

Biology Indian Institute Of Science

Frontiers in Protein and Peptide Sciences is a book series focused on leading-edge research on the structure, physical properties, and functions of proteins and peptides. Authors of contributions in this series have updated their work with new experimental data and references following their initial research. Each volume highlights a number of important topics in current research in the field of protein and peptide chemistry and molecular biology, including membrane proteins and their interactions with ligands, computational methods, and proteins in disease and biotechnology. The series is essential reading for protein chemists and researchers seeking the latest information about protein and peptide research.

New Frontiers and Applications of Synthetic Biology presents a collection of chapters from eminent synthetic biologists across the globe who have established experience and expertise working with synthetic biology. This book offers several important areas of synthetic biology which allow us to read and understand easily. It covers the introduction of synthetic biology and design of promoter, new DNA synthesis and sequencing technology, genome assembly, minimal cells, small synthetic RNA, directed evolution, protein engineering, computational tools, de novo synthesis, phage engineering, a sensor for microorganisms, next-generation diagnostic tools, CRISPR-Cas systems, and more. This book is a good source for not only researchers in designing synthetic biology, but also for researchers, students, synthetic biologists, metabolic engineers, genome engineers, clinicians, industrialists, stakeholders and policymakers interested in harnessing the potential of synthetic biology in many areas. Offers basic understanding and knowledge in several aspects of synthetic biology Covers state-of-the-art tools and technologies of synthetic biology, including promoter design, DNA synthesis, DNA sequencing, genome design, directed evolution, protein engineering, computational tools, phage design, CRISPR-Cas systems, and more Discusses the applications of synthetic biology for smart drugs, vaccines, therapeutics, drug discovery, self-assembled materials, cell free systems, microfluidics, and more In the past two decades, several pandemics have ravaged the globe, giving us several lessons on infectious disease epidemiology, the importance of initial detection and characterization of outbreak viruses, the importance of viral epidemic prevention steps, and the importance of modern vaccines. Pandemic Outbreaks in the Twenty-First Century: Epidemiology, Pathogenesis, Prevention, and Treatment summarizes the improvements in the 21st century to overcome / prevent / treat global pandemic with future prospective. Divided into 9 chapters, the book begins with an in-depth introduction to the lessons learned from the first pandemic of the 21st century. It describes the history, present and future in terms of detection, prevention and treatment. Followed by chapters on the outbreak, treatment strategies and clinical management of several infectious diseases like MERS, SARS and COVID 19, Pandemic Outbreaks in the Twenty-First Century: Epidemiology, Pathogenesis, Prevention, and Treatment, presents chapters on immunotherapies and vaccine technologies to combat pandemic outbreak and challenges. The book finishes with a chapter on the current knowledge and technology to control pandemic outbreaks. All are presented in a practical short format, making this volume a valuable resource for very broad academic audience. Provides insight to the lessons learned

from past pandemics Gives recommendations, future direction in terms of detection, prevention and treatment of pandemics Guides readers through the status and recent developments of vaccines to overcome or prevent pandemics Shows how to enhance the host innate immunity in infectious diseases Includes a chapter on immunotherapies to combat pandemic outbreaks Cancer-Leading Proteases: Structures, Functions, and Inhibition presents a detailed discussion on the role of proteases as drug targets and how they have been utilized to develop anticancer drugs. Proteases possess outstanding diversity in their functions. Because of their unique properties, proteases are a major focus of attention for the pharmaceutical industry as potential drug targets or as diagnostic and prognostic biomarkers. This book covers the structure and functions of proteases and the chemical and biological rationale of drug design relating to how these proteases can be exploited to find useful chemotherapeutics to fight cancers. In addition, the book encompasses the experimental and theoretical aspects of anticancer drug design based on proteases. It is a useful resource for pharmaceutical scientists, medicinal chemists, biochemists, microbiologists, and cancer researchers working on proteases. Explains the role of proteases in the biology of cancer Discusses how proteases can be used as potential drug targets or as diagnostic and prognostic biomarkers Covers a wide range of cancers and provides detailed discussions on protease examples

Breast Cancer Biology

Biomedical Product and Materials Evaluation

Developmental and Evolutionary Aspects

New Frontiers and Applications of Synthetic Biology

Mycobacterium Tuberculosis: Molecular Infection Biology, Pathogenesis, Diagnostics and New Interventions

Cancer-Leading Proteases

Unravelling the intricate cell signalling networks and their significance in cancer poses major intellectual challenge.

Keeping this in mind, the book aims at understanding the mechanism of action of different proteins and their complexes in the cancer signalling pathways. Hence, the proposed book that comprises 20 chapters provides a comprehensive introduction on cell signalling, its alterations in cancer, molecules that have been popular targets as well as the ones that are emerging as targets. In addition, it discusses different forms of therapy that are coming up for its treatment. Other than that, a major portion of the book is focused on studying different disciplines at the interface of biology and other areas of science that are being used to understand cancer biology in depth.

Hormones and Aging, Volume 115 in the Vitamins and Hormones series, highlights advances in the field, with this new volume presenting timely topics, including hypothalamic aging and hormones, endocannabinoids and aging-inflammation, neuroplasticity, mood and pain, the impact of hormones and bone loss across the menopause transition, and much more. Provides the authority and expertise of leading contributors from an international board of authors Presents the latest

release in the Vitamins and Hormones series Includes the latest information on Hormones and Aging
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Encyclopedia of Bioinformatics and Computational Biology: ABC of Bioinformatics combines elements of computer science, information technology, mathematics, statistics and biotechnology, providing the methodology and in silico solutions to mine biological data and processes. The book covers Theory, Topics and Applications, with a special focus on Integrative –omics and Systems Biology. The theoretical, methodological underpinnings of BCB, including phylogeny are covered, as are more current areas of focus, such as translational bioinformatics, cheminformatics, and environmental informatics. Finally, Applications provide guidance for commonly asked questions. This major reference work spans basic and cutting-edge methodologies authored by leaders in the field, providing an invaluable resource for students, scientists, professionals in research institutes, and a broad swath of researchers in biotechnology and the biomedical and pharmaceutical industries. Brings together information from computer science, information technology, mathematics, statistics and biotechnology Written and reviewed by leading experts in the field, providing a unique and authoritative resource Focuses on the main theoretical and methodological concepts before expanding on specific topics and applications Includes interactive images, multimedia tools and crosslinking to further resources and databases

An Interdisciplinary Approach to the Life Sciences

Epidemiology, Pathogenesis, Prevention, and Treatment

Salmonellosis: New Insights for the Healthcare Professional: 2011 Edition

Unravelling Cancer Signaling Pathways: A Multidisciplinary Approach

Mammalian Endocrinology and Male Reproductive Biology

Biological Oxidation Systems

RNA-based Regulation in Human Health and Disease offers an in-depth exploration of RNA mediated genome regulation at different

hierarchies. Beginning with multitude of canonical and non-canonical RNA populations, especially noncoding RNA in human physiology and evolution, further sections examine the various classes of RNAs (from small to large noncoding and extracellular RNAs), functional categories of RNA regulation (RNA-binding proteins, alternative splicing, RNA editing, antisense transcripts and RNA G-quadruplexes), dynamic aspects of RNA regulation modulating physiological homeostasis (aging), role of RNA beyond humans, tools and technologies for RNA research (wet lab and computational) and future prospects for RNA-based diagnostics and therapeutics. One of the core strengths of the book includes spectrum of disease-specific chapters from experts in the field highlighting RNA-based regulation in metabolic & neurodegenerative disorders, cancer, inflammatory disease, viral and bacterial infections. We hope the book helps researchers, students and clinicians appreciate the role of RNA-based regulation in genome regulation, aiding the development of useful biomarkers for prognosis, diagnosis, and novel RNA-based therapeutics. Comprehensive information of non-canonical RNA-based genome regulation modulating human health and disease Defines RNA classes with special emphasis on unexplored world of noncoding RNA at different hierarchies Disease specific role of RNA - causal, prognostic, diagnostic and therapeutic Features contributions from leading experts in the field

Dynamics of Advanced Sustainable Nanomaterials and Their Related Nanocomposites at the Bio-Nano Interface highlights the most recent research findings (conducted over the last 5-6 years) on the dynamics of nanomaterials, including their multifaceted, advanced applications as sustainable materials. In addition, special attributes of these materials are discussed from a mechanistic and application point-of-view, including their sustainability and interfacial interactions at the bio-nano interface and different applications. This book presents an important reference resource on advanced sustainable nanomaterials for chemical, nano-, and materials technologists who are looking to learn more about advanced nanocomposites with sustainable attributes. Finally, the book examines the emerging market for sustainable materials and their advanced applications, with a particular focus on the bio-nano interface and their future outlook. Features detailed information on the fundamentals of bio-nano interfacial interactions in sustainable nanomaterials Includes advanced applications of these materials that will help the end user select the appropriate materials for their desired application Features extensive information on the dynamics of these materials, helping the end user extend their work into new applications

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Extremophiles belong to members of all three domains of life, i.e., bacteria, archaea, and eukarya. However, a high proportion of

extremophiles are archaea and bacteria. These microbes live under chemical and physical extremes that are usually lethal to cellular molecules, yet they not only manage to survive but even thrive in such conditions. Extremophiles have important practical and industrial uses. They are a valuable source of industrially important enzymes also known as extremozymes. Recent research has revealed that extremozymes have unique structural features essential for biocatalysis under extreme conditions. Extremozymes have great commercial values and are known for their potential use in biotechnology, biomining, and bioremediation. Extremozymes and their Industrial Applications highlights the current and topical areas of research in this rapidly growing field of extremophiles and their applications. Expert researchers from around the globe are trying to uncover the underlying mechanisms responsible for their specific adaptations under extreme environments. The topics covered include the ability of acidophiles to maintain a neutral intracellular pH, the way psychrophiles "loosen up" their proteins at low temperatures, and other equally ingenious adaptations and metabolic strategies that extremophiles use to survive and flourish under extreme conditions. Extremozymes and their Industrial Applications also covers the established biotechnological uses of extremophiles and the most recent and novel applications, including their exploitation for enzyme production. Potential use of extremophiles and their enzymes in the generation of sustainable energy, biomass conversion, agro-waste processing, and biocontrol of phytopathogens is also covered. The book will be very useful for researchers and students working in the area of industrial microbiology and biotechnology, and microbial ecologists. It is also recommended reference text for those interested in the biochemistry and microbiology of extremophiles, as well as for those interested in bioprospecting, biomining, biofuels, and biodegradation. Presents information exclusively based on extremozymes and their application in industries Chapters have been collected from various experts and deals with contemporary issues related to extremozymes and their usability in various industries Enriched with suitable illustrations that assist in increasing readership and broaden the reach of the book amongst scholars and academicians

On the Road to Worldwide Science — Contributions to Science Development

Bibliographies and Literature of Agriculture

Sirtuin Biology in Medicine

Publication Exchanges of the United States Atomic Energy Commission

Proceedings of the Indian Academy of Sciences, Section B.

Microbial Diversity in the Genomic Era

This reprint volume compiles the works of the author on the building of science in developing countries. The purpose of this volume is to improve the accessibility of the literature on science development for interested individuals especially in the Third World Countries.

Contents: The Task and Its Framework: The Task in a Context Research in the Third World The Bridging of the Gap The Personal Angle Some Benefits Research on Science The Problems: The Nature of the Problem Research and Its Applications Communication Managing Science Action: Directions Latent Opportunities Human Resources Science and Technology Measuring Science Readership: Social scientists and scientists.

Sirtuin Biology in Medicine: Targeting New Avenues of Care in Development, Aging, and Disease provides a fascinating and in-depth analysis of sirtuins in the body during normal physiology as well during disease highlighting the targeting of sirtuin-controlled pathways for the development of innovative, efficacious, and safe therapeutic strategies for multiple disorders in the body that ultimately can affect lifespan extension. Sirtuins are expressed throughout the body, have broad biological effects, and can significantly impact both cellular survival and longevity during acute and long-term illnesses. These histone deacetylases play an intricate role in the pathology, progression, and treatment of several disease entities ranging from neurodegenerative disorders, cardiovascular disease, immune system dysfunction, reproductive dysfunction, endocrine disorders, gastrointestinal disease, drug dependency, and aging-related disorders. Implementing a translational medicine format, this unique reference highlights novel signaling pathways for sirtuins that promote stem cell proliferation, enhance cellular protection, modulate pathways of apoptosis and autophagy, and extend life span. Each chapter is presented with insightful detail that will be of interest and a comprehensive resource to audiences that include scientists, physicians, pharmaceutical industry experts, nutritionists, and students. Chapters are authored by internationally recognized experts who discuss the broad role of sirtuins in health and disease Details the basic and clinical role of sirtuins for the development of new clinical treatments Summarizes the multidiscipline views and publications for the compelling discipline of sirtuins by covering systems throughout the body Serves as an important resource for a broad audience of healthcare providers, scientists, drug developers, and students in both clinical and research settings

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This volume is authored by Rajat K. Baisya, alumnus of the department of Food Technology and Biochemical Engineering and a distinguished scholar, author and management consultant. The foundations of Jadavpur university and its origins as a technological institution imagined in a nationalist mould, established as a counter to the colonial British education and as a part of the movement for independence, are relatively well-known. What is less explored is the journey that the National Council of Education underwent to transform itself into the Jadavpur University. As a premier institution of higher learning in India at the present time, Jadavpur University has a number of stalwart professors to thank for its worldwide reputation. This book covers the biographies of twenty-two such professors of the Faculty of Engineering and Technology. Written from the 'technological perspective', the book attempts to trace a form of history of Jadavpur University through the microhistories of the individuals responsible for its beginnings and subsequent growth.

ABC of Bioinformatics

Biotechnological Approaches to Enhance Plant Secondary Metabolites

Extremozymes and their Industrial Applications

National Institutes of Health Annual Report of International Activities

Regenerative Medicine: Laboratory to Clinic

Omics Science for Rhizosphere Biology

During the last decades a breakthrough in the understanding of the mechanisms controlling development has been achieved. This has been possible, in great part, by the use of various experimental approaches. This book focuses on topics concerning some of the processes involved in development, the main emphasis being on the genetic and molecular mechanisms in the evolutionary context. *Drosophila* is used as an experimental model for the genetic approach to the understanding of behaviour.

Advances in Protein Molecular and Structural Biology Methods offers a complete overview of the latest tools and methods applicable to the study of proteins at the molecular and structural level. The book begins with sections exploring tools to optimize recombinant protein expression and biophysical techniques such as fluorescence spectroscopy, NMR, mass spectrometry, cryo-electron microscopy, and X-ray crystallography. It then moves towards computational approaches, considering structural bioinformatics, molecular dynamics simulations, and deep machine learning technologies. The book also covers methods applied to intrinsically disordered proteins (IDPs) followed by chapters on protein interaction networks, protein function, and protein design and engineering. It provides researchers with an extensive toolkit of methods and techniques to draw from when conducting their own experimental work, taking them from foundational concepts to practical application. Presents a thorough overview of the latest and emerging methods and technologies for protein study Explores biophysical techniques, including nuclear magnetic resonance, X-ray crystallography, and cryo-electron microscopy Includes computational and machine learning methods Features a section dedicated to tools and techniques specific to studying intrinsically disordered proteins *Biomedical Product and Materials Evaluation: Standards and Ethics* provides a much-needed overview of the procedures, issues, standards and ethical issues in the early development of biomedical products. The book covers a range of key biomedical products, from 3D printed organs and blood derived products, to stem cells and decellularized tissue products. Each chapter reviews a single product type, associated materials, biomedical applications, proven development strategies, and potential challenges. The core focus of the book is on the standardization and ethical aspects of biomedical product development, with these elements addressed and discussed in chapters dedicated to product evaluation. This is a useful reference for academics, researchers and industry professionals in R&D groups with an interest in biomaterial research and production, as well as those working in the fields of biomedical engineering, biotechnology and toxicology. Covers a variety of biomedical products, including specific biomaterials, organs-on-chips, wound care products, combinational products, and more Delves into strategies and considerations for product evaluation, including cytotoxicity assays, microbial and blood compatibility studies Discusses standardization and ethical hurdles in biomedical product development and how to overcome them

This book discusses the two different cellular approaches that are pursued in regenerative medicine: cell therapy and tissue engineering. It examines in detail the therapeutic application of hematopoietic stem cells in marrow regeneration, multi-potent mesenchymal stem cells (MSCs), also referred to as mesenchymal stromal cells. The interest in MSCs can be seen in more than 150 clinical trials, some of which have progressed to Phase III, despite the cells' limited differentiation potential. The book also explores how embryonic stem (ES) cells, being pluripotent in nature, can resolve some of the problems associated with adult stem cells, yet entail other challenges like risks of teratoma formation and immune rejection. A separate chapter deals with the role of noncoding RNAs in neuronal commitment of induced pluripotent stem (iPS) cells. Chapters like "Cord blood banking in India and the global scenario"; "3D bioprinting of tissue" and others will make this book an extremely interesting read for all students, researchers and clinicians working in the area of regenerative medicine/stem cells. The book is broadly divided into two parts, the first of which is devoted to basic information on stem cells, and the second of which addresses potential clinical applications in the areas of hematology, cardiology, orthopedic and immune suppression, etc.

Dynamics of Advanced Sustainable Nanomaterials and Their Related Nanocomposites at the Bio-Nano Interface

Advances in Protein Molecular and Structural Biology Methods

Issues in Life Sciences: Cellular Biology: 2011 Edition

Membrane Proteins

Targeting New Avenues of Care in Development, Aging, and Disease

Prognostic Epigenetics

This book reviews recent advances in the molecular and infection biology, pathology, and molecular epidemiology of *Mycobacterium tuberculosis*, as well as the identification and validation of novel molecular drug targets for the treatment of this mycobacterial disease. Despite being completely curable, tuberculosis is still one of the leading global causes of death. *M. tuberculosis*, the causative organism – one of the smartest pathogens known – adopts highly intelligent strategies for survival and pathogenesis. Presenting a wealth of information on the molecular infection biology of *M. tuberculosis*, as well as nontuberculous mycobacteria (NTM), the book provides an overview of the functional role of the PE/PPE group of proteins, which is exclusive to the genus *Mycobacteria*, of host-pathogen interactions, and virulence. It also explores the pathogenesis of the infection, pathology, epidemiology, and diagnosis of NTM. Finally it discusses current and novel approaches in vaccine development against tuberculosis, including the role of nanotechnology. With state-of-the-art contributions from experts in the respective domains, this book is an informative resource for practitioners as well as medical postgraduate students and researchers.

Microbial Diversity in the Genomic Era presents insights on the techniques used for microbial taxonomy and phylogeny, along with their applications and respective pros and cons. Though many advanced techniques for the identification of any unknown bacterium are available in the genomics era, a far fewer number of the total microbial species have been discovered and identified to date. The assessment of microbial taxonomy and biosystematics techniques discovered and practiced in the current genomics era with suitable recommendations is the prime focus of this book. Discusses the techniques used for microbial taxonomy and phylogeny with their applications and respective pros and cons Reviews the evolving field of bacterial typing and the genomic technologies that enable comparative analysis of multiple genomes and the metagenomes of complex microbial environments Provides a uniform, standard methodology for species designation

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This volume provides comprehensive information on how mapping an individual's epigenome can be medically relevant and holds the potential to improve preventive medicine and precision therapeutics at an early-stage (prior to disease onset). In order to advance clinical adoption of the recently developed epigenetic approaches, it is necessary for translational scientists, clinicians, and students to gain a better understanding about epigenetic mechanisms that are associated with a particular disorder; and to be able to effectively identify biomarkers that can be applied in drug development and for better diagnosis and prognosis of diseases. Prognostic Epigenetics is the most-inclusive volume to-date specifically dedicated to epigenetic markers that have been developed for prognosis of diseases, recent advances in this field, the clinical implementation of this research, and the future outlook. Compiles all known information on prognostic epigenetics and its role in preventive medicine and drug discovery. Covers the basic functionality of epigenetic mechanisms involved in early disease prognosis and diagnosis, and provides tools for the identification and development of these biomarkers for a wide range of diseases. Enables clinicians, researchers, and pharmacologists to improve preventive medicine and precision therapeutics throughout a person's lifetime. Features chapter contributions from leading international researchers.

Genome Analysis in Eukaryotes

Fungi Bio-prospects in Sustainable Agriculture, Environment and Nano-technology

Encyclopedia of Bioinformatics and Computational Biology

Recent Trends and Future Prospects

RNA-Based Regulation in Human Health and Disease

Frontiers in Protein and Peptide Sciences

Thousands of secondary metabolites are produced by plants to withstand unfavourable environmental conditions and are important molecules for nutraceutical, agro, cosmetic and pharmaceutical industries, etc. Harvesting of plants for the extraction of these important metabolites can threaten the plant germplasm, and various medicinally important plants are at the verge of extinction. Based on need, various methods and strategies were developed and followed by researchers from time to time to save the plant germplasm and produce important secondary metabolites efficiently to meet the growing demands. Biotechnological Approaches to Enhance Plant Secondary Metabolites: Recent Trends and Future

Prospects provides a comprehensive introduction and review of state-of-the-art biotechnological tools in this field of research at global level. The methodologies are highlighted by real data examples in both in vitro and in vivo level studies. The book:

- Highlights and provides overviews of the synthesis, classification, biological function and medicinal applications of the recent advancements for the enhanced production of novel secondary metabolites in plants
- Provides an overview of the role of induced mutation, salinity stress and brassinosteroids impact to increase the secondary metabolic contents in plants and suggests an increase in enzymatic activity in plants could be due to various point mutations, which in turn could play a role at transcriptome levels
- Discusses the significant role of endophytes to enhance the contents of plant secondary metabolites
- Alternatively, suggests the urgent need to set up the standard operating procedures using hydroponics system of cultivation for significant enhancement of secondary metabolite contents
- Enlists various in vitro techniques to enhance plant secondary metabolites contents using plant tissue culture approaches
- Provides a systematic overview of state-of-the-art biotechnological tools CRISPER Cas9 and RNAi to enhance the plant secondary metabolite contents
- Recommends CRISPER Cas9 technology over RNAi, ZFNs and TALENs because of its relatively simple and high precision method with an easily programmable tool

This serves as a reference book for the researchers working in the field of plant secondary metabolites and pharmaceutical industries at global level.

Advances in Cyanobacterial Biology presents the novel, practical, and theoretical aspects of cyanobacteria, providing a better understanding of basic and advanced biotechnological application in the field of sustainable agriculture. Chapters have been designed to deal with the different aspects of cyanobacteria including their role in the evolution of life, cyanobacterial diversity and classification, isolation, and characterization of cyanobacteria through biochemical and molecular approaches, phylogeny and biogeography of cyanobacteria, symbiosis, Cyanobacterial photosynthesis, morphological and physiological adaptation to abiotic stresses, stress-tolerant cyanobacterium, biological nitrogen fixation. Other topics include circadian rhythms, genetics and molecular biology of abiotic stress responses, application of cyanobacteria and cyanobacterial mats in wastewater treatments, use as a source of novel stress-responsive genes, development of stress tolerance and as a source of biofuels, industrial application, as biofertilizer, cyanobacterial bio-nanotechnology use in Nano-technology and nanomedicines as well as potential applications. This book will be important for academicians and researchers working in cyanobacteria, cyanobacterial environmental biology, cyanobacterial agriculture and cyanobacterial molecular biologists. Summarizes the various aspects of cyanobacterial research, from primary nitrogen fixation, to advanced nano-technology applications. Addresses both practical and theoretical aspects of the cyanobacterial application. Includes coverage of biochemical and molecular approaches for the identification, use and

management of cyanobacteria

Biotechnological Advances for Microbiology, Molecular Biology, and Nanotechnology: An Interdisciplinary Approach to the Life Sciences presents cutting-edge research associated with the beneficial implications of biotechnology on human welfare. The volume mainly focuses on the highly demanding thrust areas of biotechnology that are microbiology, molecular biology, and nanotechnology. The book provides a detailed overview of the beneficial roles of microbes and nanotechnology-based engineered particles in biological developments. Also, it highlights the role of epigenetic machinery and redox modulators during the development of diseases. In addition, it provides research on nanotechnology-based applications in tissue engineering, stem cell, and regenerative medicines. Overall, the book provides an extended platform for acquiring the methodological knowledge needed for today's biotechnological applications, such as DNA methylation, redox homeostasis, CRISPR, nano-based drug delivery systems, proteomics, genomics, metagenomics, bioluminescence, bioreactors, bioremediation, biosensors, etc. Divided into three sections, the book first highlights some recent trends in applied microbiology used in different areas, such as crop improvement, wastewater treatment, drug delivery, healthcare management, and more. The volume goes on to cover some advances in cellular and molecular mechanisms, such as CRISPR technology in biological systems, induced stem cells in disease prevention, integrated omics technology, and others. The volume also explores the indispensable role of nanotechnology in the precisely modulating intricate functioning of an organism in diagnostic and therapy along its application in tissue engineering and regenerative medicine and in food science as well as its role in ecological sustainability. This multidisciplinary volume will be highly valuable for the researchers, scientists, biologists, and faculty and students seeking to expand their horizon of knowledge in their respective fields.

Fungi bio-prospects in sustainable agriculture, environment and nanotechnology is a three-volume series that has been designed to explore the huge potential of the many diverse applications of fungi to human life. The series unveils the latest developments and scientific advances in the study of the biodiversity of fungi, extremophilic fungi, and fungal secondary metabolites and enzymes, while also presenting cutting-edge molecular tools used to study fungi. Readers will learn all about the recent progress and future potential applications of fungi in agriculture, environmental remediation, industry, food safety, medicine, and nanotechnology. Volume 1 will cover the biodiversity of fungi and the associated biopotential applications. This volume offers insights into both basic and advanced biotechnological applications in human welfare and sustainable agriculture. The chapters shed light on the different roles of fungi as a bio-fertilizer, control agent, and a component of microbial inoculants. They also focus on the various applications of fungi in bio-fuel production, nano-technology, and in the management of abiotic stresses such as drought, salinity, and metal toxicity.

Provides a deep understanding of fungi and summarizes fungi's various applications in the fields of microbiology and sustainable agriculture Describes the role of fungal inoculants as biocontrol agents, and in improved stress tolerance and growth of plants

Applications of NMR Spectroscopy; Vol. 6

Structures, Functions, and Inhibition

Volume 1: Fungal Diversity of Sustainable Agriculture

Physical Biochemistry

Hormones and Aging

Sirtuin Biology in Medicine Targeting New Avenues of Care in Development, Aging, and Disease Academic Press

This book presents a timely review of the latest advances in rhizosphere biology, which have been facilitated by the application of omics tools. It includes chapters on the use of various omics tools in rhizosphere biology, focusing on understanding plant and soil microbe interactions. The role of proteomics and metagenomics in research on symbiotic association is also discussed in detail. The book also includes chapters on the use of omics tools for the isolation of functional biomolecules from rhizospheric microorganisms. The book's respective sections describe and provide detailed information on important omics tools, such as genomics, transcriptomics, proteomics, metabolomics and meta-epigenomics. In turn, the book promotes and describes the combined use of plant biology, microbial ecology, and soil sciences to design new research strategies and innovative methods in soil biology. Lastly, it highlights the considerable potential of the rhizosphere in terms of crop productivity, bioremediation, ecological engineering, plant nutrition and health, as well as plant adaptation to stress conditions. This book offers both a practical guide and reference source for all scientists working in soil biology, plant pathology, etc. It will also benefit students studying soil microbiology, and researchers studying rhizosphere structure.

Applications of NMR Spectroscopy is a book series devoted to publishing the latest advances in the applications of nuclear magnetic resonance (NMR) spectroscopy in various fields of organic chemistry, biochemistry, health and agriculture. The sixth volume of the series features reviews focusing on NMR spectroscopic techniques for studying tautomerism, applications in medical diagnosis, in food chemistry and identifying secondary metabolites.

Biological Oxidation Systems, Volume II discusses the various antioxidants and antioxidant enzymes that play significant roles in protecting cells from deleterious reactions between their structural/functional components and the free radicals. This book examines the myriad chemical reactions of a cell's metabolic activity that produce a variety of free radicals. Comprised of three parts encompassing 35 chapters, this volume starts with an overview of the metabolism

of xenobiotics during arachidonic acid metabolism. This book then discusses the various causes of human cancers and diseases, which include exposure to environmental chemicals and other toxicants. This text considers the dietary habits and nutritional factors that play an important role in the causation and development of several human cancers, including cancer of the breast, colon, prostate, and other organs. Other chapters discuss the toxic effects of several xenobiotics that involve free-radical mechanisms. Biochemists, biophysicists, microbiologists, organic chemists, food chemists, and medical scientists will find this book extremely useful.

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Biotechnological Advances for Microbiology, Molecular Biology, and Nanotechnology

Pandemic Outbreaks in the 21st Century

Advances in Cyanobacterial Biology

Systems and Synthetic Biology

This book offers a comprehensive overview of recent developments in the field of breast cancer biology. It is a complete and descriptive reference on motioning pathways and new treatment options for the future transnational scientists and clinicians working on cancer research and treatment. We greatly appreciate the work of all the contributors to this book. They have brought with them tremendous diversity of perspectives and fields, which is truly reflective of the complexity of the topic, and they have come together in this project to serve as the node of multidisciplinary collaboration in this field. Finally, we must acknowledge the thousands of cancer patients who have participated in the studies, and who have inspired us to gather information to significantly progress knowledge in the field in recent years.

Mammalian Endocrinology and Male Reproductive Biology provides comprehensive and current coverage of the area of endocrinology and male reproductive biology, covering not just humans, but mammals in general. Written by international experts in their respective fields, this multi-author book also covers the latest developments in genomics of androgen action and male infertility. The book begins by covering sexual dimorphism in the central nervous system; structure, control of secretion and function of GnRH; and gonadotropins of pituitary origin and their role in gonadal functions. This is followed by an account of hormonal regulation of spermatogenesis, and the role of apoptosis in this process. Subsequent chapters center around epididymis, regulation of growth and function, and sperm motility regulation. The last chapters in the book discuss the structure and function of male accessory sex glands with associated pathologies as well as recent updates in male contraception, mechanism of androgen action, and genomics of male infertility. Wherever necessary, tables and figures have been added for a better understanding. Each chapter is appropriately referenced and contains current information on the latest developments in the field.

Membrane Proteins, Volume 128 in the Advances in Protein Chemistry and Structural Biology series highlights new advances in the field, with this new volume presenting interesting chapters written by an international board of authors. Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in the Advances in Protein Chemistry and Structural Biology series Updated release includes the latest information on the membrane proteins

This textbook has been conceptualized to provide a detailed description of the various aspects of Systems and Synthetic Biology, keeping the requirements of M.Sc. and Ph.D. students in mind. Also, it is hoped that this book will mentor young scientists who are willing to contribute to this area but do not know from where to begin. The book has been divided into two sections. The first section will deal with systems biology – in terms of the foundational understanding, highlighting issues in biological complexity, methods of analysis and various aspects of modelling. The second section deals with the engineering concepts, design strategies of the biological systems ranging from simple DNA/RNA fragments, switches and oscillators, molecular pathways to a complete synthetic cell will be described. Finally, the book will offer expert opinions in legal, safety, security and social issues to present a well-balanced information both for students and scientists.

Standards and Ethics

A Reprint Volume

Makers of Jadavpur: A Technological Perspective