Free Rad. Res. Comms., Vol. 4, No. 6, pp. 423–424
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BOOK REVIEWS

PEROXISOMES IN BIOLOGY AND MEDICINE
Edited by H D Fahimi and H Sies
Springer-Verlag, Berlin
XVIII + 470 Pages

This volume is based upon the lectures that that were given at an international symposium on "Peroxisomes in Biology and Medicine", held in Heidelberg during July 1986. The volume has thus appeared reasonably quickly, although the inevitable use of camera-ready copy has led to a few ugly differences in typeface. The reproduction of some of the electron micrographs is also poor.

After peroxisomes were discovered and characterized in the 1950s, there was a lull in interest until their important role in plant photorespiration was realised. "Animal biochemists" still largely ignored these important organelles, and it is only in the last few years that the key role played by peroxisomes in animal lipid metabolism has become clear, following from the seminal discovery in 1976 that liver peroxisomes have the metabolic capacity for β-oxidation of fatty acids. The present volume has thus appeared at an ideal time to summarize recent developments.

The first fourteen chapters review the role of peroxisomes in lipid synthesis and catabolism. Recent developments of our knowledge of the peroxisomal membrane are covered in the next six papers, which are followed by four papers on pathways of non-lipid metabolism within peroxisomes. There are fascinating sections on peroxisomes and drugs (with particular attention paid to peroxisome proliferators) and on the role of peroxisomal abnormalities in some human diseases. The final section of the book deals with the biogenesis of peroxisomes in plants and animals.

Despite the problems inherent in camera-ready, multi-author works, the present volume plays an important function in summarizing the rapid pace of recent development in our knowledge of peroxisomes. I thus recommend it highly.

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MOLECULAR BIOLOGY OF DNA METHYLATION (In Springer Series in Molecular Biology, Series Editor: A Rich)
By R.L.P. Adams and R.H. Burdon.
Springer Verlag; Berlin, Heidelberg, Tokyo, 1985.
xiv + 247 pages, 88 figs. DM 198.00.

After Watson and Crick had proposed the DNA double helix structure with two specific base pairs, AT and GC, the existence of a fifth base, 5-methylcytosine, in

substantial quantities in wheat germ DNA and, together with methylated adenine, in much smaller but nevertheless significant amounts in animal DNA appeared to be an anomaly which raised two important questions. First, are the methylated bases present in specific positions in DNA and, if so, what mechanisms are involved in their incorporation when DNA is replicated and, secondly, what is their function?

The first question has been clarified by the discovery of post-replication methylation processes involving particular nucleotide sequences and specific enzymes whereas the second, though not yet fully answered, has led to exciting developments in ideas concerning the control of gene expression in eukaryotic organisms, particularly by methylation of cytosine.

Publication of this book, which deals with different aspects of DNA methylation is thus opportune. It provides a useful overview of a complex field and a guide to the original literature as it includes almost 1000 references.

After a brief introduction the 12 main chapters cover the occurrence and timing of DNA methylation in prokaryotes and eukaryotes, methylation in relation to DNA structure, the mechanism of methyl group transfer to DNA bases and the enzymes involved, and the function of methylation in various aspects of gene expression, including control of transcription, X-chromosome inactivation, cancer, DNA repair and recombination. Finally, there is a short chapter summing up current knowledge and an appendix describing methods for estimating minor bases in DNA.

The book provides a useful account of the field up to the end of 1984 — there are only a very few 1985 references — and anyone requiring more up-to-date information, particularly as regards the role of methylation in the control of gene expression, would need to consult recent reviews or the original literature of the last two years. The style of writing is lucid and the text is well illustrated by diagrams. There are also a few photographs of DNA gels illustrating methylation patterns, but fortunately one is spared the monotony of large numbers of such gels.

All in all, the book can be highly recommended to libraries and research workers with a major interest in the biochemistry and molecular biology of gene expression. Unfortunately, the price is not as attractive as the subject matter and is in fact likely to deter individual purchases except those financed from research grants.

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