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Carbohydrates: The Essential Molecules of Life, Second Edition

By Robert V. Stick, Spencer Williams



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This book provides the "nuts and bolts" background for a successful study of carbohydrates - the essential molecules that not only give you energy, but are an integral part of many biological processes.

A question often asked is 'Why do carbohydrate chemistry?' The answer is simple: It is fundamental to a study of biology. Carbohydrates are the building blocks of life and enable biological processes to take place.

Therefore the book will provide a taste for the subject of glycobiology.

Covering the basics of carbohydrates and then the chemistry and reactions of carbohydrates this book will enable a chemist to gain essential knowledge that will enable them to move smoothly into the worlds of biochemistry, molecular biology and cell biology.

- * includes perspective from new co-author Spencer Williams, who enhances coverage of the connection between carbohydrates and life
- * describes the basic chemistry and biology of carbohydrates
- * reviews the concepts, synthesis, reactions, and biology of carbohydrates



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Editorial Review

Review

The rapidly emerging field of glycomics has revealed the importance of carbohydrates in a myriad of cellular processes including metastasis, inflammation, signal transduction, and infection. As we begin to unravel and elucidate the intimate roles of carbohydrates in biological systems, there is an increased demand on synthetic chemists and biologists to discover viable avenues of producing significant quantities of these biomolecules in pure form. In recent years, we have witnessed a dramatic rise in the number of synthetic and biological methods available for the production of complex oligosaccharides and glycoconjugates in a rapid and efficient manner for biological study.

The chemistry and biology of carbohydrates are intimately linked and feed into the interdisciplinary field of glycobiology, which has received increased attention over recent times. It is therefore timely that a text is released that offers a stimulating and current take on the burgeoning areas of carbohydrate chemistry and glycobiology. *Carbohydrates: the Essential Molecules of Life* by Robert Stick and Spencer J. Williams serves this role by offering a clear and concise guide to the chemistry, biochemistry, and biology of carbohydrates. Although a second edition, this book represents more than an updated version of the previous text (*Carbohydrates: the Sweet Molecules of Life* by Robert Stick). Indeed, the current book includes several new chapters, especially in the area of glycobiology.

The book consists of 12 logically and clearly organized chapters, each beginning with a broad introduction to the topic of discussion before providing a detailed account of the area. The authors use clear and concise language, which allows new and potentially difficult concepts to be easily understood. Recent examples from the literature are appropriately incorporated and are complemented with figures and schemes that are well produced and easy to follow. Each chapter culminates in comprehensive reference sections that not only contain seminal reports but also numerous publications from the past decade. The subject index is very thorough and allows one to navigate to a topic of interest quickly. Several key features incorporated in this text are also worth mentioning. The authors' clever use of footnotes throughout the book provides the reader with several informative snippets relating to the main text. Examples include short biographies on leading researchers whose work is under discussion and nomenclature clarification. Overall, this book provides a broad account of the topics under discussion. As can be expected for a book of its length (474 pp.), some sections lack detail; however, the authors use appendices to provide the reader with references to a plethora of detailed monographs on individual topics.

- Dr Richard Payne, University of Sydney --Australian Journal of Chemistry, 2009, 62, 600-601.

From the Back Cover

'*Carbohydrates: The Essential Molecules of Life*' gives a broad, modern treatment of the structure, properties and reactions of monosaccharides. This knowledge is then used in the chemical synthesis of the glycosidic linkage. Enzymes can also break and create this linkage, resulting in many of the essential molecules of life: polysaccharides, glycoproteins and proteoglycans.

About the Author

Robert Stick is a Queenslander by birth and completed his undergraduate and higher degrees at the University of Queensland. Following post-doctoral studies with Ray Lemieux and Sir Derek Barton, he took a faculty position at The University of Western Australia in 1975 and has since spent sabbatical leaves with

Bert Fraser-Reid (Duke University), and with Bill Cullen and Steve Withers (both of the University of British Columbia).

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