

Preface

Why this book? Carbohydrates are much, much more than simple biochemical fuels or—as polymers—the molecular concrete to convey stability to plants or insects. As obvious sign for a wide physiological role, glycan chains are also frequently presented by proteins and lipids. Their significance ‘is to impart a discrete recognitional role’ on the carrier (P. J. Winterburn and C. F. Phelps, 1972), the essence of the concept of the sugar code. The alphabet of its components (letters) and the sophisticated transport and enzymatic machinery for oligosaccharide (code word) formation provide the basis for the generation of these enormously versatile biochemical signals. They are handy for all aspects of bioregulation, because sugars are second to no other class of biomolecules in the capacity of information coding using oligomers. As instrumental as this feature is for far-reaching functionality *in vivo* the unsurpassed structural complexity automatically turns the task of breaking the sugar code into a highly demanding interdisciplinary challenge. With chemistry, biology and medicine being involved, there is the need for a coherent guide to the fundamentals of glycosciences designed for students and experts with interest in interdisciplinary work. As L. Stryer so elegantly and timelessly wrote in 1974, a textbook should give readers command of concepts and language and prepare a fertile ground for future discoveries. These are the aims of this multi-authored introduction to glycosciences.

The book is formatted to allow it to serve as a source for self-study and teaching, eventually enabling the reader to embrace the breadth of glycosciences at a comprehensible and professional level. To do so, all chapters are deliberately adjusted to a common standard and style and presented in a logical order from structure to biology and medicine. Illustrations and tables are designed to be ready for direct use in classrooms for lectures or even complete courses. Written by renowned experts and enthusiastic teachers, the chapters—with their concise summary boxes and entertaining info boxes—can even be read separately, to allow students and colleagues to be selective. Frequent cross-referencing between chapters is intended to minimize the need to turn to specialized literature to lay solid foundations. Consequently, aided by editorial encouragement, it was possible to limit the number of references. Complaints in this regard should be sent to me at gabius@lectins.de. Naturally, any advice, criticism or suggestions on what to improve in

order to best achieve our aims, that is to provide proper guidance and effective material for teaching as well as to fascinate and to inspire, are very welcome. So we invite you to contact us!

What you now hold in your hands would not have been possible without the enthusiasm and expertise of all members of the team of authors, without the invaluable advice, encouragement and help given by colleagues, Jürgen Kopitz and Harold Rüdiger deserve to be mentioned for being special friends, coworkers, Ruth Ohl and Herbert Kaltner deserve to be mentioned for being preciously dedicated and profoundly professional, and especially my wife Sigrun Ortrud along the way from project plan to product—and without an essential factor in teamwork, which quickly made its presence felt: the team spirit! It is a great pleasure and privilege for me to say 'Thank you', also for your interest. In the name of each and everyone involved we hope that you, our readers, enjoy the book and consider it helpful for your contribution to breaking the sugar code!

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