

## Book review

*Carbohydrates: Structure and Biology*

Written by Jochen Lehmann and translated by Alan H. Haines, Georg Thieme Verlag, Stuttgart, 1998, ISBN 3-13-110781-2, hardback, *xiv* + 274 pp, DM 148.00, ISBN 3-13-110771-5, paperback; Thieme, New York, ISBN 0-86577-790-X, hardback, US \$98.00, ISBN 0-86577-795-0, paperback, US \$49.00.

The second edition of this book differs radically from the first in that there has been a fundamental shift away from monosaccharides and their derivatives to oligosaccharides, polysaccharides, and glycoconjugates, reflecting, in particular, the intense interest that has developed in biological carbohydrate chemistry over the past 20 years.

An introduction to carbohydrate chemistry is provided by Chapter 1, which might well be skipped over by established researchers, but which should serve as a primer for those having little previous acquaintance with carbohydrates. This chapter covers structural and conformational aspects of carbohydrate chemistry, as well as providing some guidance on carbohydrate nomenclature.

Although an in-depth treatment has not been attempted, for someone like me with no formal training in biological chemistry, the real value of this book is to be found in the substantial remaining chapter on *Biological Aspects* (of carbohydrates), which begins with a section tracing the evolving roles of carbohydrates in lower organisms, such as bacteria, fungi, yeasts and algae, through to those in higher mammalian organisms. The following two sections are concerned with more dynamic aspects of carbohydrate biochemistry—the functions of carbohydrates in biological processes and the metabolism of carbohydrates. Highlighted in these sections are those processes, usually involving glycoproteins or glycolipids, that

come under the banner of molecular recognition. The role of oligosaccharides attached to proteins and lipids in recognitive processes is not always clear-cut, and the author does not shrink from discriminating between roles that are reasonably well-established and those that are merely speculative. In so doing he points to where more intensive research is needed, which should interest those wishing to contribute to this exciting area of carbohydrate chemistry. The fourth and final section discusses enzymatic methods for the synthesis and interconversion of carbohydrates, touching briefly upon the production of oligosaccharides by glycosylation, redox reactions, and carbon–carbon bond formation.

This is a bold and seamless translation which doubtless reflects the clarity of the original German text. One or two errors that might mislead the unwary did catch my eye in the early part of the book: on page 49, the concentration of solute used in calculating the specific rotation should be in  $\text{g.mL}^{-1}$  of solvent, while on page 59 methyl  $\beta$ -D-galactofuranoside is incorrectly formulated as the  $\alpha$  anomer. But these are minor quibbles that in no way detract from a lively and enjoyable rendering of the many biological aspects of carbohydrate chemistry.

**John S. Brimacombe**  
University of Dundee

