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**Algal Toxins: Nature, Occurrence, Effect and Detection** - Valtere Evangelista 2008-06-27

This volume contains the lectures and seminars given at the NATO Advanced Study Institute on “Sensor Systems for Biological Threads: The Algal Toxins Case”, held in Pisa, Italy in October, 2007. The Institute was sponsored and funded by the Scientific Affairs Division of NATO. It is my pleasant duty to thank this institution. This ASI offered updated information on how far the research on algal toxins has gone in the exploration of structures, biosynthesis and regulation of toxins, and the development of technology for bio-monitoring these c- pounds. Algae can form heavy growths in ponds, lakes, reservoirs and sl- moving rivers throughout the world; algae can house toxins which are - ually released into water when the cells rupture or die. Hundreds of toxins have been identified so far. Detection methods, including rapid screening, have been developed to help us learning more about them, especially to find out which toxins are a real threat for people and what conditions encourage their production and accumulation. Early detection of algal toxins is an - portant aspect for public safety and natural environment, and significant efforts are underway to develop effective and reliable tools that can be used for this purpose.

*Fungal Biotechnology and Bioengineering* - Abd El-Latif Hesham 2021-06-20

Fungi are eukaryotic microorganisms that include both unicellular and multicellular species. They have a worldwide distribution and a wide range of applications in diverse sectors, from environmental, food and medicine to biotechnological innovations. Fungal biochemical genetics involves the study of the relationships between genome, proteome and metabolome, and the underlying molecular processes in both native and bioengineered fungi. This book provides a valuable resource on the challenges and potential of fungal biotechnology and related bioengineering and functional diversity for various industrial applications in the food, environmental, bioenergy and biorefining, and the biopharma sectors. In comparison to previous and related publications in the area of applied myco-biotech-engineering, this book bridges a knowledge gap in the areas related to prospects and investment as well as intellectual and technical issues. This book also provides information on recent commercial and economic interests in the area by juxtaposing the developments achieved in recent worldwide research and its many challenges.

**Harmful Algal Blooms (HABs) and Public Health: Progress and Current Challenges** - 2016

Annotation Over the past decade, coastal and freshwater systems in the

U.S. and worldwide have experienced an apparent increase in the frequency and geographic distribution of harmful algal blooms (HABs). These blooms can adversely affect both public health and ecosystem health. Toxin-producing HABs can accumulate in drinking and recreational waters and in foods of aquatic origin such as fish and seafood. Human and animal health risks include exposure to the toxins through eating contaminated food or drinking or swimming in contaminated water. Because of these potential public health risks, several countries and U.S. states have developed monitoring programs and guidelines for drinking and recreational water quality to protect public health. This special issue will present research papers and reviews on various aspects of public health and environmental responses to harmful algal blooms. The subthemes considered include: - HAB monitoring for public health protection and response - Public health surveillance for HAB-related exposures and illnesses - Health risks from exposure to contaminated fish and shellfish, drinking and recreational water - Remediation and treatment technologies - Challenges and successes of HAB-related public health education campaigns and programs - HAB risk management.

Antibiotic Resistance - Institute of Medicine 2011-01-10

Years of using, misusing, and overusing antibiotics and other antimicrobial drugs has led to the emergence of multidrug-resistant 'superbugs.' The IOM's Forum on Microbial Threats held a public workshop April 6-7 to discuss the nature and sources of drug-resistant pathogens, the implications for global health, and the strategies to lessen the current and future impact of these superbugs.

**Microbial Technologies in Advanced Biofuels Production** - Patrick C. Hallenbeck 2011-12-16

Concerns over dwindling fossil fuel reserves and impending climate changes have focused attention worldwide on the need to discover alternative, sustainable energy sources and fuels. Biofuels, already produced on a massive industrial scale, are seen as one answer to these problems. However, very real concerns over the effects of biofuel production on food supplies, with some of ht recent increases in worldwide food costs attributable to biofuel production, have lead to the realization that new, non-food substrates for biofuel production must be bought online. This book is an authoritative, comprehensive, up-to-date review of the various options under development for the production of advanced biofuels as alternative energy sources. A general overview and introductory chapters for each section place the field in the context as well as provide essential basic notions for the more general reader. Accomplished, internationally recognized experts carrying out research on individual focus areas contribute specific technical chapters detailing present progress and future prospects.

**Plant Tissue Culture, Development, and Biotechnology** - Robert N. Trigiano 2016-03-30

Under the vast umbrella of Plant Sciences resides a plethora of highly specialized fields. Botanists, agronomists, horticulturists, geneticists, and physiologists each employ a different approach to the study of plants and each for a different end goal. Yet all will find themselves in the laboratory engaging in what can broadly be termed biotechnol

Probiotics and Prebiotics in Animal Health and Food Safety - Diana Di Gioia 2018-02-27

This book discusses the role of probiotics and prebiotics in maintaining the health status of a broad range of animal groups used for food production. It also highlights the use of beneficial microorganisms as protective agents in animal derived foods. The book provides essential information on the characterization and definition of probiotics on the basis of recently released guidelines and reflecting the latest trends in bacterial taxonomy. Last but not least, it discusses the concept of “dead” probiotics and their benefits to animal health in detail. The book will benefit all professors, students, researchers and practitioners in academia and industry whose work involves biotechnology, veterinary sciences or food production.

**Biofilm Infections** - Thomas Bjarnsholt 2014-10-11

This book will cover both the evidence for biofilms in many chronic bacterial infections as well as the problems facing these infections such as diagnostics and treatment regimes. A still increasing interest and

emphasis on the sessile bacterial lifestyle biofilms has been seen since it was realized that that less than 0.1% of the total microbial biomass lives in the planktonic mode of growth. The term was coined in 1978 by Costerton et al. who defined the term biofilm for the first time.In 1993 the American Society for Microbiology (ASM) recognised that the biofilmmode of growth was relevant to microbiology. Lately many articles have been published on the clinical implications of bacterial biofilms. Both original articles and reviews concerning the biofilm problem are available.

Foundations of Colorectal Cancer - Alejandro Pazos Sierra 2021-10-28
Foundations of Colorectal Cancer provides a holistic and comprehensive dive into colorectal cancer, discussing the contributions of each discipline that studies it, allowing its understanding from the most demographic and ethical facts, to the treatment process, its varieties and genetic background. Written by experts in diverse areas such as cancer research, oncology, genetics, biochemistry, psychology, social sciences, bioinformatics and palliative care, the book brings real-world experiences to help readers with any challenge they may face when dealing with patients or during their research workflow. The content is split into nine sections: Clinical manifestations and disease detection, covering primary and secondary prevention, and the role of primary care; Diagnosis and staging, discussing endoscopy, colonoscopy, molecular pathology, and anatomopathological diagnosis; Treatment, including endoscopic, surgical, radiological, and postoperative approaches; Molecular and biological mechanisms, with the role of intestinal microbiota, stem cells and signaling pathways; New diagnostic methods, encompassing biomarkers and bioinformatics tools for research; Biobanks, with an overview of their regulations and importance in the research; Epidemiological studies, focusing on incidence and mortality globally and by regions; Hereditary colorectal cancer, differentiating nonpolyposis and polyposis types; and Addressing the consequences of colorectal cancer, covering psychological effects, nutrition and ethical issues. Provides a multidisciplinary approach with a holistic view of colorectal cancer, ranging from basic science to population studies, with its social and environmental influences and impacts, interpreting the disease as a medical, chemical, physical, microbial, psychological, and social condition Written by a diverse group of specialists with complementary expertise, including oncologists, radiologists, biochemists, surgeons, psychologists, social workers and clinicians, all members of the Galician Research Network of Colorectal Cancer (REGICC) with vast collaboration experience to bring comprehensive knowledge on the subject Encompasses reliable information suitable for different workers within the healthcare sector and research community dedicated to colorectal cancer, from clinicians and healthcare providers, researchers on several aspects of cancer, to bioinformaticians who deal with health data Includes many case studies throughout the chapters discussed by specialists with high scientific accuracy and didactic value, in order to clearly and precisely share their professional experience on the subject with readers

Pocket Guide to Bacterial Infections - K Balamurugan 2019-02-07
Pocket Guide to Bacterial Infections provides information pertinent to the behaviour of bacterial cells during their interactions with different cell types of multiple host systems. This book will present the role of various bacterial pathogens affecting the host system. The book is to be organized flexibly so that chapters and topics are arranged with continuity from the former chapters. Each chapter has been made as self-contained as possible to promote this flexibility. This book will discuss each of the virulence properties of the bacteria with reference to their interacting hosts in a larger perspective. Kwey selling features: Summarizes the role various bacterial pahtogens affect the host system Reviews recent advances for combating different types of bacterial infections that infect different body parts Designed as an effective teaching and research tool providing up to date information on bacterial infections Defines important terms Written in a readable and direct writing style

**Consequences of Microbial Interactions with Hydrocarbons, Oils, and Lipids: Biodegradation and Bioremediation** - Robert J. Steffan 2019-08-22

In this book international experts discuss the state-of-the-art in the biological degradation of hydrocarbons to meet remedial or disposal goals. The work focuses on practical applications, often on globally important scales including the remediation of some of the world's largest crude oil spills. Other related chapters discuss important implications of microbial transformation of hydrocarbons, including treatment of high fat processing wastes, impacts of microbial biodegradation activity on industrial processes, and the implications of microbial oil degradation in relation to modern oil extraction processes like hydraulic fracturing of shales and extraction of oil sands.

**Diseases of the Sinuses** - Christopher C. Chang 2014-06-06

Diseases of the Sinuses: A Comprehensive Textbook of Diagnosis and Treatment, 2nd Edition, offers the definitive source of information about the basic science of the sinuses and the clinical approach to sinusitis. Since the widely praised publication of the first edition, understanding of sinus disease has changed dramatically, mainly as a result of recent developments and new discoveries in the field of immunology. This updated and expanded edition is divided into sections addressing, separately, the pathogenesis, clinical presentation, medical and surgical management of acute and chronic rhinosinusitis. Special entities such as autoimmune-related sinusitis, allergy and sinusitis, and aspirin-exacerbated respiratory disease are discussed in separate chapters. The role of immunodeficiency is also addressed. The management section has been fully updated to incorporate new medical modalities and surgical procedures. Developed by a distinguished group of international experts who share their expertise and insights from years of collective experience in treating sinus diseases, the book will appeal to anyone who has an interest in sinus disease, including both physicians and allied health professionals. Internists, pediatricians, allergists, otolaryngologists and infectious disease specialists will find the book to be an invaluable, comprehensive reference. Physician assistants and nurse practitioners who work with specialists who treat sinus disease will also benefit from the book.

**The Paraoxonases: Their Role in Disease Development and Xenobiotic Metabolism** - Bharti Mackness 2007-10-26

In September 2006 the 2nd International Conference on Paraoxonases took place in Hajdúszoboszló, Hungary, bringing together the world's foremost experts in the field. The current book is a distillation of the plenary lectures which took place at the meeting, resulting in a comprehensive up-to-date, state-of-the-art review of current paraoxonase research. The book details a unique and novel enzyme whose physiological/pathological function(s) are just starting to be revealed.

**Plant-derived Natural Products** - Anne E. Osbourn 2009-07-07

Plants produce a huge array of natural products (secondary metabolites). These compounds have important ecological functions, providing protection against attack by herbivores and microbes and serving as attractants for pollinators and seed-dispersing agents. They may also contribute to competition and invasiveness by suppressing the growth of neighboring plant species (a phenomenon known as allelopathy). Humans exploit natural products as sources of drugs, flavoring agents, fragrances and for a wide range of other applications. Rapid progress has been made in recent years in understanding natural product synthesis, regulation and function and the evolution of metabolic diversity. It is timely to bring this information together with contemporary advances in chemistry, plant biology, ecology, agronomy and human health to provide a comprehensive guide to plant-derived natural products. Plant-derived natural products: synthesis, function and application provides an informative and accessible overview of the different facets of the field, ranging from an introduction to the different classes of natural products through developments in natural product chemistry and biology to ecological interactions and the significance of plant-derived natural products for humans. In the final section of the book a series of chapters on new trends covers metabolic engineering, genome-wide approaches, the metabolic consequences of genetic modification, developments in traditional medicines and nutraceuticals, natural products as leads for drug discovery and novel non-food crops.

**Advances in Enzyme Biotechnology** - Pratyoosh Shukla 2013-08-13

Enzyme Technology is one the most promising disciplines in modern

biotechnology. In this book, the applications of a wide variety of enzymes are highlighted. Current studies in enzyme technology are focused towards the discovery of novel enzymes (termed “bio-discovery” or “bio-prospecting”) and the identification and elucidation of novel pathways of these novel enzymes with emphasis on their industrial relevance. With the development of molecular techniques and other bioinformatics tools, the time to integrate this subject with other fields in the life sciences has arrived. A rapid expansion of the knowledge base in the field of enzyme biotechnology has occurred over the past few years. Much of this expansion has been driven by the bio-discovery of many new enzymes from a wide range of environments, some extreme in nature, followed by subsequent protein (enzyme) engineering. These enzymes have found a wide range of applications, ranging from bioremediation, bio-monitoring, biosensor development, bioconversion to biofuels and other biotechnologically important value-added products. Hydrolases constitute a major component of the global annual revenue generated by industrial enzymes and the emphasis has therefore been placed on these enzymes and their applications. With the immense interest of researchers active in this area, this book will serve to provide information on current aspects in this field of study. In the current edition, the contributions of many diversified topics towards establishing new directions of research in the area of enzyme biotechnology are described. This book serves to provide a unique source of information to undergraduates, post graduates and doctoral courses in microbiology and biotechnology along with allied life sciences. The present edition of the book covers all important areas of enzyme biotechnology i.e. the wide variety of enzymes in the field of enzyme biotechnology and their industrial applications, new methods and state-of-the-art information on modern methods of enzyme discovery. This book will act as good resource on most of the current facets of enzyme technology for all students engaged in bioengineering and biotechnology.

**Fermented Foods in Health and Disease Prevention** - Juana Frías 2016-09-12

Fermented Foods in Health and Disease Prevention is the first scientific reference that addresses the properties of fermented foods in nutrition by examining their underlying microbiology, the specific characteristics of a wide variety of fermented foods, and their effects in health and disease. The current awareness of the link between diet and health drives growth in the industry, opening new commercial opportunities. Coverage in the book includes the role of microorganisms that are involved in the fermentation of bioactive and potentially toxic compounds, their contribution to health-promoting properties, and the safety of traditional fermented foods. Authored by worldwide scientists and researchers, this book provides the food industry with new insights on the development of value-added fermented foods products, while also presenting nutritionists and dieticians with a useful resource to help them develop strategies to assist in the prevention of disease or to slow its onset and severity. Provides a comprehensive review on current findings in the functional properties and safety of traditional fermented foods and their impact on health and disease prevention Identifies bioactive microorganisms and components in traditional fermented food Includes focused key facts, helpful glossaries, and summary points for each chapter Presents food processors and product developers with opportunities for the development of fermented food products Helps readers develop strategies that will assist in preventing or slowing disease onset and severity

*Eucalyptus* - John J.W. Coppen 2002-04-25

Eucalyptus, a genus of over 800 species, is a multiproduct crop par excellence. Not only is it grown for timber, pulp and fuelwood, but, as the Aborigines discovered thousands of years ago, it has numerous medicinal and aromatic properties. Since the first commercial distillation of eucalyptus oil 150 years ago, a vast array of eucalyptus-based pro

The Science and Technology of Industrial Water Treatment - Zahid Amjad 2010-04-05

Mineral scale deposits, corrosion, suspended matter, and microbiological growth are factors that must be controlled in industrial water systems. Research on understanding the mechanisms of these problems has attracted considerable attention in the past three decades as has

progress concerning water treatment additives to ameliorate these concerns.

**METABIOTICS** - Boris A. Shenderov 2020-02-13

Aimed at students, researchers, nutritionists, and developers in food technology, this research text addresses the nascent field of metabiotics. Metabiotics are products based on components of cells, metabolites, and signaling molecules released by probiotic strains, engineered to optimize host-specific physiological functions in a way that traditional probiotics cannot. This book examines the history, processes, design, classifications, and functions of metabiotics. It includes an overview of the composition and function of the gut microbiota, and discusses development of target-specific metabiotics. Further coverage includes comparisons to traditional probiotics, as well as probiotic safety and side-effects. Metabiotics: Present State, Challenges and Perspectives provides a complete history and understanding of this new field, the next phase of the probiotic industry.

**The Perfect Slime** - Hans-Curt Flemming 2016-09-15

The Perfect Slime presents the latest state of knowledge and all aspects of the Extracellular Polymeric Substances, (EPS) matrix – from the ecological and health to the antifouling perspectives. The book brings together all the current material in order to expand our understanding of the functions, properties and characteristics of the matrix as well as the possibilities to strengthen or weaken it. The EPS matrix represents the immediate environment in which biofilm organisms live. From their point of view, this matrix has paramount advantages. It allows them to stay together for extended periods and form synergistic microconsortia, it retains extracellular enzymes and turns the matrix into an external digestion system and it is a universal recycling yard, it protects them against desiccation, it allows for intense communication and represents a huge genetic archive. They can remodel their matrix, break free and eventually, they can use it as a nutrient source. The EPS matrix can be considered as one of the emergent properties of biofilms and are a major reason for the success of this form of life. Nevertheless, they have been termed the “black matter of biofilms” for good reasons. First of all: the isolation methods define the results. In most cases, only water soluble EPS components are investigated; insoluble ones such as cellulose or amyloids are much less included. In particular in environmental biofilms with many species, it is difficult to impossible isolate, separate the various EPS molecules they are encased in and to define which species produced which EPS. The regulation and the factors which trigger or inhibit EPS production are still very poorly understood. Furthermore: bacteria are not the only microorganisms to produce EPS. Archaea, Fungi and algae can also form EPS. This book investigates the questions, What is their composition, function, dynamics and regulation? What do they all have in common?

Modern Tools and Techniques to Understand Microbes - Ajit Varma 2017-04-21

This book provides essential molecular techniques and protocols for analyzing microbes that are useful for developing novel bio-chemicals, such as medicines, biofuels, and plant protection substances. The topics and techniques covered include: microbial diversity and composition; microorganisms in the food industry; mass cultivation of sebacinales; host-microbe interaction; targeted gene disruption; function-based metagenomics to reveal the rhizosphere microbiome; mycotoxin biosynthetic pathways; legume-rhizobium symbioses; multidrug transporters of yeast; drug-resistant bacteria; the fungal endophyte piriformospora indica; medicinal plants; arbuscular mycorrhizal fungi; biosurfactants in microbial enhanced oil recovery; and biocontrol of the soybean cyst nematode with root endophytic fungi; as well as microbe-mediated drought tolerance in plants.

**Cosmetic Microbiology** - Daniel K. Brannan 1997-04-23

Until now, information on cosmetic microbiology was scattered and mostly consisted of oral tradition passed on from mentors to apprentices. Finally, here is an understandable and easy-to-read guide documenting cosmetic microbiology practices. Cosmetic Microbiology: A Practical Handbook contains technical information on sanitation and the preservation of cosmetics for microbiologists as well as for process engineers, plant managers, and workers. The book provides the

knowledge needed to create safe and usable cosmetic products. All aspects of cosmetic microbiology are covered, including testing methods, preservation, toxicology, and regulatory concerns.

*A Beginners' Guide to Scanning Electron Microscopy* - Anwar Ul-Hamid 2018-10-26

This book was developed with the goal of providing an easily understood text for those users of the scanning electron microscope (SEM) who have little or no background in the area. The SEM is routinely used to study the surface structure and chemistry of a wide range of biological and synthetic materials at the micrometer to nanometer scale. Ease-of-use, typically facile sample preparation, and straightforward image interpretation, combined with high resolution, high depth of field, and the ability to undertake microchemical and crystallographic analysis, has made scanning electron microscopy one of the most powerful and versatile techniques for characterization today. Indeed, the SEM is a vital tool for the characterization of nanostructured materials and the development of nanotechnology. However, its wide use by professionals with diverse technical backgrounds—including life science, materials science, engineering, forensics, mineralogy, etc., and in various sectors of government, industry, and academia—emphasizes the need for an introductory text providing the basics of effective SEM imaging.A Beginners' Guide to Scanning Electron Microscopy explains instrumentation, operation, image interpretation and sample preparation in a wide ranging yet succinct and practical text, treating the essential theory of specimen-beam interaction and image formation in a manner that can be effortlessly comprehended by the novice SEM user. This book provides a concise and accessible introduction to the essentials of SEM includes a large number of illustrations specifically chosen to aid readers' understanding of key concepts highlights recent advances in instrumentation, imaging and sample preparation techniques offers examples drawn from a variety of applications that appeal to professionals from diverse backgrounds.

**Handbook of Hydrocolloids** - Glyn O. Phillips 2009-05-28

Hydrocolloids are among the most widely used ingredients in the food industry. They function as thickening and gelling agents, texturizers, stabilisers and emulsifiers and in addition have application in areas such as edible coatings and flavour release. Products reformulated for fat reduction are particularly dependent on hydrocolloids for satisfactory sensory quality. They now also find increasing applications in the health area as dietary fibre of low calorific value. The first edition of Handbook of Hydrocolloids provided professionals in the food industry with relevant practical information about the range of hydrocolloid ingredients readily and at the same time authoritatively. It was exceptionally well received and has subsequently been used as the substantive reference on these food ingredients. Extensively revised and expanded and containing eight new chapters, this major new edition strengthens that reputation. Edited by two leading international authorities in the field, the second edition reviews over twenty-five hydrocolloids, covering structure and properties, processing, functionality, applications and regulatory status. Since there is now greater emphasis on the protein hydrocolloids, new chapters on vegetable proteins and egg protein have been added. Coverage of microbial polysaccharides has also been increased and the developing role of the exudate gums recognised, with a new chapter on Gum Ghatti. Protein-polysaccharide complexes are finding increased application in food products and a new chapter on this topic as been added. Two additional chapters reviewing the role of hydrocolloids in emulsification and their role as dietary fibre and subsequent health benefits are also included. The second edition of Handbook of hydrocolloids is an essential reference for post-graduate students, research scientists and food manufacturers. Extensively revised and expanded second edition edited by two leading international authorities Provides an introduction to food hydrocolliods considering regulatory aspects and thickening characteristics Comprehensively examines the manufacture, structure, function and applications of over twenty five hydrocolloids

**Vibriosis in Fish** - G. L. Bullock 1977

*Microorganisms in the Deterioration and Preservation of Cultural*

*Heritage* - Edith Joseph 2021-05-05
This open access book offers a comprehensive overview of the role and potential of microorganisms in the degradation and preservation of cultural materials (e.g. stone, metals, graphic documents, textiles, paintings, glass, etc.). Microorganisms are a major cause of deterioration in cultural artefacts, both in the case of outdoor monuments and archaeological finds. This book covers the microorganisms involved in biodeterioration and control methods used to reduce their impact on cultural artefacts. Additionally, the reader will learn more about how microorganisms can be used for the preservation and protection of cultural artefacts through bio-based and eco-friendly materials. New avenues for developing methods and materials for the conservation of cultural artefacts are discussed, together with concrete advances in terms of sustainability, effectiveness and toxicity, making the book essential reading for anyone interested in microbiology and the preservation of cultural heritage.
Enzymes in Food Technology - Mohammed Kuddus 2018-11-19
The integration of enzymes in food processing is well known, and dedicated research is continually being pursued to address the global food crisis. This book provides a broad, up-to-date overview of the enzymes used in food technology. It discusses microbial, plant and animal enzymes in the context of their applications in the food sector; process of immobilization; thermal and operational stability; increased product specificity and specific activity; enzyme engineering; implementation of high-throughput techniques; screening of relatively unexplored environments; and development of more efficient enzymes. Offering a comprehensive reference resource on the most progressive field of food technology, this book is of interest to professionals, scientists and academics in the food and biotech industries.
*Implication of Quorum Sensing and Biofilm Formation in Medicine, Agriculture and Food Industry* - Pallaval Veera Bramhachari 2019-11-26
The book illustrates the role of quorum sensing in the food industry, agriculture, veterinary sciences, and medicine. It highlights the importance of quorum sensing in regulating diverse cellular functions in microbes, including virulence, pathogenesis, controlled-gene expression systems, and antibiotic resistance. This book also describes the role of quorum sensing in survival behavior and antibiotic resistance in bacteria. Further, it reviews the major role played by quorum sensing in food spoilage, biofilm formation, and food-related pathogenesis. It also explores the methods for the detection and quantification of quorum sensing signals. It also presents antimicrobial and anti-quorum sensing activities of medicinal plants. Finally, the book elucidates a comprehensive yet representative description of basic and applied aspects of quorum sensing inhibitors. This book serves an ideal guide for researchers to understand the implications of quorum sensing in the food industry, medicine, and agriculture.
Antibacterial Drug Discovery to Combat MDR - Iqbal Ahmad 2019-11-09
This book compiles the latest information in the field of antibacterial discovery, especially with regard to the looming threat of multi-drug resistance. The respective chapters highlight the discovery of new antibacterial and anti-infective compounds derived from microbes, plants, and other natural sources. The potential applications of nanotechnology to the fields of antibacterial discovery and drug delivery are also discussed, and one section of the book is dedicated to the use of computational tools and metagenomics in antibiotic drug discovery. Techniques for efficient drug delivery are also covered. The book provides a comprehensive overview of the progress made in both antibacterial discovery and delivery, making it a valuable resource for academic researchers, as well as those working in the pharmaceutical industry.
Plant Health Under Biotic Stress - Rizwan Ali Ansari 2019-05-08
The book illustrates the use of putative microbial agents which provide good protection to the plant from biotic pathogens attack. An up to date knowledge on plant-microbiome interaction strategies in terms of improved sustainability has been discussed. Information from experts across the globe on the application of microbes for providing amicable solution in sustainable agriculture has been gathered. In addition, information related to microbes mediated resistance levels leading to

enhanced plant health has been well presented. The chapters have emphasised the use of Plant Growth Promoting Rhizobacteria (PGPR) and other potential biocontrol agents/antagonists in the management of plant diseases which provide extensive information to the readers. Literature on microbial root colonization, plant growth promotions, and also on the protection of plants from attack of various soil borne pathogens have been presented in a coherent way. Information on the application of potential strain of the bio-control fungi, endophytes, actinomycetes strengthening the plants ability which rescue the plant from pathogens attack leading to improved plant health has also been underpinned.

*Regulation of Biological Control Agents* - Ralf-Udo Ehlers 2011-02-03

This book presents a comprehensive compilation of registration requirements necessary for authorisation of biological control agents (viruses, bacteria, fungi, active substances of natural origin and semiochemicals) in OECD countries. It also reviews data requirements for invertebrate agents (insect, mites and nematodes) and provides proposals for harmonisation of the regulation process and guidelines for completion of application forms. Based on results of the EU REBECA Policy Support Action, which gathered experts from academia, regulation authorities and industry, risks and benefits of the specific agents were reviewed and proposals for a more balanced registration process elaborated, including recommendations for acceleration of the authorisation process and discussions on trade-off effects and policy impacts. All these aspects are covered in detail in this book, which points the way forward for enhanced utilisation of biological control agents.

**Thermophiles and Thermozymes** - María-Isabel González-Siso 2019-04-23

Interest in the study of life in hot environments, both with respect to the inhabiting microorganisms and the enzymes they produce, is currently very high. The biological mechanisms responsible for the resistance to high temperatures are not yet fully understood, whereas thermostability is a highly required feature for industrial applications. In this e-book, the invited authors provide diverse evidence contributing to the understanding of such mechanisms and the unlocking of the biotechnological potential of thermophiles and thermozymes.

Overcoming Antimicrobial Resistance of the Skin - Stephen K. Tyring 2021-05-07

This book is a thorough, practical review of the challenges facing clinicians treating skin microbes and how to combat these therapeutic dilemmas. It expresses the critical public health concern of antimicrobial resistance and shows how microorganisms are developing the ability to halt the progress of antimicrobials like antibiotics, antivirals, and antifungals. Chapters are grouped together in five sections for ease of use. The first three sections of the book convey foundational information on the mechanisms of antibiotics, antivirals, and antifungals resistance, as well as the implications of lack of vaccination. The fourth section then turns to the specifics of drug resistance for protozoan and helminth infections focusing primarily on initial and subsequent resistance to treatment. The book closes with a discussion on the potential solutions of innovative therapy including new delivery mechanisms, broad-spectrum antibiotics, phytocompounds, and biofilms. Chapters feature magnified, microscopic photos for identifying structures as they appear on the skin. Part of the Updates in Clinical Dermatology series, Overcoming Antimicrobial Resistance of the Skin is an important resource relevant during the COVID-19 pandemic, and is written for all medical healthcare professionals.

**Fermentation Microbiology and Biotechnology** - E. M. T. El-Mansi 2011-12-12

Fermentation Microbiology and Biotechnology, Third Edition explores and illustrates the diverse array of metabolic pathways employed for the production of primary and secondary metabolites as well as biopharmaceuticals. This updated and expanded edition addresses the whole spectrum of fermentation biotechnology, from fermentation kinetics and dynam

**Biology of Microorganisms on Grapes, in Must and in Wine** - Helmut König 2017-11-01

The second edition of the book begins with the description of the

diversity of wine-related microorganisms, followed by an outline of their primary and energy metabolism. Subsequently, important aspects of the secondary metabolism are dealt with, since these activities have an impact on wine quality and off-flavour formation. Then chapters about stimulating and inhibitory growth factors follow. This knowledge is helpful for the growth management of different microbial species. The next chapters focus on the application of the consolidated findings of molecular biology and regulation the functioning of regulatory cellular networks, leading to a better understanding of the phenotypic behaviour of the microbes in general and especially of the starter cultures as well as of stimulatory and inhibitory cell-cell interactions during wine making. In the last part of the book, a compilation of modern methods complete the understanding of microbial processes during the conversion of must to wine.This broad range of topics about the biology of the microbes involved in the vinification process could be provided in one book only because of the input of many experts from different wine-growing countries.

**Therapeutic and Nutritional Uses of Algae** - Leonel Pereira 2018-01-29

Algae have been used since ancient times as food, fodder, fertilizer and as source of medicine. Nowadays seaweeds represent an unlimited source of the raw materials used in pharmaceutical, food industries, medicine and cosmetics. They are nutritionally valuable as fresh or dried vegetables, or as ingredients in a wide variety of prepared foods. In particular, seaweeds contain significant quantities of protein, lipids, minerals and vitamins. There is limited information about the role of algae and algal metabolites in medicine. Only a few taxa have been studied for their use in medicine. Many traditional cultures report curative powers from selected alga, in particular tropical and subtropical marine forms. This is especially true in the maritime areas of Asia, where the sea plays a significant role in daily activities. Nonetheless, at present, only a few genera and species of algae are involved in aspects of medicine and therapy. Beneficial uses of algae or algal products include those that may mimic specific manifestations of human diseases, production of antibiotic compounds, or improvement of human nutrition in obstetrics, dental research, thallassotherapy, and forensic medicine.

**Advanced Coating Materials** - Liang Li 2018-12-06

Provides a comprehensive, yet practical source of reference, and excellent foundation for comparing the properties and performance of coatings and selecting the most suitable materials based on specific service needs and environmental factors. Coating technology has developed significant techniques for protecting existing infrastructure from corrosion and erosion, maintaining and enhancing the performance of equipment, and provided novel functions such as smart coatings greatly benefiting the medical device, energy, automotive and construction industries. The mechanisms, usage, and manipulation of cutting-edge coating methods are the focus of this book. Not only are the working mechanisms of coating materials explored in great detail, but also craft designs for further optimization of more uniform, safe, stable, and scalable coatings. A group of leading experts in different coating technologies demonstrate their main applications, identify the key bottlenecks, and outline future prospects. Advanced Coating Materials broadly covers the coating techniques, including cold spray, plasma vapor deposition, chemical vapor deposition, sol–gel method, etc., and their significant applications in microreactor technology, super(de)wetting, joint implants, electrocatalyst, etc. Numerous kinds of coating structures are addressed, including nanosize particles, biomimicry structures, metals and complexed materials, along with the environmental and human compatible biopolymers resulting from microbial activities. This state-of-the-art book is divided into three parts: (1) Materials and Methods: Design and Fabrication, (2) Coating Materials: Nanotechnology, and (3) Advanced Coating Technology and Applications.

*Yeast Diversity in Human Welfare* - Tulasi Satyanarayana 2017-05-13

This book brings together and updates the latest information on the diversity of yeasts, their molecular features and their applications in the welfare of mankind. Yeasts are eukaryotic microfungi widely found in natural environments, including those with extreme conditions such as

low temperatures, low oxygen levels and low water availability. To date, approximately 2,000 of the estimated 30,000 to 45,000 species of yeast on Earth, belonging to around 200 genera have been described. Although there are a few that are opportunistic human and animal pathogens, the vast majority of yeasts are beneficial, playing an important role in the food chain and in the carbon, nitrogen and sulphur cycles. In addition, yeasts such as Saccharomyces cerevisiae, Hansenula polymorpha and Pichia pastoris are used in expressing foreign genes to produce proteins of pharmaceutical interest. A landmark in biotechnology was reached in 1996 with the completion of sequencing of the entire S. cerevisiae genome, and it has now become a central player in the development of an entirely new approach to biological research and synthetic biology. The sequencing of genomes of several yeasts including Schizosaccharomyces pombe, Candida albicans and Cryptococcus neofromans has also recently been completed. candida albicans="" and="" p/pp

**Infections in Surgery** - Massimo Sartelli 2021-01-29

Although most clinicians are aware of the problem of antimicrobial resistance, most also underestimate its significance in their own hospital. The incorrect and inappropriate use of antibiotics and other antimicrobials, as well as poor prevention and poor control of infections, are contributing to the development of such resistance. Appropriate use of antibiotics and compliance with infection prevention and control measures should be integral aspects of good clinical practice and standards of care. However, these activities are often inadequate among clinicians, and there is a considerable gap between the best evidence and actual clinical practice. In hospitals, cultural determinants influence clinical practice, and improving behaviour in terms of infection prevention and antibiotics-prescribing practice remains a challenge. Despite evidence supporting the effectiveness of best practices, many clinicians fail to implement them, and evidence-based processes and practices that are known to optimize both the prevention and the treatment of infections tend to be underused. Addressing precisely this problem, this volume offers an essential toolkit for all surgeons and intensivists interested in improving their clinical practices.

Microbial-mediated Induced Systemic Resistance in Plants - Devendra K. Choudhary 2016-03-22

With a focus on food safety, this book highlights the importance of microbes in sustainable agriculture. Plants, sessile organisms that are considered as primary producers in the ecosystem and communicate with above- and below-ground communities that consist of microbes, insects, and other vertebrate and invertebrate animals, are subjected to various kinds of stress. Broadly speaking, these can be subdivided into abiotic and biotic stresses. Plants have evolved to develop elaborate mechanisms for coping with and adapting to the environmental stresses. Among other stresses, habitat-imposed biotic stress is one serious condition causing major problems for crop productivity. Most plants employ plant-growth-promoting microorganisms (PGPMs) to combat and protect themselves from stresses and also for better growth. PGPMs are bacteria associated with plant roots and they augment plant productivity and immunity. They are also defined as root-colonizing bacteria that have beneficial effects on plant growth and development. Remarkably, PGPMs including mycorrhizae, rhizobia, and rhizobacteria (Acinetobacter, Agrobacterium, Arthrobacter, Azospirillum, Bacillus, Bradyrhizobium, Frankia, Pseudomonas, Rhizobium, Serratia, Thiobacillus) form associations with plant roots and can promote plant growth by increasing plants' access to soil minerals and protecting them against pathogens. To combat the pathogens causing different diseases and other biotic stresses, PGPMs produce a higher level of resistance in addition to plants' indigenous immune systems in the form of induced systemic resistance (ISR). The ISR elicited by PGPMs has suppressed plant diseases caused by a range of pathogens in both the greenhouse and field. As such, the role of these microbes can no longer be ignored for sustainable agriculture. Today, PGPMs are also utilized in the form of bio-fertilizers to increase plant productivity. However, the use of PGPMs requires a precise understanding of the interactions between plants and microbes, between microbes and microbiota, and how biotic factors influence these relationships. Consequently, continued research is

needed to develop new approaches to boost the efficiency of PGPMs and to understand the ecological, genetic and biochemical relationships in their habitat. The book focuses on recent research concerning interactions between PGPMs and plants under biotic stress. It addresses key concerns such as – 1. The response of benign microbes that benefit plants under biotic stress 2. The physiological changes incurred in plants under harsh conditions 3. The role of microbial determinants in promoting plant growth under biotic stress The book focuses on a range of aspects related to PGPMs such as their mode of action, priming of plant defence and plant growth in disease challenged crops, multifunctional bio-fertilizers, PGPM-mediated disease suppression, and the effect of PGPMs on secondary metabolites etc. The book will be a valuable asset to researchers and professionals working in the area of microbial-mediated support of plants under biotic stress.