

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, β_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, α -adrenoceptors do not appear to utilise this mechanism and current evidence, although far from conclusive, implicates changes in cytosolic 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 α - (or β -) adrenoceptor sub-type. Perhaps a revised edition (or volume 2) will allow for these and other important developments.

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