

readership, and would probably be found excessively detailed and specialized by even final-year undergraduates. Most of the reviews cite 50–100 references, dated up to 1994.

The first section, on signal transduction, covers the cellular roles of RAS proteins, casein kinase-2, and G-protein coupled P_2 purinoreceptors. The next section contains six reviews on membrane traffic, including the import of proteins into mitochondria and of bacterial toxins into eukaryotic cells, the functions of non-clathrin coat proteins in vesicular traffic and of rab5 in endocytosis, the control of autophagy, and the intracellular traffic of glycosphingolipids. The book's stated emphasis on structure-function relationships is rather less obvious in these two sections than in later ones. Rather surprisingly, vesicle targeting and fusion, currently a very hot topic, is not covered – perhaps it was decided that the area is already sufficiently reviewed.

There follow four contributions on bioenergetics (H^+ -translocation by the mitochondrial electron-transport chain, the assembly, control and mechanism of ATP synthase, and structures of mitochondrial transporters). The mechanistic controversies that continue to attend the mechanism and stoichiometry of proton-pumping by the electron-transport chain are explored, but are only touched on for F_1F_0 .

The next sections cover some relatively unfamiliar topics – cyclic ADP-ribose in erythrocytes, Mg^{2+} homeostasis in the heart and the role

of mucins in cell adhesion – as well as signal transduction by growth-factor receptors and by $\beta 1$ -integrin.

Three contributions on the structures of membrane proteins (intra-membrane helix interactions; annexin V; and porin) are preceded by a brief overview of the topic. Finally, a single review in the section on membranes and disease covers the possible involvement in ageing and disease of damage to mitochondrial DNA.

In general the clarity and organization of these reviews are excellent. The figures, mostly line-drawings and monochrome of course, are adequate without being beautiful. The editors have done a fine job in achieving balance, breadth and a consistently high quality of content, although there are minor criticisms: the three-page comparison of 65 amino-acid sequences of transporters, for which readers with average vision will need a magnifying glass, could surely have been omitted; the index adds little to the usefulness of the book; and the basis for assigning topics to particular sections is not obvious – as is the reason for division into sections at all, as with one exception there are no overviews, and there is no inter-referencing between reviews. Never mind: each topic covered fulfils the criteria of intrinsic interest and recent progress, and each review contributes handsomely to a very worthwhile collection.

David K. Apps

The Peroxisome: A Vital Organelle; Edited by C. Masters and D. Crane, Cambridge University Press, Cambridge, UK, 1995; xvii + 286 pp. \$ 69.95 (hb). ISBN 0521 482127.

The peroxisome has been the neglected child in text books of cell biology and there has been a void on informative up-to-date texts dealing with this organelle. The last review-book by Böck et al. was published in 1980 and there has been since an explosion of information, both in biology and medicine on this subject asserting the pressing need for an updated general text. The book by Masters and Crane fills this void extremely well. The authors are wellknown in the field and have contributed personally to its development.

The text consists of eleven chapters each comprising 20–30 pages. It contains numerous fullpage diagrams and many high quality illustrations, including immunoelectron micrographs. Each chapter closes with a one page summary and a short list of relevant references. In addition, there is a bibliographic appendage consisting of over 500 important references published until March 1994 with some of the older and many of the recent publications in the field.

After an introductory chapter covering most of the history, general properties and the nomenclature of peroxisomes, the chapters two through seven deal with the enzymology, intraparticle organization of proteins and the various metabolic pathways in peroxisomes. Their involvement in the catabolism of lipids via the β -oxidation pathway and their anabolic functions with the synthesis of cholesterol, ether lipids and dolichol are well-covered. This is followed by other diverse metabolic functions of peroxisomes in animal and plant cells, such as their participation in gluconeogenesis, glyoxylate cycle and purine metabolism. In an interesting and somewhat speculative chapter authors try to tie together the different metabolic functions of peroxisomes and their interactions with other organelles and the regulatory factors involved. They must admit however that 'the very broad substrate range and the wide-ranging metabolic involvement

pose many technical problems in defining the details of the regulatory relationship for this organelle'. Nevertheless, their ideas must inspire future investigators to try to develop the appropriate technology to unravel some of those still hidden secrets of peroxisomal function and regulation.

The chapters on '*Biogenesis and Turnover of Peroxisomes*', '*Peroxisome Proliferation*' and '*Peroxisomes and Human Disease*' are highly informative and up-to-date, without getting lost in details. This is very satisfactory since recently numerous reviews have been published dealing with those specific aspects of peroxisomal biology. The book closes with a review of the recent progress and the future perspectives in education and science from the viewpoint of peroxisomologists (or as a matter of fact peroxisomaniacs). A good example of the importance of investigation on peroxisomes and its effects on the community life is presented here by the description of 'Lorenzo's oil', a movie released in 1993 by Universal Studios. It deals with the life of a child suffering from adrenoleukodystrophy and the attempts of his parents to save him by self-education and development of a special diet lowering the level of his serum very long chain fatty acids.

The book is well-written and very enjoyable to read. It provides an excellent up-to-date reading material for graduate and even undergraduate students because the topic is poorly covered in almost all current textbooks of cellular and molecular biology. But also experts benefit from it immensely because it contains many interesting and unorthodox views on several aspects of investigation on peroxisomes.

H. Dariush Fahimi

Immune Reactions, Headlines, Overviews, Tables and Graphics; Edited by H.-H. Sedlacek and T. Mörry, Springer-Verlag, Berlin, Heidelberg, New York, 1995. xiii + 581 pp. DM 148.00 (hc). ISBN 3-540-58957-0.

'Immune reactions' is an overview of most aspects of mammalian immune reactions presented in the form of schematic diagrams, figures and tables. The content is based on the lectures of the two authors teaching at the Medical School at the Phillips University, Marburg, Germany. The goal has been to provide students, instructors and researchers in immunology a rapid access to the complicated structures and interactions in the immune system. The condensed presentation of the content allows a comprehensive and impressive compilation of data normally not included in text books on immunology. The first 12 chapters include the basic concepts and molecular systems in

immunology (antigen presentation, T- and B-cell differentiation, antibody formation, T-cell receptor, cytokines, cytokine receptors and complement activation) whereas the remaining 15 chapters cover more special topics as immune reactions in relation to the biology of endothelial cells, the clotting system, extracellular matrix, angiogenesis, CNS and various diseases including allergy, autoimmune diseases and cancer. Furthermore a chapter describes somatic gene therapy and another chapter is an update of the CD classification system.

The book is a good supplement to basic textbook in immunology and it may be beneficial for researchers and others who want to have a rapid