

and physiology of the human body are explained in sufficient detail to facilitate building of a working understanding and vocabulary about life's parts and processes.

The volume is essentially divided into four major sections. The first section begins with an overview of basic concepts and scientific methods, followed by chapters discussing the underlying principles of biochemistry and cell structure and function. The next section, which is by far the largest, deals with body systems and functions, and includes chapters on tissues and organ systems, the musculoskeletal system, digestion and nutrition, circulation and blood, immunity, respiration, salt–water balance and body temperature, the nervous system, sensory perception, the endocrine system, reproduction, development, and sexually transmitted diseases. The penultimate section outlines the principles of inheritance, and includes chapters on cell reproduction, observable patterns of inheritance, chromosome variations and medical genetics, DNA structure and function, cancer, and recombinant DNA and genetic engineering. The final section introduces and discusses the principles of evolution and ecology, including the fascinating and still-unfolding story of the emergence of modern *Homo sapiens*. Chapters in this section cover the principles of evolution, human evolution, ecosystems, and the impacts of human populations.

The presentation utilised in this volume is of the highest standard and helps readers visualise difficult concepts and complicated biological structures. In every chapter each concept is presented as a two-page concept spread with summary sentences containing the information needed to understand a concept. Selected illustrations incorporate zoom sequences, from macroscopic to microscopic views, showing the specific location of structures or processes. Visual summaries break down difficult processes using a combination of text and illustration, with step-by-step descriptive sequences. Physiological systems summaries describe the major body systems, all major structures and the function of each structure. Focus on health boxes discuss health concerns such as the role of antioxidants, fad diets and eating disorders, use of anabolic steroids, and exercise physiology. A CD-ROM is also included which presents *Interactive Concepts in Biology*. In summary, this is an excellent volume that will be of invaluable use to any individuals wishing to gain a comprehensive understanding of the core concepts of human biology.

C.J. Knill\*

J.F. Kennedy

*Birmingham Carbohydrate and Protein Technology Group,  
Chembiochem Laboratories, The University of Birmingham  
Research Park,  
Birmingham B15 2SQ, UK.*

\* Corresponding reviewer.

PII: S0144-8617(00)00290-3

### **Molecular and Supramolecular Chemistry of Natural Products and their Model Compounds**

Jürgen-Hinrich Fuhrhop, Claus Endisch; Marcel Dekker, Inc., New York, 2000, ix + 602 pages, ISBN 0-824-78201-1, US\$ 195.00

Carbohydrates are the most abundant group of natural products. The abundance of carbohydrates and glycoconjugates in nature and the understanding of some of their biological roles has prompted research into utilizing simple monosaccharides as starting materials for a range of high value compounds, offering a renewable alternative to current starting materials. The field supramolecular or non-covalent natural product chemistry has been scientifically fruitful for several decades, and is presently exploited for the development of molecular devices and machinery as well as for medical applications.

Classical experiments with natural compounds include their isolation, purification, elucidation of molecular structure and total synthesis. The most important by-products of the analytical and synthetic work to date, is the knowledge about the stereochemistry and reactivity of natural compounds. The mastery and application of this knowledge has enormous potential in the production of organised and finally functional molecules.

This text contains nine chapters, which deal with the eight classes of natural products common in biological organisms and simple model compounds. The book leads from the less reactive, chiral molecules (useful membrane components, lipids, steroids, carbohydrates) to molecules that react reversibly with light and electrons and are helpful in energy conversion (carotenes, porphyrins, redoxactive vitamins). Finally, helical and reactive biopolymers (nucleic acids and proteins) are covered. The chapters initially discuss relevant structural and dynamic details, followed by important synthetic strategies and typical reactions, ending with the assumption that one central goal of contemporary natural compound chemistry is the reversible production of non-covalent molecular assemblies and membranes (synkinesis).

*Molecular and Supramolecular Chemistry of Natural products and their Model Compounds* summarizes the known properties of natural compounds to determine their usefulness and synkinetics, and also investigates new techniques such as cryo-electron and scanning force microscopy and solid state NMR spectroscopy of membrane systems. This thorough, comprehensive text is aimed for advanced students in chemistry and biochemistry, and may also be of interest to research chemists. It contains over 900 references and more than 500 detailed illustrations.

J.F. Kennedy\*

N. Turan

*Birmingham Carbohydrate & Protein Technology Group,  
Chembiochem Laboratories, The University of Birmingham*

Research Park,  
Birmingham B15 2SQ, UK  
E-mail address: jfkennedy@chemistry.bham.ac.uk

\* Corresponding reviewer.

PII: S0144-8617(00)00295-2

---

### Trends in Carbohydrate Chemistry

P.L. Soni, Vineet Kumar (Eds.); John Wiley & Sons Ltd, 2000, 178 pages, £29.95, ISBN 3-527-29842-8

The book consists of selected papers delivered by distinguished scientists at the XIII Carbohydrate Conference, November 1998. The theme of the conference was 'Industrial Polysaccharides and their Applications'. The conference was jointly funded by the Association of Carbohydrate Chemists and Technologists, India (ACCTI) and The Forest Research Institute, Dehra Dun.

The topics covered within the book are varied but have a common theme, which is the utilisation of India's abundant and varied natural plant life. These are used as a sustainable resource in: the food industry, in production and quality improvement; pharmaceuticals as binding and coating agents; to modify or improve industrial processes, producing higher yields or more environmentally friendly production methods. With a view to new applications being developed for existing materials, the reaction kinetics of carbohydrates or their analysis is also discussed in several papers.

Seven of the papers discuss in detail the use of gums obtained from plant sources for a variety of purposes mostly food and pharmaceutical, but also in the oil and gas industries where tamarind seed powder is used in the drill head slurry to promote the sealing quality of mud.

The use of carbohydrate enzymes in the food in industry is covered in three papers, for example the enzymatic removal of cyanoglucosides from cassava root, which is a staple food source consumed by a large proportion of the population, some of which exhibit illness due to the cyanoglucosides.

The use of waste plant material as a resource to form new products, such as graft co-polymerisation onto starch, which was a waste product from the cotton textile industry. The grafted co-polymers have been used as an environmentally friendly and economical super absorbent.

This book is of interest to all professionals in the carbohydrates field, food industry or pharmaceuticals. It is also of economic interest with respect to biomass transformation and sustainable development.

J.F. Kennedy\*

L.A. Quinton

*Birmingham Carbohydrate & Protein Technology Group,  
Chembiochem Laboratories, The University of Birmingham*

*Research Park,*

*Birmingham B15 2SQ, UK*

*E-mail address: jfkennedy@bham.ac.uk*

\* Corresponding reviewer. Tel.: + 44-121-414-4385; fax: + 44-121-414-4384.

PII: S0144-8617(00)00308-8