

transcriptional enhancers from papoviruses, shotgun DNA sequencing, rapid RNA sequence determination, methods for the purification of restriction enzymes, methods for restriction mapping of DNA and purification of DNA by RPC-5 chromatography. A subject index is provided.

There appears to be no statement of editorial policy so that it is difficult to identify with certainty the aims of the work, or to use the aims of the Editor as criteria whereby to judge the volume. However, the volume will appeal to research workers especially those who are already using recombinant DNA technology but wish to deepen their understanding of the subject.

Inevitably in a work of this kind, not all of the chapters are of equal stature, and the standard of presentation is variable. Readers may also feel that areas important to their interests are not covered. For example, anyone wishing to construct a cDNA library would find little to help them and there is no guidance for those interested in site directed mutagenesis or in the use of synthetic oligonucleotide probes.

The highlight of the volume is the chapter on shotgun DNA sequencing by A.T. Bankier and B.G. Barrell. These authors show what can be achieved within the format of this volume and so set the standard. The chapter is thoughtfully constructed, clearly written with the necessary theory and ample experimental detail. In contrast the

chapter on cloning in bacteriophage by J. Karn has few experimental details. However, it is a useful review that provides the background information for choosing a particular vector to suit a particular problem. Most of the remaining chapters fall between these two extremes in the balance of theory and experimental detail.

One chapter raises another issue. 'Use of cloning vectors to obtain expression of eukaryotic gene products in bacteria' by T.R. Roberts covers an important subject. The chapter provides little help for the experimentalist. Moreover, this chapter was published in substantially the same form elsewhere. Some readers may find it difficult to justify this duplication.

The basic concept, that of producing a book on techniques in nucleic acid biochemistry which can be readily brought up-to-date is sound. Many of the chapters of this could prove to be very helpful to researchers but the full potential value of the format has not yet been achieved because of the disparities in both presentation and scientific content of the individual contributions. Future supplements may help to redress the balance. The format of this volume and especially its small print makes it awkward to use the individual chapters as bench manuals.

R.A. Cox

## *Heat Shock Response of Eukaryotic Cells*

Edited by L. Nover

*Springer Verlag; Berlin, Heidelberg, New York, Tokyo, 1984*

82 pages. DM 36.00 (paperback)

Most organisms can be exposed sometime in their life to rapid and intensive environmental changes to which they respond with a variety of structural and functional adaptations of their cells. Whilst an insight into stress physiology at the molecular and cellular level is intrinsically important, such approaches are clearly leading to a better understanding of normal processes of physiology, cellular differentiation and development.

This book by Nover and his colleagues is an extremely valuable, critical and comprehensive account of the physiology, genetics and molecular biology of one of the best studied stress responses, namely the heat shock response. They provide a suitably broad coverage that includes the organisation and transcription of heat shock protein genes, the synthesis and processing of ribosomal and messenger RNAs, the structural and functional

changes of the translation apparatus as well as with the most noticeable effect, the massive synthesis of a collection of proteins known as the heat shock proteins. Attention is paid not only to the autoregulation of their production but also to their role as protectors of cells against stress damage. The structures of some heat shock proteins have been highly conserved in evolution indicating an early occurrence of this mode of temperature protection in ancient organisms. Detailed consideration is also given to the influence of supraoptimal temperatures on membrane structure as well as cytoskeleton changes which may have a profound influence on a large number of cellular functions. Other chapters deal with the response in eukaryotic cells in relation to virus infection and developmental programmes.

Besides being an excellent discussion of stress physiology in an age of molecular biology, the

book also carries a comprehensive compendium of relevant references. A problem however that must be conceded is that new knowledge in this field is accumulating rapidly. The number of scientists interested in heat shock is growing and its possible relevance to cancer as well as cancer therapy is beginning to be more appreciated. Moreover there are now new developments in our understanding of the genetics and molecular biology of the response in bacteria which will inevitably influence the thinking of eukaryotic biologists. On balance this is an excellent book particularly for those who are contemplating entering the field. Hopefully the editor and his colleagues will be persuaded to produce further editions to keep up with the accelerating pace of research in this fascinating area of biology.

R.H. Burdon

## *Fatty Acid Metabolism and Its Regulation*

### New Comprehensive Biochemistry, Vol.7

Edited by S. Numa

*Elsevier Science Publishers; Amsterdam, New York, 1984*

209 pages. Dfl. 129.00

The editor is to be congratulated on assembling such an excellent set of reviews. These show that the emphasis of much of the research in this field since the previous volume on this topic was published in 1971 has been concentrated on the molecular characterization of the enzymes of fatty acid metabolism and their regulation. The first two chapters deal in detail with fatty acid synthesis *de novo*, i.e. the structure, function and regulation of acetyl-CoA carboxylase (Numa and Tanabe) and of fatty acid synthetase (Alberts and Greenspan) from animal, yeast and bacterial sources. In Chapter 3, Schweizer describes the use of appropriate mutants to study the genetics of fatty acid biosynthesis in yeast. Chapter 4 by Jeffcoat and James covers the enzymology and the regulation of desaturation and elongation of preformed

fatty acids in mammals; the enzymes involved in fatty acid oxidation in animals and the regulation of this enzyme system are critically examined in Chapter 5 by Bremer and Osmundsen. This is followed by fatty acid biosynthesis in higher plants (Stumpf) and the last chapter by Kindl illustrates the paucity of our knowledge of lipid degradation in higher plants compared with that in animals.

These reviews provide a first class summary of the present 'state of the art' as newer aspects of research in the more developed areas are getting under way, e.g. studies of the genes encoding well-characterized enzymes involved in the control of fatty acid metabolism, and the expression of these genes.

R.R. Dils