



Book reviews

J.P. Kamerling, G.-J. Boons, Y.C. Lee, A. Suzuki, N. Taniguchi, A.G.J. Voragen (Eds.), *Comprehensive Glycoscience—From Chemistry to Systems Biology*, vols. 1–4, Elsevier Ltd, Oxford, UK (2007). (xcvi + 3551 pp., £1325.00, ISBN: 0-4445-2746-2)

Glycans are an incredibly varied and structurally diverse family of molecules, which are constantly under intense scientific investigation due to the important roles they play in biological systems, from cell recognition and energy storage, to formation of structural components. As such, they are vital to many aspects of modern science, medicine, and industrial processes and technologies. In recent years, this has led to the creation of numerous new fields, such as glycomics, glycobioinformatics and glycochemistry, to name only a few, all encompassed by the blanket term 'glycoscience'. Glycoscience is therefore a complex subject, requiring knowledge of aspects of biology, chemistry (and thus biochemistry). *Comprehensive Glycoscience* aims to provide an in depth analysis and understanding of this extensive, and highly important field.

The first volume in this set begins with 5 chapters that provide an introduction to glycoscience, covering the basic concepts and nomenclature in carbohydrate chemistry, and the structures of glycoprotein glycans, glycosphingolipids, microbial polysaccharides, and cell wall polysaccharides. This is followed by 18 chapters dealing with the synthesis of carbohydrates. Topics covered include protecting group manipulation, O-glycosidation, 2-deoxy glycosides, polymer-supported oligosaccharide synthesis, synthetic strategies, enzymatic approaches using glycosyltransferases and glycosidases, sialic acid glycosides, glycopetides and glycoproteins, C- and S-glycosides, lipopolysaccharides, peptidoglycan and lipoteichoic acid fragments, glycosaminoglycans and their oligosaccharides, glycolipids, glycosidase and sialidase inhibitors, and microbial oligosaccharide production.

The second volume is concerned with the analysis of glycans, and polysaccharide functional properties. There are numerous techniques and technologies available for glycan identification. Such analytical aspects of glycoscience are dealt with by 13 chapters, which discuss structural analysis strategies, mass spectrometry, NMR spectroscopy, diffraction methods, X-ray crystallography, 2D/3D HPLC mapping, HPAEC-PAD, databases and informatics, molecular modelling, capillary electrophoresis, and DNA microarrays. The 10 chapters that discuss polysaccharide functional properties will be of particular interest to the readership of this journal, with particular topics including chitin and chitosan, bacterial exopolysaccharides, yeast and fungal polysaccharides, starch, plant storage xyloglucans, galactomannans and glucomannans, plant cell wall xylans, seaweed polysaccharides, and the biosynthesis of cellulose, and starch.

The penultimate volume deals with the biochemistry of glycoconjugate glycans (20 chapters), and carbohydrate-mediated interactions (16 chapters). Chapters of particular interest in this volume cover the biosynthesis of glycosaminoglycans and proteoglycans, the degradation of glycosaminoglycans, hyaluronan

biosynthesis, sialic acids, blood group antigens, natural product glycodiversification, plant, mushroom and microbial lectins, and antibody structures. The final volume in this set covers cell glyco-biology and development (18 chapters), and health and disease in glycomedicine (18 chapters). Glycans play a major role in cell recognition and signalling, and therefore in embryogenesis and development. Glycans play an important role in the immune systems of animals, and bacteria possess surface antigens and cell wall polysaccharides, the nature of which can strongly affect pathogenicity. Specific topics of interest include skin, and yeast glycobiology, and the roles of glycoconjugates in inflammation and inflammatory disease, cancer, viral, bacterial and parasitic infections, neurological diseases, vaccines, and therapeutic antibodies. Particular attention is also given to milk oligosaccharides, and fructo-, galacto-, galacturono- and xylo-oligosaccharides as prebiotics.

Through more than one hundred chapters in 4 volumes, highly recognised glycoscientists give an insight into their glycoworld, with glycknowledge discussed on a basic (tutorial) level, as well as on a more advanced level, depending on the topic. In conclusion, *Comprehensive Glycoscience* can be considered as an essential encyclopaedic reference work for all academic and industrial students and scientists interested in the state of the glyco-art.

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Biologically Inspired Textiles, A. Abbott, M. Ellison (Eds.). Woodhead Publishing Limited, Cambridge, UK (2008). (xxi + 219 pp, £115.00), ISBN: 978 1 84569 247 6

Textiles are flexible materials consisting of a network of natural or artificial fibres which are often referred to as thread or yarn. The textile industry is one of the biggest industries in the world because it is responsible for the production of the basic items required by mankind. Textiles have a variety of uses, the most common of which are for clothing and containers such as bags and baskets. In the household, they are used in carpeting, upholstered furnishings, window shades, towels, coverings for tables, beds, and other flat surfaces, and also in art. In the workplace, they are used in industrial and scientific processes such as filtering.

Textiles used for industrial purposes, are chosen for characteristics other than their appearance, and are commonly referred to as technical textiles. These include textile structures for automotive