

*The Methodology of Connective Tissue Research*

Edited by D. A. Hall

Joynson-Bruvvers; Oxford, 1976

viii + 292 pages. £ 5.25 (International Student Edition), £ 8.25 (Cased Edition)

Over the past 25 years the volume of research on the connective tissues has increased almost exponentially. From being a relatively neglected field these tissues now attract the attention of a large number of research workers over a wide range of disciplines; medicine, cell biology, developmental biology, biophysics, biochemistry, physiology and pharmacology etc. The macromolecular components of the connective tissues are complex and the elucidation of the structure, physicochemical properties and metabolism demand the use of a considerable array of laboratory methods, including several which are unique to collagen, such as the determination of hydroxyproline and hydroxylysine and its glycosylated derivatives and of the enzymes responsible for the synthesis of these components. Several enzymes have been found to be involved in collagen degradation, including specific collagenases.

The book consists of thirty chapters of varying length and quality and gather together analytical methods applicable to studies of collagen, elastin and proteoglycans. The isolation and assay of various enzymes of particular relevance, including collagenases, elastase and prolyl hydroxylases are also included. The chapters are grouped roughly into sections concerned with particular components. Thus there are four chapters on the preparation of various collagen fractions, followed by three on the reconstitution of collagen in solution into various forms and one on collagen crosslinks. In addition there are two chapters on the fractionation of collagen chains on carboxymethylcellulose and by acrylamide gel electrophoresis. Elastin is dealt with in a similar way and the proteoglycans are dealt with in several chapters concerned with their glycosaminoglycan components and one on the separation of proteoglycans themselves from cartilage.

Methods of determining particular components of the macromolecules are dealt with in separate chapters on hydroxyproline including its assay in urine and the

measurement of radioactively labelled hydroxyproline and proline and on the determination of the uronic acid in glycosaminoglycans. Several other chapters deal with the isolation and purification of collagenases both bacterial and mammalian, elastase and prolyl hydroxylase and methods of assaying these enzymes. Finally, there is one contribution on the use of experimental granulomas as a tool in connective tissue research.

In many ways the multiplicity of chapters and authors is a weakness of this book, which would have benefited by tighter editing and by cutting down the number of chapters. For example, there are two separate chapters on insoluble collagen, one titled as such and one as the preparation of macromolecular collagen, the latter being essentially highly purified insoluble collagen. Similarly, in the preparation of neutral salt soluble and acid soluble collagen, the methods of purification are virtually identical and yet are treated in separate chapters. The chapters on the isolation of enzymes and their assay would also have benefited by being considered in one rather than several chapters.

As the editor comments in the Foreword, the choice of methods to be dealt with cannot be so all embracing as to please everyone. Nevertheless the methods applicable to glycoproteins, in the separation of the various types of collagens now known to exist in various connective tissues and the CNBr method of producing and identifying peptides specific to these types might well have been included. Also omitted are methods of assay of lysyl hydroxylase and glucosyl transferases.

It seems a useful recipe book for those involved in the more applied aspects of connective tissue research but not for the specialist involved in fundamental studies of the connective tissue macromolecules and this was in fact the stated aim of the editor.

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