



Book Reviews

Protein Glycosylation

Roslyn M. Bill, Leigh Revers, Iain B.H. Wilson; Kluwer Academic Publishers, Dordrecht, 1998, xx + 508 pages, ISBN 0-7923-8337-0 (£119.00)

Glycoproteins play an extremely important role in biochemical processes in both fauna and flora. The oligosaccharides covalently linked to proteins are highly branched, the monosaccharide residues being linked to each other via many different linkage types. Protein-linked oligosaccharides therefore have an enormous potential to carry information. Historically, information on the biological functions of the carbohydrate moieties of glycoproteins has been confusing and controversial. This volume aims to bridge the gap between the sparse information on glycoproteins usually included in a general undergraduate/post-graduate textbook and the rather lengthy tomes devoted exclusively to glycoproteins. This volume therefore restricts itself to the structure, biosynthesis and functions of the major protein-bound oligosaccharides, but also covers many historical aspects of the field which are often overlooked.

Protein Glycosylation is composed of 10 detailed chapters, the first chapter covering the structure of sugars, proteins and glycoproteins, and provides a brief history of glycoscience. The next two chapters focus on why, and how, sugars and proteins get it together, respectively, discussing topics such as folding, secretion, conformation, adhesion, targeting, gene expression, etc. In these chapters specific biosynthetic pathways of protein glycosylation in mammals and birds, yeast, insects, and plants are also presented. The fourth and fifth chapters are concerned with *N*-linked sugars, and focus upon the construction of the core and antennae regions of oligosaccharides, respectively, whilst the sixth chapter specifically discusses *O*-linked sugars. Chapter 7 covers the modification of non-reducing terminal sugars, i.e. the ends of the antennae, which are the 'business end' of major oligosaccharide–ligand interactions. The eighth chapter discusses unusual forms of protein glycosylation found in mammals, plants, invertebrates, parasites, yeast and fungi, and slime moulds. The penultimate chapter is devoted to the *in vitro* synthesis of glycoforms, covering chemical routes for oligosaccharide and glycopeptide synthesis and glycosylation, and enzymatic strategies. The final chapter presents a summary and future research directions.

In conclusion, this well referenced volume contains a wealth of useful information presented in a readily accessible form. It is a very useful text for undergraduate/

postgraduate students as well as for researchers with interests in areas of glycobiology and carbohydrate science, and is therefore highly recommended.

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Handbook of citrus by-products and processing technology

Robert J. Braddock; Wiley, New York, 1999, x + 247 pages, ISBN 0471-19024-1 (£58.50)

Modern communications, consumer awareness of high-quality citrus, and product transportation methods have resulted in significant production and processing growth emerging in countries with suitable climates for citrus culture. The large amount of fruit being processed requires an understanding of modern technology and a large by-products industry to utilise the peel residue, essential oils, and other components as well as a search for newer products and uses.

'Handbook of Citrus By-Products and Processing Technology' describes traditional and modern citrus processing technologies, where they apply to juice and by-products. The opening chapters focus on fruit and juice processing, describing some of the important variables relating to extraction methods and other process operations required in commercial juice recovery. These are followed by a discussion on thermal processes, covering the pasteurisation and concentration processes and their relationship to finished product quality. Juice chemical reactions and