experiments which indicate two components (see page 54) and the deuterium NMR experiments which show a single homogeneous lipid phase (page 140) for the same reconstituted protein–lipid systems, is related to the different time scales of the two techniques. Exchange between the boundary layer lipid and the remaining lipid is fast on the deuterium NMR time scale (exchange rate is faster than $10^{-4}$ s) whereas ESR spectroscopy corresponds to fast motions with rotational correlation times for immobilised lipid, about $10^{-8}$ s. The exchange frequency for lipid molecules within fluid lipid bilayers is about $10^{-7}$ s.

Marsh and Watts nevertheless state that the immobilised lipid component, as seen by spin labels, bears a *fixed* stoichiometry to the protein *independent* of the lipid to protein ratio (see page 106). However, even this view has recently been modified. In a more recent publication Marsh and co-workers accept, as suggested by other workers, that departures from fixed stoichiometric ratios can occur, arising from protein–protein contacts which are particularly probable at high protein to lipid ratios.

Boggs et al. in their chapter discuss lipothilin and suggest that this protein 'because of its very hydrophobic character and transmembrane location also has boundary lipid' (see page 19). They do accept that rapid exchange between the lipid next to the protein and the remaining lipid does occur, as indicated by the deuterium NMR experiments.

The chapter on photochemical crosslinking by Khorana and colleagues is a very useful one for summarising the various methods and the molecules used in such studies and examples are given of applications of the technique such as the identification of the lipid binding site of the phosphatidylcholine transfer protein.

The final chapter on thermotropic phase transitions is useful for its data but could have been more extensively discussed. In general I found these two edited volumes by Jost and Griffith worthy of careful reading.

D. Chapman

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# *The Sarcoplasmic Reticulum (Transport and Energy Transduction)*

by Leopoldo de Meis

*John Wiley & Sons; New York, 1981*
xv + 163 pages. £29.25

The calcium ATPase (or calcium pump) of skeletal muscle sarcoplasmic reticulum is one of the most studied of all membrane transport proteins. During the past 15 years a very large number of kinetic studies of the purified enzyme have been made. These have provided information for the construction of a detailed kinetic model of the mechanism of calcium transport by this protein. This book is a description of many of these experiments performed both by the author and other workers. It sets out to give in detail the results of steady-state and transient kinetic experiments that have led to the formulation of a model of the reaction sequence with eight intermediate states. The chapters are arranged so that generally each one describes experiments designed to elucidate one or two steps of the sequence. This leads to a certain amount of repetition although this is not excessive. The style is generally clear, and all the experiments are

described in sufficient detail for both the results and the conclusions deduced from them to be readily understood. Partial reactions are given before each new set of experiments, which saves a reader who is not actually working on the ATPase from having to refer continually back to a complete scheme. The references cover most of the kinetic experiments on the enzyme to 1980 and there is adequate discussion of disagreements between different workers.

However, no other aspects of sarcoplasmic reticulum function are covered in this book. Topics such as the physiological control of calcium release and uptake during a contraction cycle, other proteins of the sarcoplasmic reticulum, quantitative aspects of calcium movements in muscle, structural studies of the calcium ATPase, etc. are not discussed at all. This is not meant as a criticism of the book, since the author deliberately sets out to cover one aspect of the subject only. It is meant as a warning that this book should not be bought by those expecting a general treatise on sarcoplasmic reticulum. It is written purely as a detailed review of kinetic studies on the calcium ATPase, and from this limited viewpoint can be recommended.

P.J. England

# *Interaction of Platelets and Tumor Cells*

## Progress in Clinical and Biological Research Vol. 89

Edited by G.A. Jamieson

*Alan R. Liss; New York, 1982*
xx + 523 pages

The two very active research fields, cancer and coagulation, have been moving inexorably towards each other during the last decade or so and although it is well established that clotting abnormalities (second only to infections) are one of the major causes of death in cancer patients, the value of anticoagulant regimes in the treatment of malignancy is still very much a controversial issue. What is more certain, however, is that there are so many features of the growth and spread of tumours that appear to interdigitate in some way with the body's haemostatic mechanisms that intensive investigations of the various factors and the cell to cell surface interactions on which the close association of these two processes depend can be amply justified since they may well lead to a further understanding of metastatic processes.

Around twenty years ago it was first demonstrated in tumour-bearing animals that the incidence of metastases could be substantially reduced by decreasing the circulating platelet population and some years later it was clearly shown that the metastatic potential of tumour cells in vivo roughly correlated with their capacity to aggregate platelets in vitro. Strangely, with the passage of time and despite the current wealth of knowledge we now possess about the physicochemical properties of the surface membranes of both platelets and tumour cells there is still a paucity of information on what these cell interactions may mean at the 'small print' molecular level. Clearly this was a major stimulus for devoting the 1981 Chesapeake Conference to this important topic area. The present publication, which is Vol. 89 in a highly regarded series dealing with progress in clinical and biological research, brings together all the major contributions to that conference which was organised and chaired by the editor.

Inevitably when a first time conference is focuss-