

## Preface

Integration of the structural and biosynthetic data with the functional role of glycoconjugates is central to the understanding of glycobiology. A discussion of glycoconjugate function must include those macromolecules that interact with the oligosaccharide moieties of glycoconjugates. In this volume we have brought together chapters that discuss current approaches to elucidating oligosaccharide structures; that give the mechanisms of biosynthesis and turnover of those structures; that discuss the characteristics of macromolecules that interact with glycoconjugates; that present the emerging role of molecular biology in the study of glycoconjugates; and that present plausible concepts concerning glycoconjugate function. Our objective is to present these topics in such a way as to minimize dry data enumeration and to highlight and even speculate on design-order and structure-function correlates of glycoconjugates.

This book presents a sequence of chapters leading from the classical methodology of structural and biosynthetic analysis through to today's new methods in ongoing research on the molecular biology of glycoconjugates and carbohydrate-binding proteins. The authors were encouraged to focus on the importance of their topic in formulating a structure-function relationship that includes the known, the hypothesized, and the speculative.

Several concepts are emerging in the field of glycobiology regarding the presence of carbohydrate-binding proteins in plants, animals, and microorganisms. These proteins, called lectins, appear to mediate activities such as nodule formation in leguminous plants, organization of embryonic tissue, metastatic behavior of cancer cells, and bacterial colonization of mucous membranes. Our objective in including discussions of lectins in this book is to illustrate the specificity of recognition that cells have developed while using only a relatively small array of monosaccharides.

Since the ability to comprehend any scientific presentation is dependent upon an understanding of unique terminology, we have presented a summary of the rules of carbohydrate nomenclature in the opening chapter. We hope that this will remove the mystery, especially for students, as to how terms are derived.

This volume summarizes significant contemporary information in the field of glycobiology in understandable language for students with a background in biochemistry and cell biology, for scientists who lack a detailed background in glycobiology, and for glycobiologists who wish to refresh their knowledge of areas of glycobiology that are different from their own specific area of expertise. The scope of this book provides an overview for the glycoconjugate biochemist while bringing the nonspecialist and student up to date on current concepts and approaches in glycobiology. Researchers in related areas will find stimulating ideas, and both researchers and students will be able to arrive at an understanding of the biological significance of glycoconjugates, lectins, and other glycoconjugate receptors.

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