cultivation, and scale-up of these cells, with examples of both their industrial application and their future potential. Special emphasis is given to solve the critical issues encountered during the discovery of new drugs, process development, and the manufacture of new and existing compounds. Other topics include recombinant protein expression, bioinformatics, high throughput screening, analytical tools in biotechnology, DNA shuffling, and genomic discovery. The authors all have proven track records in the successful implementation of commercial-scale processes.

This Handbook will prove especially useful not only to those involved in biotechnology as a broad discipline, but also assist experienced practitioners in perfecting the special art of the industrial cell culture. Many scientists currently in the field find their carriers transitioning across work with mammalian, microbial, and plant bioprocesses; thus they are very much in need of a book linking these disciplines in a single format, which may be also suitable for teaching.

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Severian Durmitriu, Polysaccharides, Structural Diversity and Functional Versatility, 2nd ed. University of Sherbrooke/Marcel Dekker, Quebec, Canada/New York, USA, 2005 (xvii +1204pp., £155.00, ISBN 0-8247-5480-8)

Polysaccharides are the macromolecules that belong to the means components of life. Together with nucleic acids and proteins, the polysaccharides determine the functionality and specificity of the species. Oligosaccharides and polysaccharides are biopolymers commonly found in living organism, and are known to reveal the physiological functions by forming a specific conformation.

Polysaccharides have received little such promotion even though they are widely distributed throughout nature and highly organized structure. In this way, polysaccharides as natural polymers are by far the most abundant renewable resource. In contrast to petroleum-based synthetic polymers, plant polysaccharides are sustainable materials synthesized by the sun's energy and fully biodegradable in the original states. Thus, with decreasing supply of oil resources polysaccharides, including cellulose, starch, chitin, storage polysaccharides, are expected to play an increasingly important role in industrial use.

However, our understanding of polysaccharide chains is still in its premature state with respect to their structure in solid and in solution. Structural analysis may offer the most fundamental knowledge to understand the functions of polysaccharides, but the diversity and irregularity of polysaccharides chains make a formidable task.

Completely revised and expanded to reflect the latest advancements in the field, *Polysaccharides* presents state-of-the-art polysaccharides research from different aspects regarding the macromolecular variety, function, chemistry, structure and stability in just one volume. This second edition outlines are the most complete summary now available of the present knowledge of polysaccharide chemistry. This work reveals new analytical techniques and applications currently impacting the cosmetic, medicinal, chemical, and biochemical industries.

This authoritative book discusses some fundamental aspects of polysaccharides as: progress in structural characterization, conformation and dynamic aspects of polysaccharides gels, rheological behaviour of polysaccharides in aqueous systems, biosynthesis, structure and physical properties of bacterial polysaccharides, renewable resources, new applications of polysaccharides and the incorporation of the polysaccharides in the synthetic matrix. Just one point—what is your view as a reader—should *polysaccharides* still be being used as a term or should it now be solely carbohydrate polymers?

In summary, this book is a very useful tool for scientist of both academia and industry interested in the fundamental principles of polysaccharides functions and modifications on one hand, and novel applications on the other. This manual opens an interesting way to challenge and encourage scientists to deal with polysaccharides as fascinating polymers with a bright future.

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Shalaby W. Shalaby and Karen J.L. Burg, editors. Advances in Polymeric Biomaterials Series: Absorbable and Biodegradable Polymers (2004, CRC Press, Florida, USA) (289 pp., $289, ISBN 0-8493-1484-4)

Egyptians sutured wounds as early as 3500 BC using a variety of natural polymers including treated intestines, which are the early versions of collagen-based surgical gut-sutures. In

addition to collagen-based polymers, other natural, absorbable polymers have been used for many pharmaceutical and biomedical applications for several decades. Of these polymers, the application of chitosan- and hyaluronic acid-based polymers has received a great deal of attention in the past 15 years for use in controlled drug delivery systems, tissue repair, tissue engineering, and controlling certain biological events.

Interest in synthetic absorbable polymers has grown considerably over the last three decades, principally because of their transient nature when used as biochemical implants or drug carriers. Recently, however, investigators have revived interest in naturally derived polymers. The genesis of absorbable polymers was driven by the need to replace the highly tissue-reactive, absorbable, collagen-based sutures with synthetic polymers, which elicit milder tissue response.

Technology of absorbable/biodegradable polymers (A/BP) has evolved in two independent areas. The evolution of natural polymers took place through chain modification of existing materials using chemical means or modulating the biosynthetic functional properties. On the other hand, the evolution of synthetic A/BP has been achieved through modulating their chemical composition using several polymerisation techniques and, to a lesser extent, chemical modification of presynthesized polymers.

Absorbable and Biodegradable Polymers integrates recent developments in both areas of research to form a coherent source of diverse but interrelated information. After an introduction, the book describes evolutionary materials development, processing methods, characterization and evaluation techniques and applications.

In concert with this theme, the book begins with an introduction (Section A). The Section B deals with the development and application of new systems. Section C pertains to development in preparative, processing, and evaluation methods. The last section addresses growing and newly sought applications.

The comprehensive nature of the chapters and their extensive biographies will make this volume a valuable source well suited for use by students, industrialists, and educators with interest in development and/or investigation of A/BP for use in pharmaceutical and biomedical applications.

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Richard Owusu-apenten, editor. Introduction to Food Chemistry (2005, CRC Press, Florida, USA) (249 pp., $24.99, ISBN 0-8493-1724-X)

Chemistry is the study of the composition, structure, and properties of materials and the changes that these undergo. Inserting the word food before materials leads to a reasonable definition for food chemistry. In other words, food chemistry is the study of composition, structure, and properties of food materials and the changes that these undergo. In this way, food chemistry is the application of chemistry principles to the food system, including agricultural production, storage, transportation, processing, distribution, retail, and consumption.

Food chemistry emerged as a discipline after World War II. The mission statement for food chemistry is to ensure a supply of food, which is nutritious, safe, and affordable, with due regard for the environment. This mission is shared by the other food sciences including food microbiology, food processing, food engineering, and food law. There is an emphasis on the chemistry of food components, including macro constituents (water, carbohydrates, lipids and proteins), micro constituents (for example, flavours, vitamins, minerals, sweeteners, general additives), and their interactions.

It is only through the proper use of statistical methods that we obtain reliable data and make substantive progress. Thus Chapters 2 and 3 are devoted to food analysis and statistical analysis. Chapters 4–6 cover most of the conventional topics in food chemistry (e.g. carbohydrates, lipids, proteins, enzymes). The seventh and eighth chapter present material science and rheology, concepts that are being applied increasingly to foods. Chapters 9 and 10 consider chemical processes leading to food spoilage. Finally, chapters 11 and 12 deal with enzyme and biological chemistry of deteriorative processes, such as ripening and senescence.

After completing this book the reader will have learned a great many new facts intended to increase their knowledge of food chemistry. By emphasizing general principles, this book will facilitate an understanding of concepts. Though not adopting a commodities approach, it provides pertinent examples of areas of application for the concepts discussed. The book will be suitable as a basis for courses in food science with emphasis on food chemistry. Material from some parts of the book could be useful for nutrition majors. Another aim of this book is to help the reader proceed to more specialist monographs and research articles. Members of the food professions will also benefit from reading this book.

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