

Book review

Neoglycoconjugates: Preparation and Applications, Edited by Y.C. Lee and R.T. Lee, Academic Press, London, UK, 1994. ISBN 0-12-440585-1, 549 pp plus indexes, £93.00.

This is, rather surprisingly, the first book devoted to this important aspect of the field of glycobiology. It signifies a growing recognition of neoglycoconjugates not only as probes for the study of carbohydrate–protein interactions per se, but also as potentially valuable reagents in medicine. The editors have assembled a diverse range of applications in a single reference source to emphasise the significance of neoglycotechnology, and to provide a stimulus for new ideas. The book is presented in 17 chapters (with a useful subject index) and is divided into four sections; I Introduction, II Preparation, III Applications, and IV Other Aspects (incidentally this latter section division is curiously omitted from the contents page but appears on p 499).

Section I comprises two chapters that provide a clear and thorough introduction to the complex but essential aspects of carbohydrate presentation and clustering effects. This section, while compulsory reading for any newcomer to the field, also provides a valuable reference point for those of us that occasionally need reminding about those essential features of neoglycoconjugates. With the exception of the introductory chapters the editorial influence is indistinct, resulting in what appears as a monograph of independent articles on related subjects. However, it is difficult to say whether this is a strength or weakness in the book.

Sections II, III, and IV comprise the remaining 15 chapters which cover a wide range of topics concerned with different methods of neoglycoconjugate synthesis and application strategies. These chapters are rather artificially divided into these three sections with the titles: Preparation, Applications, and Other Aspects. These headings give the impression of continuity in presentation, however there is considerable overlap of important features of synthesis and biological applications that appear under all three section headings.

Nevertheless, if the reader ignores these artificial divisions the contents are generally quite stimulating. The range of subject matter covered is broad. The early chapters predominantly cover the many different approaches to the synthesis of neoglycoconjugates. Although not comprehensive, the glyco-glossary in chapter 3 (pp 55–57) provides part of a helpful and refreshing introduction to the synthetic-chemistry-based chapters.

Subsequent chapters accommodate an interesting and diverse array of applications such as the biotechnology advances in neoglycoconjugate vaccines (chapter 10), liver imaging and tumour diagnosis (chapters 11 and 12), and mechanisms of drug delivery (chapter 15). The enterprising application of carbohydrate-containing polystyrenes in the reconstruction of liver structure and function (chapter 8), may also serve to inspire the reader to explore other novel applications. The book provides something-for-everyone and will therefore appeal to a wide audience. Therein lies one of its important features in bringing together organic chemists, biologists, and clinicians, which is a prerequisite for further progress in this multi-disciplinary field.

The book clearly fulfils the aim of highlighting the importance and varied application of neoglycoconjugates, however there were some disappointments: chapter 16 describes the use of immobilised oligosaccharides on TLC and microtitre plates to determine the structure of carbohydrate epitopes. The reference list of just 10 articles, contains only one that was published later than 1989. Moreover, there is no reference to the more efficient epitope mapping on microtitre plates using the well-known polyacrylamide-carbohydrate neoglycoconjugates (referred to in chapter 3, pp 114–115). Chapter 17 was a rather obscure conclusion to the book. This chapter, which certainly fits into the “Other Aspects” category, described the technical advances in targeted gene delivery and antisense inhibition of gene expression. The token reference to antisense asialoglycoprotein-based carriers seemed far too brief to qualify the inclusion of this chapter in a book devoted to neoglycoconjugates. The diplomatic application of editorial pressure could have guided a more appropriate end to the book with a chapter dealing more directly with the use of neoglycoconjugates in targeted gene delivery.

In summary then, this book should have wide appeal, not only to the expert reader for whom this book will be an important reference, but also to the many scientists and clinicians on the periphery of glycobiology. For the latter group the book may additionally provide a subtle stimulus for the inspiration of joint ventures between divergent disciplines. It should, therefore be a valuable contribution to the development and application of neoglycoconjugates in biology and medicine.

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