

Isolation and purification of plasmids; the action of restriction endonucleases on plasmids; electrophoretic analysis of plasmid DNA (three practicals).

Measurement of serum cholesterol and uric acid (three practicals).

Radioimmunoassay of prostaglandins (one practical).

As can be seen, some of the experiments are designed to follow on from one another, if desired, thereby maintaining some sort of continuity. Each experiment carries with it a series of questions testing the student's understanding of the practical and several helpful references both general and specific. At the end of the book is a series of appendices

giving useful information such as  $pK$  values,  $M_r$  values for common proteins, etc.

All in all, I am happy to recommend the book, both for Practical Course Organizers to help in the design of up-to-date experiments using modern technology, and for BSc students as a source of much detailed practical information on modern biochemical methods. (Mind you, at £35.95 I'm not sure many students could afford to buy it!)

I suppose we have to accept that Americans have never learned how to spell, and we must put up with their sulfur, color, pipets and burets!

PETER McCORIE

### Neurotransmitter Actions in the Vertebrate Nervous System

MICHAEL A. ROGAWSKI and  
JEFFERY L. BARKER (Editors)

Plenum Press, New York and London, 1985, pp. 511,  
\$69.50

Biochemists should beware the metonymy of this book's title: promised victuals, we receive cake; promised neurotransmitter actions, we receive largely electrophysiology. The editors' preface and their introduction state that the book is not emphasizing the presence of neurotransmitters in neurons, nor their synthesis, release and inactivation; but rather their capabilities in modifying ion channel activities, and the action of pharmacological agents thereon.

The editors can claim much success in following this programme. The book's 17 chapters by 25 authors fall into five groups, successively: amino acids, acetylcholine, biogenic amines, neuropeptides and the purine-based transmitters. This sequence directs attention to ionic effects rather than to second messengers, for there is as yet little 'effectual' to say about such messengers in the actions of  $\gamma$ -aminobutyrate or glycine and their congeners. When with the third group we encounter serotonin, noradrenaline and dopamine, their actions on cell-firing and ion permeabilities are again the major features presented. Serotonin shows inhibitory actions on hippocampal cells by membrane hyperpolarization caused by an increase in potassium conductance, and excitatory actions on motoneurons by depolarization through decreased potassium conductance. The likelihood is briefly noted of such actions being mediated by serotonin-induced

increase of adenylate cyclase, yielding cyclic AMP and causing phosphorylation of a membrane protein linked to a channel involved in the potassium-ion movements. Adenylate cyclase, however, is not indexed nor is the involvement of cyclic AMP. Actions of serotonin on membrane potential and cell firing are well documented with reproduction of data from several investigations.

The book's strength lies in this type of selection of results. Of its approximately 180 illustrations, the majority are of electrophysiological data obtained by electrode and micro-electrode observations of neurons *in situ*, in tissue culture or in surviving tissues maintained in isolation. More data would be desirable about how these latter systems were obtained, maintained, and their metabolic status validated.

The book is much better edited than are many works of collective authorship. The chapters usually begin with a brief historical note, with distribution of the transmitter and its receptors preceding the main findings, which are followed by a summary or conclusion. Coverage of biochemical aspects, even briefly, is variable. An action through phosphoinositide turnover received very brief unindexed mention; rarely are there included details of fractionation with correlated assays. The subject index misses many instances of neurotransmitter analogues and pharmacological agents which feature in the text; there is no author index.

H. McILWAIN

### Methods of Enzymatic Analysis, 3rd Edition, Volume 8, Metabolites 3: Lipids, Amino Acids and Related Compounds

H. U. BERGMAYER, J. BERGMAYER and  
M. GRASSL (Editors)

VCH, Weinheim, 1985, pp. 629, price unknown

The ingenuity that can be brought to the use of enzymes to assay metabolite concentrations is well illustrated in this volume. In addition to direct and coupled spectrophotometric and colorimetric procedures, enzyme-linked immunoassays of various degrees of elaborateness and with colorimetric, luminometric and fluorometric detection are described in detail. A browse through the descriptions of these assay methods provides a valuable guide to some of the types of enzyme-linked immunoassays and their advantages and limitations. Enzyme electrodes based on  $pCO_2$  or

oxygen electrodes are also described for the determination of some amino acids and some automated assay systems are also described.

As would be expected for a volume in this series, full experimental details are provided including the preparation of enzyme-antibody and enzyme-ligand coupling for immunoassays, the preparation of enzyme electrodes and the purification of enzymes in the rare cases, such as octopine dehydrogenases, when they are not available commercially in a sufficient state of purity.

A defect of a series on enzymic methods is that there is no detailed consideration of alternative procedures such as g.l.c. or h.p.l.c., which have tended to become the methods of choice for the analysis of some lipids, amino acids and

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