

Mammalian cell membranes

Mammalian Cell Membranes. Vol. 2: The Diversity of Membranes. Vol. 3: Surface Membranes of Specific Cell Types. Edited by G. A. Jamieson and D. M. Robinson. (Butterworths: London and Boston, Massachusetts, 1977.) £18 each volume.

THESE two volumes continue an extensive coverage of the structure and function of cell membranes under the general editorship of G. A. Jamieson and D. M. Robinson. As in the first volume of the series, the editors adopt a relaxed attitude towards the form and content of each contribution, with the inevitable results of an uneven mixture of styles and a considerable amount of overlap in content. Nevertheless, a considerable amount of enjoyment is to be had from these books.

In the opening chapter of volume 2, Emmelot provides an excellent short account of the composition and organisation of the plasma membrane. His discussion of the interactions of the plasma membrane with microtubules and microfilaments, one of the growth areas in present-day membrane research, is particularly useful and includes a reminder that some of the initial effects of various drugs disrupting cytoplasmic contractile elements may be directly on the plasma membrane. Kramer and his colleagues then present a personal and very interesting account of membrane flow, the migration of components from the membranes of the endoplasmic reticulum to other membranes including the plasma membrane.

These two rather general reviews are followed by short chapters concerned, respectively, with membranes of the Golgi apparatus (Favard), mitochondria (Capaldi), lysosomes (Wattiaux), microbodies or peroxisomes (Tolbert and Donaldson) and nuclei (Fry). The volume is rounded off with two somewhat dated accounts of myelin and basement membranes having no full reference later than 1973, a serious drawback in these rapidly expanding fields, in which new membrane components are turning up regularly to transform previous views of membrane organisation. It is surprising too that the primary sequence of the basic protein of myelin, which was established several years ago, is nowhere discussed, particularly in connection with its encephalitogenic properties.

The most complete analysis of glycoprotein structure is in the first chapter in volume 3 by Segrest, which is particularly valuable in presenting his current views on the molecular topography of the non-polar domain of this glycoprotein. There is interesting speculation on the state of self-association of glycoprotein within the membrane and the possibilities of these aggregates in facilitating transport. One of the editors (Jamieson) provides an authoritative summary of platelet ultrastructure, perhaps the clearest case for intimate inter-relationships of the plasma membrane with underlying microtubules in a cellular function. Jamieson also summarises the intriguing evidence for collagen-platelet interactions being mediated through surface located glycosyl transferase. As Jamieson points out, some of the disagreement in this area may be due to an unwarranted extension of his original theory, concerned with simple adhesion of platelets on to collagen, to collagen-induced platelet aggregation. The membrane systems of lymphocytes and purification of their antigenic markers are then reviewed, followed by summaries of the extensive literature on tumour cells including an excellent fresh appraisal of the complex "transformation phenotype" by Paster-

nak. Volume 3 closes with three descriptive essays, respectively on the sarcoplasmic reticulum of muscle, composition and structure of excitable nerve membranes and the interactions of sperm and egg membranes in fertilization, and finally a detailed account by De Luca of vitamin A biochemistry and effects on epithelial cell membranes. The role of retinol compounds in transglycosylation is well covered.

To summarise, the series on *Mammalian Cell Membranes* is shaping up as a useful collection of articles which, despite considerable dispersal and overlap between the various volumes and rather indifferent indexing, serves a useful purpose as a source of the recent membrane literature. In one or two cases the author does more, illuminating as well as cataloguing the field. One further point: although the line drawings are in general excellent the reproduction of original photographs and electron micrographs is usually poor. In volume 2, which relies heavily on such reproductions, this is a serious drawback and is always a nuisance since often the pictures illustrate a crucial argument. **R. C. Hughes**

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Predator-prey relationships

The Ethology of Predation. By E. Curio. Pp. x+250. (Springer: Berlin and New York, 1976.) DM72; \$29.60.

THIS is a thorough and well-presented review of a wide range of literature up to and including 1973 on the general subject of predator-prey relationships, primarily from a behavioural point of view. It will serve as a valuable reference work for many years to come. Although the main bulk of the book is concerned with behavioural aspects of predation (using the term in a very broad sense), dealing with questions of how animals detect, search for and capture food, there are brief excursions into physiological and ecological aspects of the subject. These peripheral, but important areas are dealt with in less detail than the pure behaviour, and one feels that the author is less happy with them. For example, among the ecological aspects, the discussion of the functional response contains several minor errors, such as the assertion that a type 3 response only occurs when there are at least two alternative prey types. Similarly the summary of optimal foraging theory on pages 70-80, heralded on the book cover as a link

with modern ecology, is confusing and somewhat inaccurate, and the author does not emphasise that the theory he presents at this stage applies equally to problems discussed in other parts of the book. Much of the literature on optimal foraging has appeared since 1973, so Curio's account is already dated.

Curio is, however, encyclopaedic, accurate, and critical in reviewing the more traditional ethological literature. For example, both his discussion of prey selection and the accounts of specialised hunting techniques are excellent sources of information. In the latter sections, the literature survey covers an impressive range of examples, from African natives stalking their prey under the disguise of a stuffed hornbill's head, to Green Herons hunting for fish by dropping pellets of commercial fish food into a pool at the Miami Seaquarium. My only criticism of these behavioural chapters is that the material is presented as a series of rather separate sections without a great deal of attempt to unify them. This makes this useful book more like a work of reference rather than an introduction to the subject.

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