

ed this. A great deal of new information and a better interpretation of previous data has become possible since this structure was determined.

The other chapters contain a random list of enzymes, this time *EcoRV*, *PstI* and *PvuII*. No justification what-so-ever is given as to why these particular enzymes were chosen. The first time round the list contained *PaI*, *HhaII*, *PstI* again and *BspR*. In the first volume Wells discussed cleavage of single-stranded DNA by restriction endonucleases and this time round he again contributes a chapter but this time looking at enzymatic probes for left-handed Z DNA. Both these are extremely important and interesting areas and again it is good to have one of the major workers in the field reviewing them. Perhaps the most important new technique applying restriction enzymes for gene analysis to take place since volume 1 appeared is the use of very infrequent

cutting enzymes (such as *NotI*) to generate very large restriction fragments which are then separated using pulsed field gel electrophoresis (PFGE). It is excellent that the book contains a chapter by McClelland on this, in which he also discusses the use of methylase sensitive enzymes to reduce the frequency of cutting (and hence increase the size of the fragment).

As can be seen, the book is very much a curate's egg: some parts of it are extremely interesting and useful; some are useful but the information could be obtained much cheaper elsewhere. The book is in no sense comprehensive and many parts of it do not really live up to the title of the series. However, for those with an interest in one or other topic, relevant chapters are certainly worth reading.

Alan D.B. Malcolm

Molecular Biology in Basic and Clinical Neuroscience Research

Edited by J. de Vellis, J. Lauder, J. Mallet, A. Privat and J.R. Perez-Polo

Alan R. Liss; New York, 1986

332 pages. £56.00

Molecular biology of the nervous system has become an area of increasing interest not only to neuroscientists but also to clinicians and to molecular and developmental biologists investigating specific regulation of gene expression. Significant progress both in resolving basic problems in neurobiology and in probing the molecular bases of inherited neurological disorders such as Huntingdon's chorea has already been achieved using molecular biological techniques.

'Molecular Biology in Basic and Clinical Neuroscience' is a compilation of research papers, which offers some perspective of current research topics being undertaken and brings together in one volume summaries of diverse lines of investigation.

The book is somewhat arbitrarily divided into four sections. The first and largest section on neurotransmitters and neuromodulators, includes chapters on localization of peptide hormones, on neurotransmitter receptors and enzymes, and is

followed by a related section on neuronal function and development. This covers topical subjects such as proto-oncogene expression (c-src) in neurones, as well as neurone-specific enolase and cloning of rare transcript sequences. Several papers on myelin basic protein and studies on astrocytes in culture are included in the third section, glial function and development. The final section addresses some clinical applications.

Perhaps inevitably, the topics covered are rather selective; some subjects e.g. the molecular biology of the myelin proteins and certain strategies such as the use of in situ hybridization are a little over-represented whilst other current areas of interest, such as inter-cellular interactions, are not covered. Although not an all-encompassing up to the minute review of molecular neurobiology, there is nevertheless much in this book to interest workers in this field and it is a useful book of its type. The contributions describe developments ranging from

the various strategies adopted in the isolation of cDNAs of interest to the characterization of a novel human myelin basic protein sequence and the regulation of diverse brain-specific genes. However, a few of the reports are preliminary in nature, pointing to avenues of future research rather than presenting a full story. One of the strengths of this volume is its inclusion of detailed experimental protocols. The book serves to illustrate the applications of several standard molecular biological techniques, most notably in situ hybridization, and since potential difficulties are often pin-pointed, it may prove quite useful to other researchers.

As an overview of molecular biology in neuro-

science research the book is perhaps a little too technical and rather restricted in its coverage. Although all contributors have provided clear introductory sections, it is a pity that more general background information was not included in the book as a whole.

In summary, 'Molecular Biology in Basic and Clinical Neuroscience Research' is a useful volume, which provides some pointers to the promise and potential pitfalls of in situ hybridization and other molecular biological techniques in the investigation of gene expression in the brain.

Christine Hall

The Vital Force; A Study of Bioenergetics

By Franklin M. Harold

W.H. Freeman; New York, 1986

xviii + 577 pages. £19.95

As an undergraduate, I searched in vain for a book that would expand my knowledge of biochemistry without simultaneously diminishing my enthusiasm for the subject. Subsequently, such books have been written, Watson's *Molecular Biology of the Gene* being an outstanding example. Harold's book is the equivalent for those interested in any aspect of bioenergetics. He points out that "bioenergetics has recently attained a degree of integration comparable to that of molecular genetics", and that "the principle of energy coupling by ion currents, given a clear and general expression in Mitchell's chemiosmotic hypothesis, together with the Huxleys' sliding-filament model of muscle contraction, has provided the possibility of giving a reasonably coherent account of how cells generate useful energy and perform work". "That is the object of this book" which is "chiefly addressed to students and researchers in biochemistry, physiology, microbiology and cell biology who seek the wider perspective on their particular subject that may come from an appreciation of biological energetics".

I consider that this book has achieved its object. It has done so by way of its content, structure, excellent quality of illustration and, most of all, by the clarity of thought and presentation of its author.

Chapter headings include: Energy, Work, and Order; The Metabolic Web; Energy Coupling by Ion Currents; The Bacterial Paradigm/Energy Transduction; The Bacterial Paradigm/Useful Work; Vestiges of Evolution; Mitochondria and Oxidative Phosphorylation; Harvesting the Light; Carriers, Channels and Pumps; Transport Mediators and Mechanisms; The Major Organs of Movement; Filaments, Tubules, and Vesicles/Topics in Cellular Motility; Signals for Communication and Control; Morphogenesis and Biological Order.

On the whole, explanations of experiments and ideas are given more comprehensive treatment than is possible in general textbooks or learned reviews and it is unlikely that a student will need to go elsewhere for a fuller explanation; it is all here, written in a stimulating, lucid style. One (small) ex-