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Book reviews

***In-situ* Hybridization: a practical approach.** D. G. Wilkinson (ed). IRL Press. 1992. Pp. 163. Price £30.00, hardback, comb-bound. ISBN 0 19 963328 2.

In situ Hybridization: a practical appoach, is exactly that. This is a wonderful book containing extremely detailed recipes (apologies: protocols) which will actually allow the reader to carry out these complex techniques. The ten chapters cover the majority of uses of *in situ* hybridization as applied at present.

The preface succinctly outlines the importance of this technique in it's ability to demonstrate molecular genetic information in a structural context. In chapter one, David Wilkinson explains in a mere 13 pages 'the theory and practice of *in situ* hybridization'. This is expertly done, but being a visually minded individual, I do feel some simple diagrams would have greatly aided the comprehension of these complex systems. On a more positive note, the inclusion of a section on 'Artefacts and Controls' was most welcome.

The remaining chapters describe the various options available for *in situ* hybridization. They cover all of the main problem areas and provide the reader with choices, either specific or general, to be able to adapt these techniques to their research and/or diagnostic needs. Specimens range from tissue sections to insect and vertebrate embryos and chromosomes.

The fixation of the tissues and the accessibility of the target molecules is covered thoroughly. In addition, the types of probe, whether they consist of RNA, DNA or oligonucleotides are all discussed in detail. The labelling of these probes using radioactivity, biotin or digoxigenin is addressed, along with their respective merits and demerits. Finally, the detection systems for the various labels are elucidated.

In Chapter seven, Bratic and Ozden link the techniques of *in situ* hybridization and immunocytochemistry to provide a powerful demonstration of gene expression, with respect to both messenger RNA and protein, and in chapter eight Maximillian Binder introduces the use of this technique at the electron microscope level, thus allowing even greater resolution over the light microscope procedures described in the rest of the book.,

This book demonstrates the importance of *in situ* hybridization in developmental biology, viral pathology, cytogenetics and therefore, perhaps, to Biology as a whole. The book ends, as does each chapter, with a useful list of references and, finally, a list of suppliers. As with all good cookery books, this one is to be tried and tested. Bon appetit!

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Nucleic Acids and Molecular Biology (Vol 6). F. Eckstein and D. M. Lilley (eds). Springer-Verlag, Heidelberg. 1992. Pp. 273. Price £80.00, hardback. ISBN 3 540 55238 2.

Probably anyone who is trying actively to conduct research in molecular biology will, at least occasionally, find it very difficult to keep up with the wealth of information relevant to their field that is being published week after week. This is even more true for related subjects, and the situation worsens the further removed a topic is from one's own field of interest. Therefore, one has to rely on the publication of review articles.

The editors of the series 'Nucleic Acids and Molecular Biology' probably had such overworked scientists in mind as potential readers — especially those who want to look over the horizon of their own immediate interest and learn about new developments in related, or even removed areas. As a whole the book proves very appropriate for this purpose, although the fourteen reviews contained in it do vary considerably in their style, clarity, and accessibility.

The book starts with a discussion of base pair opening in short DNA molecules, with specific focus on the open state of the base pair. The authors review recent NMR studies measuring exchange times of amino protons of guanosine and thymidine residues with solvent. Unfortunately, it is assumed that the reader is familiar with a number of recent reviews on the subject, which are all cited in the introduction. Anyone who actually is familiar with these will profit considerably from this review; however, for non-NMR specialists, the article remains largely cryptic. Similarly, the second review on superhelix density as a thermodynamic variable presents its topic for the specialist. This approach provides a very sensitive means of determining the degree of unwinding of DNA upon binding of a protein. Again, however, the article is not very accessible for someone without a strong background in thermodynamics. In contrast to these two reviews, the detailed description about the structure of the glutaminyl-tRNA synthesase-$tRNA^{Gln}$-ATP complex is comparatively easy to understand. However, it is a specific, original research report an not a review in a wider context. This article is immediately preceded by a review about aminoacyl-tRNA synthesases and their partition into two classes. The partition was originally based on sequence motifs, but is confirmed by new structural studies and their implications, which are also considered. Here, among others, an original publication about the structure of glutaminyl-tRNA synthesase is discussed, which puts it in the context missing in the following chapter.

Three very well written and informative reviews discuss different DNA binding motifs of proteins. These are the basic-region leucine-zipper, the helix-loop-helix motif, and the HMG box motif. Other subjects covered in this volume are intracellular DNA supercoiling in bacteria, the abundant