

Hormones in Normal and Abnormal Human Tissues, Volume 1

K. FOTHERBY and S. B. PAL (Editors)
Walter de Gruyter, Berlin, 1981, pp. 658, DM 145.00

The assay of hormones is now a vital part of the biochemist's repertoire, and this series of reviews gives an insight into some of the applications of these assays. The Editors have taken on a difficult task in trying to cover the wide scope of this expanding field, and the first two volumes seem rather biased in favour of the steroid hormones. However, a third volume is to come and it is hoped that this will rectify the omissions, such as many of the gut hormones, ACTH (corticotropin), ADH (vasopressin) and PTH (parathyrin).

The various chapters in 'Hormones in Normal and Abnormal Human Tissues' are organized randomly, and it would make use as a reference book easier if reviews were grouped so that where they are two or more contributions concerning the same hormone, these would run consecutively. Individual articles are, however, of a good standard, with clear Figures and Tables.

Those reviews with the most relevance to the biochemist are probably those which discuss assay methods, such as Vodian and VanderLaan's 'HGH: aspects of measurement' and P. A. Kelly's chapter on 'Prolactin determination in health and disease', and those that review the application of hormone assays to clinical medicine, such as Martin and colleagues' chapter 'Calcitonin production and calcitonin receptors in human cancers' and the contributions of Gower, Saxena & Rathnam and Whitehouse & Vinson.

The references to most articles are extensive and provide a good basis for further reading. The index is clear and easy to use.

In conclusion, a well-written, readable book, but one which could be better organized for ease of reference. It will probably be of most value to the research endocrinologist, but should also find a place in Biochemistry Department libraries.

C. J. HILLYARD

The Enzymology of Post-Translational Modification of Proteins

ROBERT B. FREEDMAN and HILARY C. HAWKINS
(Editors)
Academic Press, London, 1980, pp. 515, £40.00

The contents page promises an excellent menu, but primarily for the connoisseur. A wide selection of twelve satisfying courses, each prepared by a different expert, is provided. Most customers will probably wish to digest only one or two of these, although those with a taste for proteolysis can arrange a good four-course meal. A few authors assist the digestion of detailed argument with a liberal sprinkling of stimulating questions, personal views and helpful summaries, but most assume the healthy appetite of the fellow specialist. Nevertheless the offerings are generally interesting, satisfying and attractively presented.

In bringing together a wide selection of protein modifications, the editors draw to our attention the marked differences in level of understanding of enzyme action in the various processes. The enzymes have been studied in detail in some areas, but in others hardly at all. It may therefore have been a little optimistic and even misleading to place the emphasis in the title on enzymology. However, only the most ardent enzymologist is likely to be disappointed with the resulting collection of reviews.

The opening chapter is a broad, very readable, account of the relevance of peptidase activity to the function of signal sequences involved in the transfer of proteins across membranes. A fair amount of biochemical detail is put in a cell-biological context. Eukaryote is compared with prokaryote. Proteolysis is picked up again in a later interesting chapter dealing with the maturation of prohormones and proproteins. Several examples establish the importance of the process and indicate that much enzymology remains to be done. Some of the first examples of limited proteolysis and cascades turn up in a separate chapter dealing with the processing of zymogens. General aspects of less limited proteolysis are covered in an earlier discussion of the control of protein degradation. Speculation on the importance of phosphorylation, deamidation and thiol groups concludes this review.

The regulation of enzyme activity through phosphorylation

and dephosphorylation is the subject of a separate critical review. The importance of phosphatases as well as kinases is stressed. The properties of several of the latter occupy much of the discussion. Three further chapters deal with covalent addition to proteins. Assisted by a provocative style, the reader is taken quickly through the complex oligosaccharide structures resulting from protein glycosylation. The demands that these place on the glycosyltransferases and glycosidases concerned in their biosynthesis are assessed. A few examples provide glimpses of the advances now being made in this area. In another fascinating account we learn that both cholera toxin and diphtheria toxin catalyse the ADP-ribosylation of a protein that hydrolyses GTP to initiate the associated disease conditions. The role of vitamin K in the carboxylation of glutamyl residues of prothrombin precursors forms the substance of a further chapter. A more historical approach taking us through its discovery precedes an account of the properties of the carboxylase, which leads to speculations on the mechanism of the action of the vitamin.

One of the remaining accounts is of the fairly detailed enzymology of prolyl hydroxylase and lysyl hydroxylase. Another explains the importance of the oxidative formation of disulphide bonds in proteins. Several examples of enzymic catalysis of the process and possible mechanisms are discussed.

Appropriately, the final chapter gives an insight into how several of the aforementioned enzyme systems together achieve the extracellular modifications of both matrix and fibrous proteins of several connective tissues.

Presumably this book is aimed at the library. At £40 few individuals interested in any one or two of the specialist areas covered, with the possible exception of proteolysis, will consider it a bargain. Most of the chapters are really too specialized for the browser. Nevertheless, as an excellent account of current understanding of post-translational modification of proteins it will be disappointing if this first volume does not appear on the shelves of every life-science library. We look forward to the appearance of the promised second volume.

F. W. HEMMING

- post-translational modifications of proteins and enzymes; - pertinent model systems and computational studies; - novel applications of analytical methods to study proteins and enzymes. Protein Chemistry and Enzymology welcomes submissions of the following article types: Brief Research Report, Correction, Data Report, Editorial, General Commentary, Hypothesis and Theory, Methods, Mini Review, Opinion, Original Research, Perspective, Review, Specialty Grand Challenge and Technology and Code. All manuscripts must be submitted directly to the section Protein Chemistry and Enzymology, where they are peer-reviewed by the Associate and Review Editors of the specialty section. Open Access Statement. Copyright Statement.