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 indispensible 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 cooperation.

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the coverage of molecular neurobiology is patchy, detail variable, while the text itself is rapidly becoming out-of-date (press date, late 1983).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 subnanomolar quantities of polypeptides. Whereas a previous book from the same publishers – Methods in Protein Sequence Analysis, ed. M. Elzinga, 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.

The contents are divided into five parts. Part A, on purification techniques, has a short chapter on preparative electrophoresis but is dominated by reverse-phase HPLC. Although this is undoubtedly the single most useful procedure for purifying microgram quantities of peptides, it is perhaps a little inequitable to ignore other modes of liquid chromatography that are very applicable to proteins while devoting two chapters (pp.3–87) that contain some repetition to the reverse-phase mode. Part B deals with amino acid analysis. Only fluorimetric detection, after precolumn derivatization with *o*-phthalaldehyde or postcolumn derivatization with the same reagent or with fluorescamine, is described. It is unfortunate for the authors that only very recently has UV-detection of PTC-amino acids emerged as one of the most useful systems for amino acid analysis so that here it is merely mentioned as a method 'holding considerable promise'. About half of the book is taken up by Part C, on N-terminal sequence determination. Separate chapters deal with automated sequencers of liquid-(spinning cup), solid- and gas-phase types. The latter instrument, which has revolutionized the art of sequencing due to its great sensitivity (low pmol) is described by M.W. Hunkapiller and colleagues from Applied Biosystems, from whom the machine has been commercially available since 1982. For those who wish to keep their options open B. Wittmann-Liebold has designed a sequencer capable of adaption to liquid-, solid- and gas-phase operation but this does not seem to be commercially available. In all these chapters the occasional photograph would have clarified the detailed descriptions of engineering instead of the sole reliance on line diagrams. Due to the very high capital and running costs of automated sequencing there remains a niche for manual methods and this is filled by G.E. Tarr's excellent chapter. He reverts from the more recent manual methods like DABITC/PITC or dansyl/Edman to pure Edman chemistry with HPLC detection of PTH-amino acids, a topic that also has a short chapter devoted to it. Part D, on carboxyl-terminal analysis, lists carboxypeptidases and their sources with advice on their use and, as an alternative, has a chemical method using tritium labelling. The book is rounded off by a section on mass spectrometry that includes a description of the impressive new technique of fast atom bombardment (FAB) mass spectrometry.

For those with a serious interest in protein sequencing this book is essential reading. The text contains many useful tips and is well illustrated with specific instances of proteins that have been sequenced that include some refractory as well as routine examples. Anyone intending to purchase a sequencer will find useful comparisons and may even decide that a manual method will suffice. It can even be recommended to the parsimonious since the steep cost of the book fades into insignificance against such possible savings.

G.B. Irvine

Biological Methylation and Drug Design

Experimental and Clinical Roles of *S*-Adenosylmethionine

Edited by R.T. Borchardt, C.R. Creveling and P. Magne Ueland

Humana Press; Clifton, New Jersey, 1986

457 pages. £73.35

This book has been developed from a symposium held in 1985 that was designed to bring together scientists from various disciplines to deliberate on the biological roles of *S*-adenosylmethionine (AdoMet) and to discuss the feasibility of utilising AdoMet-dependent enzymes as targets for drug design. The book is divided into five sections and the scene is set by the first which is concerned with