

A Dictionary of Genetic Engineering

by S.G. Oliver and J.M. Ward

Cambridge University Press; Cambridge, 1985

153 pages. £12.50, \$19.95

One area of molecular biology that is developing very rapidly, and generating a vast amount of jargon, is genetic engineering and it is high time that a book devoted to the terminology commonly used is published. This service has been performed by Oliver and Ward.

The book describes over 500 commonly used terms in genetic engineering in a simple, concise fashion designed to aid those least versant with the subject, but it should also be helpful as a memory aid to those more expert in the field. The definition of some terms is helped by the use of clear illustrations. These could be extended further but would, of course, considerably increase the length of the book. The range of definitions includes equipment such as 'power pack' and 'ultracentrifuge' and more complex terms like 'replacement vectors' and 'cosmids'.

The text includes excellent cross-referencing of terms which not only helps emphasise that, within genetic engineering and molecular biology, no term can be considered in isolation but also saves on space and makes the book much more concise, an essential for a book of this type. Commonly used abbreviations are also incorporated in the cross-referencing.

The dictionary also includes six appendices of useful information. These comprise a list of restriction enzymes and their recognition sites; restriction maps of pBR322, M13mp8, M13mp10 and bacteriophage λ ; genetic nomenclature of *Escherichia coli* and *Saccharomyces cerevisiae*; genetic maps of *E. coli*, *Bacillus subtilis* and *S. cerevisiae*; the genetic code (and variations found in codon usage by different organisms) and the one- and three-letter abbreviations for amino acids. This type of information is important if the dictionary is to be seen as a reference work for use by undergraduates, postgraduates and more experienced workers, both within the field and those attempting to understand the jargon.

This book is an excellent attempt to simplify the jargon and terminology involved in genetic engineering and should open the field to a large number of interested scientific workers. It should be especially useful to undergraduates and postgraduates new to genetic engineering and its terminology. Hopefully the authors will be prepared to revise and update this edition in time as the field of genetic engineering expands.

P.A. Boyd

Gene Expression in Brain

Edited by C. Zomzely-Neurath and W.A. Walker

John Wiley & Sons; New York, 1985

300 pages. £49.15

The dissection of the molecular biology of the mammalian brain is an immensely daunting as well as challenging prospect. The brain is a unique

organ on account of its extensive cell-type heterogeneity and the pronounced physical, chemical and electrical specializations exhibited by

each neuronal cell type, features which contribute to the very high mRNA complexity characteristic of the tissue. This volume presents work from different systems (e.g. neuron-specific phosphoproteins, microtubule proteins, 74 kDa heat shock protein, vasoactive intestinal polypeptide) in an attempt to outline the approaches used by molecular biologists to unravel this complexity.

Some genes are described in detail, not all are brain-specific; discussion of the developmentally regulated G3PDH gene in mouse cerebellum demonstrates nicely that brain-specificity is not a requirement for a protein to be worthy of neurobiological study. Moreover, expression of this gene appears to be sensitive to intercellular interactions during development, a finding of considerable significance in view of the intricate and complex connectivity exhibited by brain neurons.

Ample evidence is presented that recombinant DNA has already proved itself an indispensable tool to answer fundamental questions such as what constitutes a cell type in the nervous system and how specific genes determine the individual properties of neurons. The identification of genes encoding as yet unidentified brain proteins and peptides (e.g. the POMC complex) as well as markers of neuronal differentiation is clearly vital. While this may aid cellular identification/discrimination, considerable problems of specificity and sensitivity in transcript detection still remain and may be exacerbated in neurons by axonal

transport. In situ hybridization analysis should now permit the discrimination of intercellular uptake of proteins from de novo synthesis.

The breadth of this volume is indicated by the inclusion of a chapter on the neuroactive peptide gene family which mediates egg-laying behaviour in *Aplysia*. Implicit is the potential contribution to the study of nervous systems of more complex animals. Discussion of the utility of mouse cerebellar and dysmyelinating mutants also emphasizes the need for interdisciplinary co-operation.

Inevitably, for a volume of its size, it is far from comprehensive; the coverage of molecular neurobiology is patchy, detail variable, while the text itself is rapidly becoming out-of-date (press date, late 1983). Poly(A⁻) mRNA is discussed but the controversial 'brain ID' sequences are not. With some overlap, it does however usefully complement the Cold Spring Harbor volume (48) on this subject, although the Editors of *Gene Expression in Brain* regrettably did not see fit to include a summary chapter putting the work described in context and perspective. This volume nevertheless succeeds in providing a readable introduction to current strategies and experimental approaches in molecular neurobiology as well as a valuable reference source of use to neurobiologists and molecular biologists alike.

David Cooper

Methods of Protein Microcharacterization

Edited by J.E. Shively

Humana Press; Clifton, New Jersey, 1986

456 pages. £76.30

This volume, the latest in a series on Biological Methods from Humana Press, is a cornucopia of strategies, instrumentation and methodologies for those intent on sequence determination of sub-nanomolar quantities of polypeptides. Whereas a previous book from the same publishers – *Methods in Protein Sequence Analysis*, ed. M. El-

zinga, 1982 – contained the proceedings of a conference, this book comprises sixteen substantial chapters by leading scientists from the academic and commercial spheres that provide a comprehensive review of current purification and sequencing methods with sufficient experimental detail to justify the subtitle – *A Practical Handbook*.

This dictionary provides readers with access to the basic vocabulary of modern biotechnology and genetic engineering so that even those with an elementary knowledge of basic biology and biochemistry will be able to follow any developments in this field. This dictionary has been updated and expanded to account for the new developments and new terminology in the rapidly evolving areas of genomics, bioinformatics, cell signaling, and molecular medicine. In addition, a number of biochemical terms pertaining to recent advances in medicines for the treatment of viral diseases, mental illness, choles