Protein Secretion. A Critical Analysis of the Vesicle Model

by S.S. Rothman

John Wiley; New York, Chichester, Brisbane, Toronto, Singapore, 1985

xii + 347 pages. £86.95

As the title indicates, this is a polemical book; its subjectivism goes beyond that usually encountered in monographs.

Based on data from his laboratory, the thrust of the author is directed against the vesicle 'dogma', according to which secretory proteins initially cross the endoplasmic reticulum membrane and are then transported inside vesicles by fission-fusion processes. According to the view of S. Rothman, proteins are able to diffuse across membranes of the secretory granule and of the cell.

The book is introduced by 20 pages of philosophical remarks on the 'constructed' nature of the vesicle hypothesis. After a relatively short description of the vesicle paradigm, the main part of the book is devoted to its 'testing'. References are generally scarce, self-citations prevail and recent developments are often ignored. For example, in the chapter on the signal hypothesis, which is actually copied from a previous book edited by S. Rothman, of the 19 references all but one date before 1982.

The book may be of interest to specialists since it questions seemingly firm facts, but it is misleading to the uninitiated.

Tom A. Rapoport

Pyruvate Carboxylase

Edited by D.B. Keech and J.C. Wallace

CRC Press; Boca Raton, FL, 1985

262 pages. $90.00 (USA), $104.00 (elsewhere)

Monographs devoted to descriptions of the biochemistry and physiology of single cells or tissues are commonplace. However, one could be forgiven for wondering whether a similar approach is justifiable for a single enzyme. This volume provides a clear answer, albeit for an enzyme having a very crucial role in both microbial and vertebrate metabolism and showing considerable diversity in its regulatory properties as a consequence of differences in metabolic organisation in the various species in which it is present. In addition, as indicated by Professor Harland Wood in his preface, pyruvate carboxylase is no stranger to controversy possibly as a consequence of its crucial metabolic role and the range of interesting properties which it displays. In addition to examples cited in the Preface one could add the prolonged controversy in the 1960's regarding the sub-cellular localisation of the enzyme in mammalian liver (which graphically illustrated some of the factors that may complicate such an analysis) and the relationship between the bound metal ion present in most pyruvate carboxylases and the catalytic mechanism of the enzyme. These aspects, and many others, are thoroughly analysed in this monograph, which in a very comprehensive treatment brings together consideration of present knowledge of the molecular structure, reaction mechanism and

regulatory properties of pyruvate carboxylase. The roles of the enzyme in various tissues and species is also discussed in the context of the regulatory properties determined for the isolated enzyme and the factors which influence the total level of enzyme activity present. In addition a chapter is devoted to disease states associated with decreased pyruvate carboxylase activity both in man and in other vertebrates.

A most valuable feature of the monograph is the very extensive tabulation of published data and the equally comprehensive reference list consisting of just over 1000 articles. As a consequence it will also serve as an extremely valuable reference source for the first phase of the studies on pyruvate carboxylase. In this respect its preparation at this time is opportune since much of the basic descriptive work on this enzyme is nearing completion while little information is yet available either on the structure of the pyC gene in either prokaryotes or eukaryotes or on the detailed 3-dimensional structure of the protein. Elucidation of these latter aspects which constitute the next phase of studies on this enzyme are probably the only way in which many of the remaining problems and uncertainties will be resolved.

I shall certainly value my copy of the monograph as the definitive source of information on an enzyme in which I have a long-standing interest and have no hesitation in recommending it to other workers with similar inclinations. It is a fitting tribute to the late Professor Merton Utter to whom all of those who have worked on pyruvate carboxylase owe so much.

M.C. Scrutton

Progress in Protein-Lipid Interactions, Volume 2

Edited by A. Watts and J.J.H.H.M. De Pont

Elsevier; Amsterdam, 1986

344 pages. $98.25, Dfl. 265.00

The interactions of lipids with membrane proteins are obviously important for the structure of the membrane. In addition they clearly modulate, and perhaps regulate, the behaviour of many of the proteins. In recent years, the study of these interactions has generated a good deal of activity and a certain amount of controversy. Progress has depended strongly on technical developments, and it is thus appropriate that this excellent book has a strong methodological flavour.

The first four chapters are concerned with the application of structural techniques: X-ray and neutron diffraction (Blaurock), NMR spectroscopy (Dreese and Dratz, and Oldfield et al.) and Fourier transform infrared spectroscopy (Mendelsohn and Mantsch). The short chapter by Oldfield and his colleagues describes their studies of bacteriorhodopsin by multinuclear NMR, which clearly differentiate 'surface' and 'buried' amino-acid residues. The remaining three chapters in this section are broader reviews of the subject areas. Each includes sufficient introductory material to allow the reader unfamiliar with the specific technique to understand it in general terms, and reviews the information the technique has provided. All three are excellent reviews – clearly written, critical, and reasonably up-to-date. Until recently, the physical information available about lipid-protein interactions related almost entirely to the lipid component, and this is naturally reflected in these chapters. However, they also describe the recent work – notably by neutron diffraction and NMR of isotopically labelled species – which promises to provide much more detailed information on the way in which the lipid environment affects the protein.

The next three chapters are also largely methodological, but concerned with 'wet' biochemistry. Moller, Le Maire and Andersen discuss the use of non-ionic and bile salt detergents

Unconventional Protein Secretion. Methods and Protocols. Editors.Â Analysis of Yeast Extracellular Vesicles. Marcio L. Rodrigues, Debora L. Oliveira, Gabriele Vargas, Wendell Girard-Dias, Anderson J. Franzen, Susana FrasÃ©s et al. Pages 175-190.Â secretory pathways UPS analysis organisms SP lacking proteins protein traffic. Editors and affiliations. Andrea Pompa. Analysis of proteins secreted by Mtb has been of interest to the field of | Find, read and cite all the research you need on ResearchGate.Â Figure 1. Western analysis of secretion of EsxH by BCG. BCG containing an empty vector control and EsxG-EsxH-FLAG expression construct. (FLAG tag at C terminal of EsxH) were analyzed for presence EsxH by anti-FLAG western.Â Curli are extracellular amyloid fibres produced by Escherichia coli that are critical for biofilm formation and adhesion to biotic and abiotic surfaces. CsgA and CsgB are the major and minor curli subunits, respectively, while CsgE, CsgF and CsgG direct the extracellular localization and assembly of curli subunits into fibres. In addition, protein modeling and analysis were performed to access the potential binding of the spike protein of 2019-nCoV with human cell receptor, angiotensin-converting enzyme 2 (ACE2). Results: Detailed genomic and structure-based analysis of a new coronavirus, namely 2019-nCoV, showed that the new virus is a new type of bat coronavirus and is genetically fairly distant from the human SARS coronavirus. Structure analysis of the spike (S) protein of this new virus showed that its S protein only binds much weaker to the ACE2 receptor on human cells whereas the human SARS coronavirus exhibit