

The secretion of lysosomal enzymes and the retention of indigestible material within the lysosomes are often normal cellular functions. In chapter 6 extremes of these processes, due either to a specialised cell function or to a genetic defect are described.

The work concludes with a description of the biogenesis of lysosomes. The biochemical and immunocytochemical evidence for the major common pathway for the biosynthesis and intracellular transport of lysosomal enzymes is presented but alternative pathways and anomalies are not ignored. Finally there is speculation about the regulation of the lysosomal system.

Inevitably in such a fast moving field, exciting information appears between writing and publication. However, typically, the author attempts to minimise this problem by 'Bulletins from the front' - very brief synopses of significant contributions appearing in this time!

Several stylistic features contribute to the success of this volume. The text is easy to read, with clear headings, sub-

divisions and highlighted key words. There are ample figures either illustrating the appearance of lysosomes or providing biochemical data to support a point. The absence in the text of citations to the original literature makes for easier reading but each chapter concludes with a list of selected papers and books for further reading. Footnotes elaborating on a controversial hypothesis or explaining jargon or the properties of a particular cell system are very helpful, as is the frequent cross-referencing to other relevant sections of the book.

The lists of scientists who have read draft chapters or contributed by discussion or data are impressive and lend authority to the work. In the preface Dr Holtzman restricts the value of this book to 'researchers interested in obtaining a broad background'. In my view anybody working on lysosomes will also learn a lot from reading this highly personal, unified and stimulating account of lysosomes.

Bryan Winchester

Cell Signalling by N.G. Morgan; Open University Press; Milton Keynes, 1989; xii + 203 pages; £14.95 (paperback), £35.00 (hardback)

Noel Morgan's book is aimed primarily at undergraduate and postgraduate students of biochemistry, physiology and pharmacology, and would also be useful to pre-clinical medical students. It covers the rapidly advancing field of cell signalling in a comprehensive and very readable style.

The early chapters deal with theoretical aspects of cell signalling, signal amplification, receptor theory and analysis, receptor desensitization and so on. There follow a series of chapters on the signalling systems, G-proteins, cyclic nucleotides, inositol lipids. These in turn are followed by chapters on insulin and growth factors, arachidonic acid and eicosanoids and finally on the role of protein phosphorylation in cell regulation.

Each chapter is illustrated with clear simple diagrams and has a 'further reading' section which is subdivided by topic within the chapter, so that the references to a particular subject can easily be identified. The diagrams and figures are clear and uncluttered, although they may in some cases be taken as over-simplistic.

This book can certainly be recommended to those student groups at whom it is aimed, and also to other readers interested in obtaining a balanced introduction to this fast-developing area of molecular cell biology.

S.L. Howell

Liposomes: A Practical Approach; Edited by R.R.C. New; Oxford University Press; Oxford, 1990; 301 pages; £22.50

This book will be of great value as a laboratory manual to both newcomers and experimental scientists working in liposomology. It provides an abundance of information on useful and commonly applied methods and discusses properties of liposomes and theory of membrane processes. A book like this is long overdue - the only similar manual (3 volumes of 'Liposome Technology', edited by G. Gregoriadis, CRC Press, 1984) discusses limited methods on selected topics. The great strength of this book is that it brings all the relevant and up-to-date information on methodology and theory together, and makes everything easy to follow.

The book contains 6 chapters and 3 appendices. The topics

covered include properties of phospholipids, membranes and liposomes; techniques on preparation and characterisation of liposomes; surface conjugation of proteins and other ligands; fluorescence techniques; interactions of liposomes with cells; radiolabelling of liposomes; techniques to study the in vivo fate of liposomes. Each topic is covered extensively and difficult techniques are made easy by illustration. For example, the method of negative stain electron microscopy of liposomes is made easy by providing 5 illustrations. Methods for the preparation and purification of various chemicals and reagents such as the purification of egg yolk phosphatidylcholine, carboxyfluorescein, preparation of Sendai virus, etc.

are provided in the Appendix. It also lists names and addresses of manufacturers and suppliers of specialised chemicals and equipment used in liposomology, together with a list of important publications on the application of liposomes.

The layout of the book and chapters therein is well done, the index is thorough and the illustrations and diagrams are good. It is good value for money and I recommend that my colleagues keep this book in their laboratory.

H.M. Patel

Modern physical methods in biochemistry, Volume 11B; Edited by A. Neuberger and L.L.M. van Deenen
Elsevier, Amsterdam, New York, Oxford, 1988 xi + 308 pages; \$94.25

Compiling a volume of methods can be a daunting task and writing the contributions yet more difficult. The choice of 'methods' to be included is always subjective and this volume is the second in a two volume contribution to the 'New Comprehensive Biochemistry' series from Elsevier. Volume 11A covers protein crystallography, NMR, ESR, mass spectroscopy, circular dichroism and optical rotary dispersion. With the 'heavy weights' and well established methods dealt with, it is easy to make volume 11B almost an after-thought. A cursory glance at the chapter titles might lead one to suppose this is close to being true, but the choice made by the editors is an interesting, if not indeed an informed and, in some cases, very useful one.

The contributor's difficulty is whether to write a 'how to do it' chapter or a 'review of the latest work' chapter. Here, the editors have made their intentions clear; no 'how to do it' with nuts and bolts detail chapters are in this volume. Reviews do appear, unfortunately, but some authors tread the line skilfully. The format of each chapter is different, with everything from a 'theory, instrument, results' approach to one chapter being essentially an historical ramble through the method.

A failure with such volumes, which many contributors worry about when writing, is the tardiness of appearance on the shelves of this kind of compilation. One author admits to references being included up to mid-1986. However, three authors include just a single paragraph in their chapter, essentially saying that the newest development of the method has shown a specific improvement, with a list of systems studied but no further details or information. Adjunct paragraphs like this suggest addition in the proof stage, but surely if this is the 'newest, latest and best' about the method, should the development not get a major discussion? If there is one criticism of the editorial aspect of this volume, this is it. New developments should have been expanded and made more prominent, not appearing as after-thoughts.

Chromatography today is surely one of the poor cousins of biochemistry. Although vital to virtually every aspect of modern molecular science, what funding body would give more than modest support for a project to improve or develop new chromatographic methods? Despite being the territory of industry nowadays perhaps, two chapters in this volume are dedicated to the method. Colpan and Riesner give a short, but fact-filled contribution on high performance liquid chromatography of nucleic acids. With a modern day need for routine chromatography of nucleic acids in various stages in cloning and sequencing procedures, production of DNA fragments and plasmids, as well as in diagnostic applications for medicine, phytopathology and testing genetic

disorders and infectious disorders, this chapter is certainly a valuable contribution. Sufficient technical information is provided along with general hints for extension to new applications. What is missing, the general principles of chromatography, is found in Hearn and Aguilar's contribution on the chromatography of peptides and proteins. Ways of predicting chromatographic properties are presented, and even suggestions about how secondary structural considerations may affect elution properties, even though it is quite unclear whether such structural features observed in elution solvents are still maintained during chromatography itself. The new and pressing need to deal with hydrophobic membrane associating peptides is also systematically and informatively covered. If there is a criticism of these two chapters in particular, if not others, it is that no indication of potential problems are given; one has the feeling that only the best results are presented with no indication about the hard effort expended to achieve such 'textbook' results.

The lack of organization in chapter 1 gives the reader the impression that the author, Lakowicz, is an exceptionally well established expert who is entirely immersed in Fluorescence spectroscopy and its application to biological systems, but that to communicate this knowledge does not come easily. Most annoying and distracting is the continual oscillation between technical aspects, review of results and theory, with little coherence. This chapter is certainly not instructive, but could be the transcript of a detailed conversation between established experts. Poor proof reading contributes further to the distraction; Figure 3 is frequently referred to when Figure 2 should have been referenced, figure legends are often less than informative (Figure 18 and the curve fitting routine, for example), and reference to 'the data for nuclease...' with no indication about how or where it originated, are typical examples of irritations encountered. In addition, this is one of the chapters which mentions the latest developments (pulse laser instruments) but devotes no more than a short paragraph to this new development and list of applications with no attempt at informing the reader further about 'modern methods'.

In sharp contrast, 'Raman and resonance Raman' by Carey and 'X-ray and neutron scattering' by Perkins, take the reader from a similar base-line in assuming a modicum of biophysical knowledge, to a high level of appreciation of the methods with an exceptionally clear pedagogical style which nurtures the reader to a position of confidence and familiarity with the techniques; both chapters would make excellent undergraduate or postgraduate teaching texts. Carey explains basic principles and leads the reader convincingly up the

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