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KEY=ESSENTIALS - PHILLIPS MIDDLETON

ESSENTIALS OF GLYCOBIOLOGY, THIRD EDITION

Defined in the broadest sense, Glycobiology is the study of the structure, biosynthesis, biology, and evolution of saccharides (sugar chains or glycans) that are widely distributed in nature in all living life forms. Glycobiology is now one of the more rapidly growing fields in the natural sciences, with broad relevance to many areas of basic research, biomedicine, and biotechnology. The field includes the chemistry of carbohydrates, the enzymology of glycan formation and degradation, the recognition of glycans by specific proteins, roles of glycans in complex biological systems, and their analysis or manipulation by various techniques. The third edition of this primary textbook in the field continues in the prior tradition, seeking to provide basic overview of Glycobiology, directed towards the advanced undergraduate or the beginning graduate-level student of molecular and cellular biology and biomedicine. While efforts have been made to avoid a major increase in overall length of the text, substantial changes and improvements include the following: · Broader focus on all lineages of life forms in nature. · Wider range of topics, ranging from biology and medicine to chemistry and materials science. · Expanded international editorial board representing a wider range of expertise. · Wider range of contributing authors with expertise in specific areas. · Greatly expanded monosaccharide symbol nomenclature for the representation of glycans. · Greater attention to informatics, and integration with databases on other classes of molecules.

ESSENTIALS OF GLYCOBIOLOGY

CSHL Press Sugar chains (glycans) are often attached to proteins and lipids and have multiple roles in the organization and function of all organisms. "Essentials of Glycobiology" describes their biogenesis and function and offers a useful gateway to the understanding of glycans.

ESSENTIALS OF GLYCOBIOLOGY. 2ND EDITION

ESSENTIALS OF GLYCOBIOLOGY /3RD EDITION

ESSENTIALS OF GLYCOBIOLOGY, FOURTH EDITION

Saccharides are widely distributed in all living life forms and glycobiology is the study of their structure, biosynthesis, biology, and evolution. It is a rapidly growing field, relevant to many areas of basic research, biomedicine, and biotechnology. The field includes the chemistry of carbohydrates, the enzymology of glycan formation and degradation, the recognition of glycans by specific proteins, roles of glycans in complex biological systems, and their analysis and manipulation. Essentials of Glycobiology is the field's most authoritative textbook, offering an overview suitable for advanced undergraduates and graduate students in molecular and cellular biology and biomedicine. In an entirely revised and updated fourth edition, the book retains a broad focus and applicability to fields ranging from biology and medicine to chemistry and materials science, with excellent artwork and chapters written by an international selection of leading investigators.

INTRODUCTION TO GLYCOBIOLOGY

Oxford University Press Introduction to Glycobiology reveals the true impact of the sugars on biological systems, explaining their function at the molecular, cellular, and organismal level and their clinical relevance.

ESSENTIALS OF GLYCOBIOLOGY . 3RD EDITION

ESSENTIALS OF CARBOHYDRATE CHEMISTRY AND BIOCHEMISTRY

John Wiley & Sons Concise yet complete, this is a succinct introduction to the topic, covering both basic chemistry as well as such advanced topics as high-throughput analytics and glycomics -- in one handy volume. This improved and expanded 3rd edition features all-new material on combinatorial synthesis of carbohydrates and carbohydrate biodiversity, and each chapter now contains study questions for self-learning and classroom teaching. Didactically written by an experienced lecturer and graduate student advisor, the text is backed by practical examples and more than 150 study questions tailored to students' needs.

THE GLYCOME

UNDERSTANDING THE DIVERSITY AND COMPLEXITY OF GLYCOBIOLOGY

CRC Press This volume provides a comprehensive understanding of the enigmatic identity of the glycome, a complex but important area of research that has been largely ignored due to its complexity. The authors thoroughly deal with almost all aspects of the glycome, i.e., elucidation of the glycan identity enigma and its role in regulation of the cellular process, and in disease etiology. The book bridges the knowledge gap in understanding the glycome, from being a cell signature to its applications in disease etiology. In addition, it details many of the major insights regarding the possible role of the glycome in various diseases as a therapeutic marker. The book systematically covers the major aspects of the glycome, including the significance of substituting the diverse monosaccharide units to glycoproteins, the role of glycans in disease pathologies, and the challenges and advances in glycobiology. The authors stress the significance and huge encoding power of carbohydrates as well as provide helpful insights in framing the bigger picture. The Glycome: Understanding the Diversity and Complexity of Glycobiology details state-of-the-art developments and emerging challenges of glycome biology, which are going to be key areas of future research, not only in the glycobiology field but also in pharmaceuticals.

ANIMAL LECTINS

A FUNCTIONAL VIEW

CRC Press Introduces Groundbreaking Approaches for Assessing Lectin Function Lectins and their ligands are under quite a heavy microscope due to their potential applications to pharmacology, immunology, cancer therapy, and agriculture. With growing interest in the glycobiology field, the body of research related to lectin roles has grown at an explosive rate

PLANT GLYCOBIOLOGY - A SWEET WORLD OF LECTINS, GLYCOPROTEINS, GLYCOLIPIDS AND GLYCANS

Frontiers Media SA Plants synthesize a wide variety of unique glycan structures which play essential roles during the life cycle of the plant. Being omnipresent throughout the plant kingdom, ranging from simple green algae to modern flowering plants, glycans contribute to many diverse processes. Glycans can function as structural components in the plant cell wall, assist in the folding of nascent proteins, act as signaling molecules in plant defense responses or (ER) stress pathways, or serve within the energy metabolism of a plant. In most cases, glycans are attached to other macromolecules to form so-called glycoconjugates (e.g. glycoproteins, proteoglycans and glycolipids), but they can also be present as free entities residing in the plant cell. Next to the broad, complex set of glycans, plants also evolved an elaborate collection of lectins or proteins with a lectin-like domain, which can recognize and bind to endogenous (plants-own) or exogenous (foreign) glycans. Though still poorly understood in plants, the dynamic interactions between lectins and carbohydrate structures are suggested to be involved in gene transcription, protein folding, protein transport, cell adhesion, signaling as well as defense responses. As such, a complex and largely undetermined glycan-interactome is established inside plant cells, between cells and their surrounding matrix, inside the extracellular matrix, and even between organisms. Studying the biological roles of plant glycans will enable to better understand plant development and physiology in order to fully exploit plants for food, feed and production of pharmaceutical proteins. In this Research Topic, we want to provide a platform for articles describing the latest research, perspectives and methodologies related to the fascinating world of plant glycobiology, with a focus on following subjects: 1. Identification and characterization of plant glycans, their biosynthetic and degradation enzymes 2. Characterization of plant lectins and glycoproteins 3. Plant glycans in the plant's energy metabolism 4. Role of plant glycans in plant defense signaling 5. Use of plant lectins in pest control 6. Plant lectins as new tools in human medicine 7. Glyco-engineering in plants

BIOMEDICAL CHEMISTRY

CURRENT TRENDS AND DEVELOPMENTS

Walter de Gruyter GmbH & Co KG Biomedical Chemistry provides readers with an understanding of how fundamental chemical concepts are used to combat some diseases. The authors explain the interdisciplinary relationship of chemistry with biology, physics, pharmacy and medicine. The results of chemical research can be applied to understand chemical processes in cells and in the body, and new methods for drug transportation. Also, basic chemical ideas and determination of disease etiology are approached by developing techniques to ensure optimum interaction between drugs and human cells. This Book is an excellent resource for students and researchers in health-related fields with frontier topics in medicinal and pharmaceutical chemistry, organic chemistry and biochemistry.

KINETICS FOR BIOSCIENTIST

Bookboon This book starts off by discussing the basics of kinetics, using everyday examples. It then moves on to describing kinetics in mathematical terms. Special chapters in this book are dedicated to cases relevant for Bioscientists, e.g. zero, first and second order kinetics. In the last part of the book, the focus is on more complex applications of kinetics, e.g. steady-state reactions and the kinetics of equilibria. An important aspect is to provide relevant examples and model calculations. Every theoretical approach is underpinned by several model calculations of real-life examples.

CARBOHYDRATES: THE ESSENTIAL MOLECULES OF LIFE

Elsevier 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

CELL SURFACE CARBOHYDRATES AND CELL DEVELOPMENT

CRC Press Cell Surface Carbohydrates and Cell Development summarizes knowledge on the structure and function of cell surface carbohydrates in development and differentiation. The chapters include reviews on the expression of cell type-specific carbohydrates and their roles in cell-cell interaction. In particular, the role of cell surface carbohydrates in immune cell response, malignant transformation, fertilization, and neural cell development are addressed. This includes the exciting discovery about the role of adhesive molecules in leukocyte-endothelium interaction. Cell Surface Carbohydrates and Cell Development also summarizes the latest knowledge on structure and biosynthesis of carbohydrates, the role of specific carbohydrate modification, and animal lectins. The book will be useful to researchers and students interested in the biology of glycoproteins and biotechnology.

GLYCOINFORMATICS

Humana Press This book provides current glycoinformatics methods and protocols used to support the determination of carbohydrate structures in biological samples as well as carbohydrate structure databases, the interaction of carbohydrates with proteins, and theoretical and experimental methods to study their three-dimensional structure and dynamics. Glycoinformatics explores this recently emerged field, which has come into being in order to address the needs of encoding, storing, and analyzing carbohydrate 'sequences' and their taxonomy using computers. Written in the highly successful Methods in Molecular Biology series format, chapters contain the kind of detailed description and key implementation advice to ensure successful results. Authoritative and timely, Glycoinformatics demonstrates the progress that has been achieved in glycoinformatics, which indicates that it is no longer a niche subject covered by only a few scientists but is truly coming of age.

THE ART OF CARBOHYDRATE ANALYSIS

Springer Nature

MICRO- AND NANO-TRANSPORT OF BIOMOLECULES

Bookboon This e-book introduces the reader to biomolecules and describes the experimental and theoretical aspects of their micro- and nano-scale motion in water. Particular emphasis is given to their transport in engineered micro-environments where they are driven by externally imposed electric fields. Envisaged application technologies of this wide-ranging science involve healthcare, food provisioning, environmental services, etc. The e-book is generally intended for undergraduate students studying chemical, life, physical and engineering sciences, and also interdisciplinary researchers.

THE SUGAR CODE

FUNDAMENTALS OF GLYCOSCIENCES

John Wiley & Sons A reader friendly overview of the structure and functional relevance of natural glycosylation and its cognate proteins (lectins), this book is also one of the few books to cover their role in health and disease. Edited by one of the pioneering experts in the field and written by a team of renowned researchers this resource is a perfect introduction for all students in life and medical sciences, biochemistry, chemistry and pharmacy. Website: WWW.WILEY-VCH.DE/HOME/THESUGARCODE

TRANSFORMING GLYCOSCIENCE

A ROADMAP FOR THE FUTURE

National Academies Press A new focus on glycoscience, a field that explores the structures and functions of sugars, promises great advances in areas as diverse as medicine, energy generation, and materials science, this report finds. Glycans--also known as carbohydrates, saccharides, or simply as sugars--play central roles in many biological processes and have properties useful in an array of applications. However, glycans have received little attention from the research community due to a lack of tools to probe their often complex structures and properties. Transforming Glycoscience: A

Roadmap for the Future presents a roadmap for transforming glycoscience from a field dominated by specialists to a widely studied and integrated discipline, which could lead to a more complete understanding of glycans and help solve key challenges in diverse fields.

SILKWORM BIOFACTORY

SILK TO BIOLOGY

CRC Press While silk derived from silkworm has been of economic importance for centuries, more recently silkworm has been found to have utility in biomedicine. This has attracted attention for expressing eukaryotic recombinant proteins, which require post-translational modifications. In 1985 Dr. Susumu Maeda demonstrated that silkworm larvae could produce a functional human-interferon. Since then various techniques have been developed to express recombinant proteins in silkworm. With the development of the *Bombyx mori* nucleopolyhedrovirus (BmNPV) bacmid system, which is capable of replicating in both *Escherichia coli* and *Bombyx mori* derived cell lines or silkworm, silkworm larvae or pupae have been used for the expression system for recombinant protein production. This method has the advantage of a bacmid, in that it can be easily prepared for sufficient bacmid DNA for subsequent expression in silkworm. It is potentially a big breakthrough in production of recombinant eukaryotic proteins and viruses, which will be a powerful tool in a new proteome era. This volume contributes to the advancement of our knowledge in the subject, for example gene expression systems and silkworm research, and focuses on silkworm biofactories for the recombinant protein production and commercial applications of proteins.

CARBOHYDRATE CHEMISTRY

VOLUME 42

Royal Society of Chemistry With the increase in volume, velocity and variety of information, researchers can find it difficult to keep up to date with the literature in their field. This invaluable volume contains analysed, evaluated and distilled information on the latest in carbohydrate research. The discovery and synthesis of novel carbohydrates and mimetics with diverse applications continues to be a major challenge for carbohydrate chemists. The understanding of the structure and function of carbohydrates and glycoconjugates remains vital in medicine and molecular biology. This volume collates modern carbohydrate research from theory to application and demonstrates the importance of carbohydrates in new lead generation. It is of benefit to any researcher who wishes to learn about the latest developments in the carbohydrate field.

GLYCOMICS

METHODS AND PROTOCOLS

Humana Press Due to the significant contributions of carbohydrates to the functional diversity of the cell, the challenging study of the glycome has expanded beyond the research of carbohydrate experts and into the wider scope of the life sciences. To aid all scientists now delving into this vital subject area, *Glycomics: Methods and Protocols* collects a compendium of detailed laboratory protocols reflecting the increasing availability of sample preparation, chromatographic, electrophoretic, mass spectrometric, and bioinformatic tools specifically designed for the analysis of glycosylation. Leading researchers in the field address subjects such as glycoprotein and proteoglycan analysis, glycosylation structure determination, as well as various approaches to investigate the interaction between glycans and a variety of carbohydrate-recognizing proteins in order to aid exploration into the functional significance of the oligosaccharides. Written in the highly successful *Methods in Molecular Biology*TM series format, the chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible protocols, and notes on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, *Glycomics: Methods and Protocols* serves as a valuable guide for experimenters facing the challenges of glycan analysis in hope of providing further insights into the biology of cell-cell communication and interaction.

GLYCOENZYMES

S Karger Ag In living organisms, glyco-materials (beta-glycans, their oligosaccharides, and glyco-chains) play a decisive role in such biological processes as signal transduction, cell adhesion, fertilization, transport, and immunity. For industrial production, glyco-materials are inexhaustible and renewable resources. beta-glycans, for instance, are essential for the commercial production of food stuffs and other industrial products. The present volume focuses on the glyco-enzymes, which catalyze the reactions (hydrolysis, transfer, and condensation) of glyco-materials and are thus critical for their industrial utilization.

BIOCHEMISTRY AND CELL BIOLOGY OF AGEING: PART I BIOMEDICAL SCIENCE

Springer This new volume in the *Subcellular Biochemistry* series will focus on the biochemistry and cellular biology of aging processes in human cells. The chapters will be written by experts in their respective fields and will focus on a number of the current key areas of research in subcellular aging research. Main topics for discussion are mitochondrial aging, protein homeostasis and aging and the genetic processes that are involved in aging. There will also be chapters that are dedicated to the study of the roles of a variety of vitamins and minerals on aging and a number of other external factors (microbiological, ROS, inflammation, nutrition). This book will provide the reader with a state of the art overview of the subcellular aging field. This book will be published in cooperation with a second volume that will discuss the translation of the cell biology of aging to a more clinical setting and it is hoped that the combination of these two volumes will bring a deeper understanding of the links between the cell and the body during aging.

GPI MEMBRANE ANCHORS

Academic Press *GPI Membrane Anchors* reviews major advances in our understanding of glycosylphosphatidylinositol (GPI) membrane anchors. The book examines the GPI structure and its originality as an anchoring device, its ubiquitous distribution, the main steps of its biosynthetic pathway, and the elegant means by which a protein signals for GPI attachment. It also presents evidence for the uniqueness of GPI as a tag in intracellular traffic and as a mediator of transmembrane signaling. This volume is organized into 20 chapters and begins with a discussion of the structural requirements of a nascent protein for processing to a PI-G anchored form, with emphasis on experiments on intact cells and cell-free systems. It then turns to the mechanisms underlying signal transduction by GPI-anchored membrane proteins, the LY-6 superfamily of GPI-anchored molecules, and glycosylated-phosphatidylinositols as virulence factors in *Leishmania*. The reader is also introduced to the molecular biology of GPI-anchored border hydrolases, the role of GPIs and their inositolglycan derivatives in the mediation of insulin and growth factor function, and biosynthesis and cellular localization of GPI-modified glycoproteins in *Saccharomyces cerevisiae*. An account of electrospray mass spectrometry of a C-terminal peptide purified from the scrapie isoform of the scrapie prion protein is also given. The book concludes with a chapter on GPI-anchored recognition molecules that function in axonal fasciculation, growth, and guidance in the nervous system. This book is a valuable resource for students and researchers in the fields of cell biology and biochemistry.

HANDBOOK OF GLYCOSYLTRANSFERASES AND RELATED GENES

Springer Science & Business Media The so-called postgenomic research era has now been launched, and the field of glyco biology and glycotecology has become one of the most important areas in life science because glycosylation is the most common post-translational modification reaction of proteins *in vivo*. On the basis of Swiss-Prot data, over 50% proteins are known to undergo glycosylation, but in fact the actual functions of most of the sugar chains in the glycoconjugates remain unknown. The complex carbohydrate chains of glycoproteins, glycolipids, and proteoglycans represent the secondary gene products formed through the reactions of glycosyl transferases. The regulation of the biosynthesis of sugar chains is under the control of the expression of glycosyltransferases, their substrate specificity, and their localization in specific tissue sites. There is a growing body of evidence to suggest that these enzymes play pivotal roles in a variety of important cellular differentiation and developmental events, as well as in disease processes. Over 300 glycosyltransferases appear to exist in mammalian tissues. If the genes that have been purified and cloned from various species such as humans, cattle, pigs, rats and mice are counted as one, approximately 110 glyco genes that encode glycosyltransferases and related genes have been cloned at present, and this number continues to grow each day. However, most of the functions of the glycosyltransferase genes and related genes are unknown. This fact has stimulated numerous new and interesting approaches in molecular biological investigations.

TECHNIQUES IN GLYCOBIOLOGY

CRC Press This work covers methodologies for plant and animal glycoconjugate analysis. It details mass spectrometry, nuclear magnetic resonance spectroscopy, glycolipids and new physical methods, o-glycosylation characterization, chromophore and fluorophore labelling of oligosaccharides, separations, exoglycosidases and mapping, and plant glyco biology.

ANTIBODY GLYCOSYLATION

Springer Nature This book summarizes recent advances in antibody glycosylation research. Covering major topics relevant for immunoglobulin glycosylation - analytical methods, biosynthesis and regulation, modulation of effector functions - it provides new perspectives for research and development in the field of therapeutic antibodies, biomarkers, vaccinations, and immunotherapy. Glycans attached to both variable and constant regions of antibodies are known to affect the antibody conformation, stability, and effector functions. Although it focuses on immunoglobulin G (IgG), the most explored antibody in this context, and unravels the natural phenomena resulting from the mixture of IgG glycovariants present in the human body, the book also discusses other classes of human immunoglobulins, as well as immunoglobulins produced in other species and production systems. Further, it reviews the glycoanalytical methods applied to antibodies and addresses a range of less commonly explored topics, such as automatization and bioinformatics aspects of high-throughput antibody glycosylation analysis. Lastly, the book highlights application areas ranging from the ones already benefitting from antibody glycoengineering (such as monoclonal antibody production), to those still in the research stages (such as exploration of antibody glycosylation as a clinical or biological age biomarker), and the potential use of antibody glycosylation in the optimization of vaccine production and immunization protocols. Summarizing the current knowledge on the broad topic of antibody glycosylation and its therapeutic and biomarker potential, this book will appeal to a wide biomedical readership in academia and industry alike. Chapter 4 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

GENOMIC AND PERSONALIZED MEDICINE

Academic Press *Genomic and Personalized Medicine, Second Edition* — winner of a 2013 Highly Commended BMA Medical Book Award for Medicine — is a major discussion of the structure, history, and applications of the field, as it emerges from the campus and lab into clinical action. As with the first edition, leading experts review the development of the new science, the current opportunities for genome-based analysis in healthcare, and the potential of genomic medicine in future healthcare. The inclusion of the latest information on diagnostic testing, population screening, disease susceptibility, and pharmacogenomics makes this work an ideal companion for the many stakeholders of genomic and personalized medicine. With advancing knowledge of the genome across and outside protein-coding regions of DNA, new comprehension of genomic variation and frequencies across populations, the elucidation of advanced strategic approaches to genomic study, and above all in the elaboration of next-generation sequencing, genomic medicine has begun to achieve the much-vaunted transformative health outcomes of the Human Genome Project, almost a decade after its official completion in April 2003. Highly Commended 2013 BMA Medical Book Award for Medicine More than 100 chapters, from leading researchers, review the many impacts of genomic discoveries in clinical action, including 63 chapters new to this edition Discusses state-of-the-art genome technologies, including population screening, novel diagnostics, and gene-based therapeutics Wide and inclusive discussion encompasses the formidable ethical, legal, regulatory and social challenges related to the evolving practice of genomic medicine Clearly and beautifully illustrated with 280 color figures, and many thousands of references for further reading and deeper analysis

PLANT CELL WALLS

Garland Science Plant cell walls are complex, dynamic cellular structures essential for plant growth, development, physiology and adaptation. *Plant Cell Walls* provides an in depth and diverse view of the microanatomy, biosynthesis and molecular physiology of these cellular structures, both in the life of the plant and in their use for bioproducts and biofuels. *Plant Cell Walls* is a textbook for upper-level undergraduates and graduate students, as well as a professional-level reference book. Over 400 drawings, micrographs, and photographs provide visual insight into the latest research, as well as the uses of plant cell walls in everyday life, and their applications in biotechnology. Illustrated panels concisely review research methods and tools; a list of key terms is given at the end of each chapter; and extensive references organized by concept headings provide readers with guidance for entry into plant cell wall literature. Cell wall material is of considerable importance to the biofuel, food, timber, and pulp and paper industries as well as being a major focus of research in plant growth and sustainability that are of central interest in present day agriculture and biotechnology. The production and use of plants for biofuel and bioproducts in a time of need for responsible global carbon use requires a deep understanding of the fundamental biology of plants and their cell walls. Such an understanding will lead to improved plant processes and materials, and help provide a sustainable resource for meeting the future bioenergy and bioproduct needs of humankind.

CHEMICAL GLYCOBIOLOGY

Amer Chemical Society Although the process of understanding the biological functions of carbohydrates has developed slowly due to the lack of efficient approaches in obtaining and studying these structures, in the past two decades, remarkable advances have been made in chemical and chemoenzymatic synthesis of carbohydrates and glycoconjugates. The material presented in this volume shows how a better understanding of the structure and the function of carbohydrate-containing bacterial cell wall has revealed that carbohydrate-containing molecules and carbohydrate-like structures are useful as carbohydrate-based anti-microbial vaccines, anti-viral drugs, anti-coagulants, anti-cancer drugs, and potential anti-cancer vaccines. In addition, the text explores the important roles that novel glycolipids have been found to play in the immune system. Metabolic engineering has demonstrated itself as an efficient approach to probe and manipulate biological functions of carbohydrates both in vitro and in vivo. Automated glycan analysis, carbohydrate microarrays, and novel high-throughput screening methods have hastened the analysis and the understanding of carbohydrate-containing structures. Polypeptide-based glycopolymers have been developed for the study of multivalent binding events of carbohydrates and proteins. This text presents examples of these recent developments in using chemical techniques and tools to study glycobiology. This is an excellent reference book for upper-division undergraduate students, graduate students, and researchers who are interested in carbohydrate-related medicinal chemistry, organic chemistry, biology, and chemical biology.

VERTEBRATE LECTINS

Van Nostrand Reinhold Company

ESSENTIALS OF MARINE BIOTECHNOLOGY

Springer Nature This textbook introduces marine biotechnology by collecting the key knowledge on genetics, fish breeding, genetic diversity, seaweed production and microalgae biotechnology, and explores marine biomaterials and how they can benefit human health. Covering the latest applications of marine biotechnology in natural product development, genomics, transgenic technology, cosmeceuticals, nutraceuticals, and pharmaceutical development, it particularly focuses on future biological resources, developing functional materials from marine life, production of marine bioenergy and marine microbial resources and biotechnology. The author explains the structure of the book in an introductory note, and each chapter offers a detailed overview and conclusion to help readers better grasp the acquired knowledge. Lastly, the final part provides a comprehensive glossary with brief explanations of the key concepts in marine biotechnology. Written by a leading expert in the field with more than 30 years of teaching experience, this book broadens students' understanding of the basics and recent developments in marine biotechnology.

MICROALGAL BIOTECHNOLOGY

BoD – Books on Demand *Microalgal Biotechnology* presents an authoritative and comprehensive overview of the microalgae-based processes and products. Divided into 10 discreet chapters, the book covers topics on applied technology of microalgae. *Microalgal Biotechnology* provides an insight into future developments in each field and extensive bibliography. It will be an essential resource for researchers and academic and industry professionals in the microalgae biotechnology field.

BIOLOGY OF THE FUNGAL CELL

Springer Science & Business Media What makes the fungal cell unique among eukaryotes and what features are shared? This volume addresses some of the most prominent and fascinating facets of questions as they pertain to the growth and development of both yeast and hyphal forms of fungi, beginning with subcellular components - then cell organization, polarity, growth, differentiation and beyond - to the cell biology of spores, biomechanics of invasive growth, plant pathogenesis, mycorrhizal symbiosis and colonial networks. Throughout, structural, molecular and ecological aspects are integrated to form a contemporary look at the biology of the fungal cell.

STRUCTURAL GLYCOBIOLOGY

CRC Press *Structural Glycobiology* covers the experimental, theoretical, and alternative technologies used in the study of the structural basis for the diverse biological roles of carbohydrates. The book overviews the application of specialized technologies to the study of carbohydrates in biology, reviews relevant and current research in the field, and is illustrated throughout by specific examples of how research investigations have yielded key structural and associated biological data on carbohydrates and glycolipids. In particular, the book focuses on: X-ray crystallography and small-angle scattering, NMR, and cryo-electron microscopy techniques Theoretical (modeling-based) approaches, such as molecular mechanics, molecular dynamics, free energy calculations, and carbohydrate docking Alternative techniques for yielding structural information on carbohydrates from complex biological samples

Carbohydrates in medicine, specifically in areas that have been directly impacted by our understanding of the structural role of carbohydrates in immune recognition: cancer, organ transplantation, and infection

GLYCOME INFORMATICS

METHODS AND APPLICATIONS

CRC Press A Focused, State-of-the-Art Overview of This Evolving Field Presents Various Techniques for Glycoinformatics The development and use of informatics tools and databases for glycobiology and glycomics research have increased considerably in recent years. In addition to accumulating well-structured glyco-related data, researchers have now developed semi-automated methods for the annotation of mass spectral data and algorithms for capturing patterns in glycan structure data. These techniques have enabled researchers to gain a better understanding of how these complex structures affect protein function and other biological processes, including cancer. One of the few up-to-date books available in this important area, Glycome Informatics: Methods and Applications covers all known informatics methods pertaining to the study of glycans. It discusses the current status of carbohydrate databases, the latest analytical techniques, and the informatics needed for rapid progress in glycomics research. Providing an overall understanding of glycobiology, this self-contained guide focuses on the development of glycome informatics methods and current problems faced by researchers. It explains how to implement informatics methods in glycobiology. The author includes the required background material on glycobiology as well as the mathematical concepts needed to understand advanced mining and algorithmic techniques. She also suggests project themes for readers looking to begin research in the field.

ORGANIC CHEMISTRY: 100 MUST-KNOW MECHANISMS

Walter de Gruyter GmbH & Co KG This book summarizes 100 essential mechanisms in organic chemistry ranging from classical such as the Reformatsky Reaction from 1887 to recently elucidated mechanism such as the copper(I)-catalyzed alkyne-azide cycloaddition. The reactions are easy to grasp, well-illustrated and underpinned with explanations and additional information.

LAB DYNAMICS

MANAGEMENT SKILLS FOR SCIENTISTS

CSHL Press "Lab Dynamics is a book about the challenges to doing science and dealing with the individuals involved, including oneself. The authors, a scientist and a psychotherapist, draw on principles of group and behavioral psychology but speak to scientists in their own language about their own experiences. They offer in-depth, practical advice, real-life examples, and exercises tailored to scientific and technical workplaces on topics as diverse as conflict resolution, negotiation, dealing with supervision, working with competing peers, and making the transition from academia to industry." "This is a uniquely valuable contribution to the scientific literature, on a subject of direct importance to lab heads, postdocs, and students. It is also required reading for senior staff concerned about improving efficiency and effectiveness in academic and industrial research."--BOOK JACKET