

an altered emphasis of the original material. It should certainly be looked at again by those who had not found the earlier editions suitable for their courses for recommendation to students.

One major change is a stress on the function of lipids. The division of functions chosen by the authors is structural, storage and metabolic (although a misleading heading in the summary chapter suggests the third aspect is lipids in metabolic control). While these divisions may not be entirely appropriate they work for the majority of the book.

The book starts with a chapter outlining methods for the isolation, separation and detection of lipids and another chapter gives a full account of fatty acid structure and metabolism. Much of the rest of the book is new. Major aspects of lipid metabolism are reviewed in two chapters on lipid as energy stores (in plants and animals) and metabolism of structural lipids. Further functions of lipids are dealt with in two chapters covering many different topics from lipids in cellular structures to membrane fusion

and pulmonary surfactant. Other parts of the book deal with the involvement of lipids in health and disease.

The advantage of the book is that all major aspects of lipid metabolism are covered in one volume and thus it will be of great benefit to those looking for a readable review of lipid biochemistry. However, the disadvantage is that because of the wide cover of subject matter only a summary can be given for many subjects. One such area is inositol lipids and second messengers which is reviewed in only four pages. In other cases the inclusion of a few extra words would have provided much more information. Thus the conversion by cyclic AMP of inactive triacylglycerol lipase to an active form is given but there is no mention of phosphorylation by a kinase! There are also one or two confusing diagrams but overall the volume fills an important gap in the literature.

M.P. Rogers

---

**Membrane fusion;** Edited by Jan Wilschut and Dick Hoekstra; Marcel Dekker: New York, Basel, Hong Kong, 1991; xvii + 902 pages; \$234.00.

The objectives of the editors in planning this volume were ambitious and laudable. In their own words: 'The purpose of this book is to provide the reader with an overview of recent progress in research on membrane fusion as it relates to (these) diverse areas of scientific interest'. The result is a large, multidisciplinary, multi-author volume containing a wealth of information on the theory and applications of membrane fusion, but regrettably it fails to achieve its stated purpose. The reason is clear: almost all of the contributions were completed in early 1986 and few have been more recently updated.

There are morals here for all who might be considering similar projects; sixty-six contributors (sixteen of whom have in the interim moved laboratories) is just too many academics to try to harness together for any such team effort. Any volume like this which aims at ... 'supplying a comprehensive view...' for a readership comprising '...molecular, cell and membrane biologists; biophysicists; biochemists; virologists; biotechnologists; microbiologists; immunologists; physiologists; and graduate and medical school students in biophysics, biochemistry, physiology, virology, cell biology and biotechnology...' is likely to end up satisfying almost no individual reader. And, finally, when as a result, it costs \$234, who will be able to buy it?

But what of the material covered here? The book is divided into six parts, each comprising various chapters on related topics. The first part comprises three chapters on general aspects of membrane structure, lipid polymorphism and intramembrane forces. One might think that this material might not suffer from the publication delay but Parsegian and Rand, who wrote the third chapter, draw attention to the fact that the period from 1986 to 1991 was one of rapid progress and their contribution does not adequately reflect these changes. The second section deals with

fusion in model membrane systems and with nine chapters is the most extensive; it provides a good background on the kinds of approaches aimed at elucidating molecular mechanisms of fusion and discussions on the relation of model systems to biological membranes. The next section considers the best understood systems, namely the fusogenic properties of enveloped viruses, studied in model and cellular systems. The contributions here I felt have withstood the test of time best, with the reviews by J. Lenard and by D. Hoekstra being very readable. Section four, with seven chapters on intracellular membrane traffic, is the one where progress, particularly in the molecular and genetic aspects of the topic, has been most marked; many reviews and books have covered this topic more recently and it is to these that a general reader would turn at this time. Section five briefly considers cell-cell fusion, with chapters on myoblast fusion, and sperm-egg fusion during fertilization. The final nine chapters are headed 'Applications of Membrane Fusion Techniques'. Collectively, they make fascinating reading, covering, for example, production of monoclonal antibodies, use of liposomes in drug targeting, and applications to genetic engineering. But here, as throughout this volume, one knows for a fact, or one suspects, that the story has moved on, the techniques have been modified and new questions are being asked.

Overall, therefore, although there is much of general background interest here, this volume largely comprises a presentation of old goods in new packaging, and cannot be recommended for anyone seeking up-to-date information on research on membrane fusion.

J.W. Payne