

the book was conceived as a collection of related reviews in which collated data on normal cells would be compared with oncogenically transformed cells. The Editor has, however, successfully encouraged his contributors additionally to extrapolate from established facts to the discussion of hypotheses concerning the possible significance of the observations reported. This has not only increased the usefulness of the book: it has also made for more interesting reading.

The first eight chapters are well interrelated, and an initial chapter provides a general background for these articles. For those coming newly to the field, the introductory chapter also raises some important points (that are elaborated further in the individual chapters) regarding basic premises in cancer research, viz 'in attempting to obtain molecular explanations for the phenotype of transformed cells, which is difficult enough in itself, one must be aware that this is still at least one remove from an explanation of the tumour cell phenotype. On the other hand, if one does not

take advantage of the potential of tissue culture, useful molecular information about tumour cells is difficult to obtain'.

The remaining chapters are on early events in growth stimulation, surface components of erythrocytes, adhesive specificity among embryonic cells, and cell surface and development in *Dictyostelium discoideum*. The four articles are equally well written and interesting, and they have apparently been included to provide a context for the consideration of molecular changes in transformed cells. Some of the topics, in particular the erythrocyte membrane, have however been well covered in reviews published elsewhere.

I warmly recommend this book, which contains a wealth of well-documented information (up to 1977/78) that is carefully presented and thoughtfully discussed. It is both a good reference source and an interesting readable volume.

J. A. Lucy

### *Structure and Function of Biomembranes*

Edited by K. Yagi  
Japan Scientific Soc.; Tokyo, 1979  
xi + 244 pages. \$46.00

As is explained in the preface by the Editor, who was the Congress President, this book records the proceedings of a Symposium held in Nagoya, Japan, in October 1977 during the First Congress of the Federation of Asian and Oceanian Biochemists.

The book is divided into four unequal sections, and it contains a total of 21 articles by distinguished contributors. As the individual chapters vary considerably in both style and length (from some 7–17 pages), it appears that some are essentially published versions of the symposium lectures, while others have been expanded to a larger format. There is no subject index.

The first section on membrane structure contains a chapter on the application of chemical and physical methods to studies on lipid–lipid and lipid–protein interactions, one concerned with the interactions of lysophospholipids with cell membranes, and one on

ligand–protein interactions and oxidative phosphorylation that really belongs in the final section of the book. In the second section (cell surface and biological function) there is a mixed bag of articles on amino acid and hexose transport in cultured cells, the chromaffin granule membrane, cell surface sugars, membrane proteoglycans, the extracellular regulation of matrix synthesis in chondrocytes, hepatic binding systems in the regulation of serum glycoprotein metabolism, and human histocompatibility antigens. The two articles in section three are on the biogenesis of the endoplasmic reticulum in liver, and membrane biogenesis in mutant mitochondria.

The final section is the only part of the book (approximately 100 out of 240 pages) in which there is a sufficient number of related articles to permit the chosen topic to be considered in any breadth. Here there are nine contributions devoted to various aspects

of energy transduction and ATP synthesis.

This book will clearly be of most use to those working on energy transduction and oxidative phosphorylation in mitochondria. Its interest for others will be limited by the fragmentary coverage of mem-

brane phenomena provided especially as a number of the other topics covered, although undoubtedly interesting, are unexpectedly specialised for a relatively slim book with such a very general title.

J. A. Lucy

*Receptor Binding Studies in Adrenergic Pharmacology*

by L. T. Williams and R. K. Lefkowitz

Raven; New York, 1978

ix + 157 pages. \$21.45

With some notable exceptions biochemists have until recently been unaware of the intricacies of cellular interactions with the catecholamines. It has been enough in most studies to demonstrate that a given process (or reaction) is stimulated or inhibited by the catecholamines and little attention has been paid to the characteristics of the receptor which is involved. Two developments have made adrenergic pharmacology a topic of considerable importance to biochemists interested in cellular responses to the catecholamines and in the mechanisms involved in intracellular transmission of the signals generated by the interaction of the catecholamine with its plasma membrane receptor. First, it is now well recognised that the nature of the stimulus-response coupling mechanisms is related to the type of catecholamine receptor which is present on the cell under study. For example,  $\beta_1$ -adrenoceptors appear in most, if not all, instances to mediate their effects via activation of adenylate cyclase and an increase in the concentration of cyclic 3',5'-AMP. In contrast,  $\alpha$ -adrenoceptors do not appear to utilise this mechanism and current evidence, although far from conclusive, implicates changes in cytosolic  $\text{Ca}^{2+}$  concentration as a crucial event in the coupling sequence, associated in some cases at least with inhibition of adenylate cyclase. Second, adrenergic pharmacology has produced a very wide range of drugs with widely variant selectivities for the different adrenoceptor types and sub-types. The selectivity of such compounds can be employed to good purpose in investigations of the metabolic effects of the catecholamines, although as yet they have not been widely exploited. There is therefore plenty here of interest to the biochemist; all that is needed is a well-informed and sympathetic

guide to the unfamiliar realms of pharmacology, a role for which Dr Lefkowitz is uniquely well qualified.

In this book Drs Lefkowitz and Williams provide a lucid and extremely readable introduction to adrenergic pharmacology. Although the focus is on the use of binding studies to characterise adrenoceptors the book provides also an excellent account of the background to adrenoceptor classification. In addition, the binding data are set into their physiological context and the authors consider how such studies can provide information on the regulation of tissue responsiveness to catecholamines. On a more practical level the theory of the ligand-receptor interaction is developed and various problems inherent in the theory are considered while an entire chapter is devoted to the methodology required to obtain meaningful binding data on adrenergic receptors. The latter will be of particular value to any workers contemplating a study of this type since it contains practical advice on the difficulties likely to be encountered.

I have therefore no hesitation in recommending this book most highly to anyone whose studies cover the topic of cellular interactions with catecholamines whether or not binding studies are contemplated. My only reservation is the rapidity with which this field is moving at present. For example, in respect to Dr Lefkowitz's own studies, the book makes no mention of the elegant use of selective antagonists coupled with computer analysis of the binding curves which allows objective analysis of data obtained for tissues containing more than  $\alpha$ - (or  $\beta$ -) adrenoceptor sub-type. Perhaps a revised edition (or volume 2) will allow for these and other important developments.

M. C. Scrutton