book of this size and audience. The only serious omission is a section on linkage analysis and one might argue that a worked example would help beginners cope with the difficult concept of genetic distance.

In conclusion, though highlighting some of the faults of this book in this review, I have to recommend it as a text which should give many novices a useful introduction to the subject. It has been well worth the effort of translation from the original French edition.

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Exercises in Applied Genetics. Lynn Burnet. Cambridge University Press 1988. Pp. viii + 120. Price \$4.95. ISBN 0-521-33883-2.

Exercises in Applied Genetics is something of a misnomer for this book. The majority of the pages comprise six chapters which are principally script, and which skim the cream of the subject in a rapid-fire style of writing, and buzz words picked out in bold type. The author should be given credit for attempting a fresh approach aimed at stimulating the student, and for providing some interesting and new exercises. There is no practical component. It is clearly stated that a knowledge of basic Mendelian genetics is required, as well as appreciation of the structure and function of nucleic acids. Chromosomes and nuclear division in eukaryotes receive scant attention, and presumably all of that background is taken for granted as well. The problem faced by the author is the one which is well known to all teachers of genetics—

how to get on to the more exciting bits, and encourage "active learning", without having to first master the rules of heredity and their relationship to chromosome behaviour during nuclear division. In this case the solution is to say you can find all that stuff elsewhere. I doubt that this much background can really be assumed at GCE A Level standard. Will these students really have a thorough grasp of the Hardy-Weinberg Principle, or will they just use it on the assumption that all gene and genotype frequencies are in permanent genetic equilibrium (if they know what that means)? Chapter 1 deals with an "Introduction to Quantitative Genetics", and covers everything from the genetic basis of continuous variation, through environmental variation, pure lines, inbreeding and outbreeding, measurement of variation and heritability. It could form a useful revision summary for an advanced undergraduate. Chapter 2 on "Selective Breeding of Plants and Animals" is likewise all-embracing. It covers the whole field, and in the last seven pages deals with self-incompatibility in plants, hybrid corn (including cytoplasmic male sterility) and polyploidy in crop plant evolution. Meiosis in polyploids is left out completely, and one is left wondering where is the substance? How will the teacher or the pupil gain any real understanding of all this stuff? What will they make of the statement (relating to Triticale) "... However, one cannot expect a 'raw' allopolyploid to show all the desired features because these are often the result of epistatic interaction in coadapted gene complexes?" There are chapters on "Resistance to Pesti-

cides", and "Resistance to Pest and Diseases". Interesting material is used here, but how many readers at this level will ever get to the bottom of the buzz-words **gene for gene hypothesis**. Chapter 5 covers "New Techniques for Gene Manipulation". In a few pages a fast flowing text deals with plant tissue culture, monoclonal antibodies, recombinant DNA technology, genetic manipulation in higher organisms and transformation and selection. The Chapter includes a quick refresher course on genetic recombination in bacteria, a review of protein synthesis, a section on split genes, and not so many exercises. "Human variation" occupies the final Chapter. It has some interesting material as one might expect, but again it relies heavily on the student having substantial background knowledge. The book is intended for A Level Biology and various other courses through to University undergraduates and one must applaud the attempt to freshen up the subject and to activate student interest. Notwithstanding this goal one is left with the strong feeling that the subject has been skimmed. The undergraduate will value the book as a summary, but will bemoan the lack of substance, while the A level pupil will be like the child who reaches out to touch the moon, only to grasp a handful of thin air. Teachers will use the book for its source material and teaching ideas.

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Help wanted

House mouse study – quantification of deme birth rate

Collaborators required who are willing to collect information on mice entering homes. Data required both on houses which do not get invaded as well as details on those that do. Would like data sent please, but where successful invasion occurs it might be possible to deal with dried or preserved specimens.

For further details please contact
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