Preface

Cellular interactions are involved in many biological events, including regulation of gene expression, cell growth, cell migration, cell differentiation, and apoptosis, and might be modulated in several physiological and pathological processes, e.g., inflammation, arthritis, metastasis. During these interactions, cell–extracellular matrix and cell–cell adhesions occur through specific surface receptors, cadherins, integrins, selectins and/or proteoglycans. The last decade has witnessed major discoveries of protein moieties of the adhesive molecules and their membrane receptors, and significant advances have been made in the functional sequences, the nature of the promoter and the design of therapeutic techniques using adhesive molecules. It must be kept in mind that most adhesion molecules and adhesion receptors are glycoproteins, and advances in glycobiology have revealed the possibility that the carbohydrate chains of adhesion molecules might play important roles in cell–extracellular matrix and cell–cell recognition. It is necessary to consider the contribution of glycans borne by adhesion molecules in the function and regulation of cell recognition in terms of two complementary aspects: 1) basic investigations to elucidate mechanism(s) and regulation of glycans, and 2) medical, pharmaceutical and therapeutic aspects and diagnostic techniques.

The book has been organized into two parts. The first deals with general aspects of structure and biosynthesis of glycoconjugates. In addition, a review of the structure and metabolism of glycosaminoglycans and glycolipids is given, since some of these molecules also play a role in cellular interactions. A general account of cell adhesion and the extracellular matrix is also included in the first part. The second part addresses the pathology aspects of glycoconjugates as regards to cancer progression, neurophysiopathologies and Carbohydrate Deficient Glycoprotein Syndromes, and their therapeutic aspects. The editor would like to express her gratitude to P. Méhul for the book cover illustration.