

chapters are those which concentrate on ideas even if these are reiterations of previous statements. Thus, Bar-Sinai et al. consider the regulation of adenylyl cyclase and (yet again) challenge the idea that G, necessarily dissociates and that only then does α , interact with and activate the catalytic unit. This is an argument which seems to have evaded the textbooks but that doesn't mean that it should be allowed to disappear. Peter Cobbold and his colleagues present an extensive review of their data on Ca^{2+} oscillations and consider a proposal for the mechanisms by which these are regulated. Another article which I have enjoyed is that by Sophie Loterstajn and (many) colleagues which concerns the question of hormonal control of plasma membrane Ca^{2+} pumps. Possibly my appreciation here is conditioned by the relative obscurity of this topic compared with most of the articles which cover the familiar ground of receptors, G-proteins, ion channels, inositol metabolism etc.

Although at about 18 months, the volume has appeared more rapidly than many of its ilk, as far as I can tell, almost everything that is offered in these pages has long since appeared in print in the journal articles in which science is properly reported. Though I would not deny that I am quite

happy to be the possessor of this book, I certainly would not have purchased a copy: in my opinion, along with most collections of this kind, it is almost useless.

I have an idea (not new). In the belief that compilations of related articles initially presented as papers at meetings might have a place in the scientific literature, and the understanding that book sales can help in the financing of such occasions, the reports should be presented in specialised single issues of second line journals. Simultaneously the compilation should be presented as a book volume for individual purchase. In this way I believe that with the disciplined routines of journal production the articles could appear within a reasonable time (6-8 months); they would be easily accessible (as a part of a journal sequence); and available in the bookshop to those with a specialised interest. A prominent publisher tells me that this has been tried, but failed. The reason is that the librarians do not like to see the same books stashed away on different shelves. Maybe they get confused. I think that simultaneous publication of meeting articles in journals and book volumes is worth another try.

B.D. Gomperts

The Plant Plasma Membrane; Edited by C. Larsson and I.M. Moller; Springer-Verlag; Berlin, Heidelberg, 1990; x + 418 pages; DM 248.00

Let me say right from the very beginning that this new book gives a most comprehensive and up-to-date coverage of the structure, function and molecular biology of the plasma membrane of plants. The editors must be congratulated for bringing together sixteen first class contributions. My enthusiasm for this book probably stems from the fact that I started my scientific career twenty-five years ago by studying the ion transport properties of the plasma membrane of the green unicellular alga *Chlorella pyrenoidosa*. As the editors of this book state in their preamble, in those days most studies on the cell membranes of plants were restricted to in situ measurements using the electron microscope to investigate structure and radioisotopes to assay transmembrane fluxes of ions and metabolites. Today of course the powerful techniques of biochemistry, molecular biology and electrophysiology have played a key role in the advance of our understanding of biological membranes. For me reading through the various chapters was a joy and my impression is that those actively working on the plant cell plasmalemma can hold their heads up high when exposed to their counterparts working on the membranes of animal cells. The book seems

to cover every topic which one associates with membrane physiology. Not only did I find the expected chapters on ATPases, transport, electrophysiology (including patch-clamping), and techniques (isolation and purification, cytochemistry etc) but unexpected accounts of subjects such as coated pits, endocytosis, cytoskeleton, secondary signalling, acclimation to stress (chilling, freezing) host-pathogen interactions and symbiosis (e.g. rhizobium-legume). Despite the wealth of information given in these various chapters there is still a long way to go before we have a complete picture of the structure and function of the plasma membrane of plants. This point is made in the last chapter of the book written by P. Kjellbom, J. Chory and C.J. Lamb in which they give their perspective of what advances can be expected in the next few years by the increased application of the techniques of molecular biology.

All in all the sixteen contributions add up to an excellent book which I thoroughly recommend to all those working in the plant membrane area and to those who teach advanced courses in plant physiology.

J Barber

Ionizing Radiation Damage to DNA: Molecular Aspects; Edited by S.S. Wallace and R.B. Painter; Wiley-Liss; New York, 1990; xx + 331 pages; \$98

This book reports the proceedings of a meeting of the Radiation Research Society, held in the beautiful surroundings of Lake Tahoe, California, in January 1990. It has thus been published commendably quickly, presumably

because of the use of camera-ready manuscripts. The meeting was claimed to be the first molecular biology conference exclusively devoted to problems related to ionizing radiation damage and its repair.

The first section of the book is devoted to studies of radiation-induced DNA damage. It deals with the biological consequences of products of ·OH attack upon pyrimidines, measurement of DNA base damage and DNA-protein cross-links in chromatin using GC-MS, radiation-induced damage to deoxyribose and the effect of thiols, and multiply-damaged sites. In the following section, several papers deal with excision repair mechanisms in bacteria and eukaryotes. Four papers comprise section III, headed 'recombinational repair'. Section IV deals with the mutagenic effects of radiation-induced DNA damage: the effects of thymine glycol and 8-hydroxyguanine are considered, and special attention is given to the molecular nature of radiation-induced mutations of nuclear DNA and of DNA introduced into mammalian cells.

Three papers are devoted to the cloning of radiation repair genes: one deals with *E. coli* and the other two with human genes. The final section of the book is headed 'Inducible responses'. Two papers discuss the superoxide-response regulation of *E. coli*, one deals with X-ray inducible proteins and genes in human cells and the last paper discusses a possible role of the *c-myc* gene product.

No attempt was made to report the discussion that took place at the meeting, and so reading these proceedings is no substitute for having attended the meeting. Overall, however, the papers are well-written and authoritative and I recommend this volume as a reasonably up-to-date account of the field.

B. Halliwell

Radioisotopes in Biology: A Practical Approach; Edited by R.J. Slater; Oxford University Press; Oxford, 1990; xx + 307 pages; £32.50 (spiral bound), £22.50 (paperback)

Radioisotopes in Biology is the latest volume in the Practical Approach Series under the series editors, D. Rickwood and B.D. Hames. As with the other books in this series the work comprises a mixture of theoretical background and practical methodology produced by specialists in the field. The book contains ten chapters and seven appendices, but may be considered to be divided into three parts.

The first four chapters, plus the appendices, introduce the general concepts of the use of radioisotopes and their detection. The theory behind radioactive decay along with the associated dangers and appropriate laboratory design are dealt with briefly, but adequately enough to introduce a newcomer or to remind the more experienced worker. The largest single section is that on the use of scintillation counters (both β and γ) for detection of radioactive decay. Most of the necessary information is provided but it does not stand out from a large amount of superfluous material. Laudable as it is to attempt to provide a considerable amount of background on setting up and calibrating instruments, the vast majority of workers using commercial scintillation fluids and modern instruments with their inbuilt quench correction and dual label programmes will ignore most of this chapter. What also is the advantage of a double page spread of 4 photographs advertising β -counters which will soon become obsolete and date the work? In contrast the following chapter on the use of X-ray film is less than half the length of its counterpart, more succinctly written and gives the reader a good mix of theory and easy-to-follow practical advice.

The major middle section of the book deals with some of the most commonly used procedures in current biological research. These include the use of radioisotopes in vivo (both in animals and plants) and in vitro. Perhaps it is a sign of the

times that methods involving labelled nucleic acids are given four times the space of those involving proteins although this is perhaps balanced a little by a chapter on radioimmunoassay. As one might expect from a multi-author work there is some variation in style, including the amount of experimental detail provided. However overall there is adequate detail with appropriate theoretical background. Unfortunately I believe that there are two major omissions from this section. The first is that it does not include the use of [^3H]thymidine for the measurement of DNA synthesis and cell growth, which is the basis of many bioassays. This is a very widely used (and abused) technique with numerous pitfalls which deserve discussion. There is also no mention of the use of radioisotopes for the assay of enzymes, although this use is indexed and mentioned in the first chapter. Many general points about such assays could, and should, have been raised.

In the final two chapters attempts are made to summarize the legislative aspects of the use of radioactivity in the United Kingdom and the U.S.A. These are of necessity brief summaries of complex legislation, but the section on the United Kingdom in particular is so short as to be of little use to those who are not already familiar with the area.

There are a number of slightly annoying typographical errors, including some incorrect cross-referencing and a meaningless equation, but overall this must be considered as another useful volume in the series. It contains much in the way of basic methodology simply described and will be helpful for newcomers. It is difficult to say that every laboratory should have one, but at least there should be one around for reference.

K.R.F. Elliott