Biotechnology Deswal And Deswal

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A Textbook of Biotechnology - Dubey R.C. 2022
Fifth Revised Edition 2014 FOR UNIVERSITIY & COLLEGE STUDENTS IN INDIA & ABROAD Due to expanding horizon of biotechnology, it was difficult to accommodate the current information of biotechnology in detail. Therefore, a separate book entitled Advanced Biotechnology has been written for the Postgraduate students of Indian University and Colleges. Therefore, the present form of A Textbook of Biotechnology is totally useful for undergraduate students. A separate section of Probiotics has been added in Chapter 18. Chapter 27 on Experiments on Biotechnology has been deleted from the book because most of the experiments have been written in ';Practical Microbiology' by R.C. Dubey and D.K. Maheshwari. Bibliography has been added to help the students for further consultation of resource materials.
New and Future Developments in Microbial Biotechnology and Bioengineering - Neha Srivastava 2019-05-03
New and Future Developments in Microbial Biotechnology and Bioengineering: From Cellulose to Cellulase: Strategies to Improve Biofuel Production outlines new methods for the industrial production of the cellulose enzyme. The book compares the various processes for the production of biofuels, including the cost of cellulose production and availability. Biofuels are considered to be the main alternatives to fossil fuels in reducing environmental pollution and climate change. Currently, all existing biofuel production is suffering because of the high costs of production processes. As a result, cost effective practical implementation is needed to make this a viable energy alternative. Introduces new and innovative strategies for cellulase enzyme production at industrial scale Provides sustainable approaches to produce cellulase at low cost Covers all aspect and possible factors for economical, low cost, cellulase mediated biofuels production
Microbial Biotechnology in Crop Protection - Manoj Kaushal 2021-05-29
This edited volume is a comprehensive account of plant diseases and insect pests, plant protection and management for various crops using microbial and biotechnological approaches. The book elucidates the role of biotechnology for the enhancement of crop productivity and management of bacterial and fungal diseases via eco-friendly methods. It discusses crop-pest⁄ pathogen interaction and utilizing this interaction in a beneficial and sustainable way. This book is of interest to teachers, researchers, plant scientists and plant pathologists. Also the book serves as additional reading material for undergraduate and graduate students of agriculture, forestry, ecology, soil science, and environmental sciences.
Genomic Diversity Analysis and Nucleotide Sequencing of Hyper-variable Regions in VP4 and VP7 Genes of Group A Rotaviruses Isolated from Different Host Species [with CD Copy]. - Sandeep Deswal 2006

Environmental Studies - B. S. Chauhan 2008-05
This book is intended to meet the academic requirements of the subject 'Environmental Studies' for undergraduate students in Indian and overseas universities. The contents have been prepared keeping in mind the widest possible variations in the background of the users. The entire UGC syllabus and supplementary materials are in the nine chapters. Chapter 1 describes the multidisciplinary nature of environmental studies. Chapter 2 and 3 comprehensively elaborate the forest, water, minerals, food, energy and land resources. Chapter 4 explains various aspects of biodiversity. Chapter 5 discusses the science of ecology and concepts of ecosystem. Chapter 6 is an exhaustive description of environmental pollution, its sources, effects and control measures. The sustainable development has been discussed in Chapter 7. Issues on environment and health, human rights, AIDS, women & child welfare and role of IT industry have been addressed in great length in Chapter 8. Key features of this book include authentic, simple to the point and latest account of each and every topic besides well sketched illustrations and various case studies. The book also contains glossary of terms which can be of particular use to students with little or no science background, and appendices and abbreviations commonly used in describing environmental studies
Rhizobium Biology and Biotechnology - Alexander P. Hansen 2017-09-25
This book provides in-depth reviews of the role of Rhizobium in agriculture and its biotechnological applications. Individual chapters explore topics such as: the occurrence and distribution of Rhizobium; phenotypic and molecular characteristics of Rhizobium; impact of Rhizobium on other microbial communities in the rhizosphere; N2-fixation ability of Rhizobium; Rhizobium and biotic stress; Rhizobium-mediated restoration of an ecosystem; in silico analysis of the rhizobia pool; further biotechnological perspectives of Rhizobium.
Biotechnology for Environmental Management and Resource Recovery - Ramesh Chander Kuhad 2013-03-25
Various types of secondary agriculture and forestry wastes represent valuable resource materials for developing alternate energy as biofuels and other value added products such as sugars, phenols, furans, organic acids, enzymes and digestible animal feed etc. However, if not managed properly, waste material and environmental contaminants generated by various industries such as food and feed, pulp and paper and textile may lead to severe environmental pollution. The energy, food and feed demand necessitate developing simple and economically viable technologies for environmental management and resource recovery. Microorganisms and their enzymes contribute significantly in utilization of plant residues, resource recovery and eventually in pollution mitigation. “Biotechnology for Environmental Management and Resource Recovery” presents a comprehensive review of selected research topics in a compendium of 16 chapters related to environmental pollution control and developing biotechnologies in agro-ecosystem management and bioconversion of agro-residues (lignocellulosics) into biofuels, animal feed and paper etc. This book provides a valuable resource for reference and text material to graduate and postgraduate students, researchers, scientists working in the area of microbiology, biotechnology, and environmental science and engineering.
Elucidation of Abiotic Stress Signaling in Plants - Girdhar K. Pandey 2015-05-30
Abiotic stresses such as high temperature, low-temperature, drought, and salinity limit crop productivity worldwide. Understanding plant responses to these stresses is essential for rational engineering of crop plants. In Arabidopsis, the signal transduction pathways for abiotic stresses, light, several phytohormones and pathogenesis have been elucidated. A significant portion of plant genomes (most studies are Arabidopsis and rice genome) encodes for proteins involves in signaling such as receptor, sensors, kinases, phosphatases, transcription factors and transporters/channels. Despite decades of physiological and molecular effort, knowledge pertaining to how plants sense and transduce low and high temperature, low-water availability (drought), water-submergence and salinity signals is still a major question before plant biologists. One major constraint hampering our understanding of these signal transduction processes in plants has been the lack or slow pace of application of

molecular genomic and genetics knowledge in the form of gene function. In the post-genomic era, one of the major challenges is investigation and understanding of multiple genes and gene families regulating a particular physiological and developmental aspect of plant life cycle. One of the important physiological processes is regulation of stress response, which leads to adaptation or adjustment in response to adverse stimuli. With the holistic understanding of the signaling pathways involving not only one gene family but multiple genes or gene families, plant biologists can lay a foundation for designing and generating future crops that can withstand the higher degree of environmental stresses (especially abiotic stresses, which are the major cause of crop loss throughout the world) without losing crop yield and productivity. Therefore, in this proposed book, we intend to incorporate the contribution from leading plant biologists to elucidate several aspects of stress signaling by functional genomic approaches.

Biotechnology and Safety Assessment - John A. Thomas 2002-09-05

A comprehensive treatise on new developments in biotechnology, the authors of Biotechnology and Safety Assessment, 3e, bring readers an up-to-date review of food safety issues, pre-clinical safety and development of new foods and drugs, plant biotechnology, food allergies and safety assessment, and consumer benefits with regard to genetically modified food. Tomorrow's foods will be obtained from genetically modified crops, offering consumers higher nutritional value and more of it. Our medications will be obtained through a variety of biotechnological procedures yielding more potent and specific medications for diseases and vaccines. In order to make this view of the future come to light, John A. Thomas and Roy L. Fuchs have updated their classic in order to keep readers one step ahead. Written by internationally recognized molecular biologists, plant agronomists, microbiologists, toxicologists, nutritionists, and regulatory authorities, this third edition is an excellent and authoritative resource, making it a valuable resource to any biomedical library or scientific bookshelf. Provides timely coverage on topics of agribiotechnology and biotherapeutics Describes the recent progress in genetically modified crops and their safety Presents an update of the newer developments in therapeutic agents Discusses role of genetically modified microorganisms in the development of new food products Outlines various global regulatory issues relating to GM crops Addresses environmental and ecological topics related to GM crops

Plant Biotechnology: Progress in Genomic Era - S. M. Paul Khurana 2019-11-14

Refinement in sequencing technologies and potential of genomic research resulted in meteoric growth of biological information such as sequences of DNA, RNA and protein requiring databases for efficient storage, management and retrieval of the biological information. Also, computational algorithms for analysis of these colossal data became a vital aspect of biological sciences. The work aims to show the process of turning bioscience innovation into companies and products, covering the basic science, the translation of science into technology. Due to rapid developments, there seems to be no basic difference between the pharmaceutical industry and the biotechnological industry. However, approved products in the pipeline and renewed public confidence make it one of the most promising areas of economic growth in the near future. India offers a huge market for the products as well as cheap manufacturing base for export. The book is a sincere work of compilation of new and recent advances in the topic of concern through various innovative researches and scientific opinion therefrom. The book is dedicated to the readers who will definitely find it interesting and knowledgeable in carrying out their respective researches in different aspects of applied microbiology and biotechnology.

Current Developments in Biotechnology and Bioengineering - Ashok Pandey 2016-09-17

Current Developments in Biotechnology and Bioengineering: Production, Isolation and Purification of Industrial Products provides extensive coverage of new developments, state-of-the-art technologies, and potential future trends, focusing on industrial biotechnology and bioengineering practices for the production of industrial products, such as enzymes, organic acids, biopolymers, and biosurfactants, and the processes for isolating and purifying them from a production medium. During the last few years, the tools of molecular biology and genetic and metabolic engineering have rendered tremendous improvements in the production of industrial products by fermentation. Structured by industrial product classifications, this book provides an overview of the current practice, status, and future potential for the production of these agents, along with reviews of the industrial scenario relating to their production. Provides information on industrial bioprocesses for the production of microbial products by fermentation Includes separation and purification processes of fermentation products Presents economic and feasibility assessments of the various processes and their scaling up Links biotechnology and bioengineering for industrial process development

Genome Editing in Drug Discovery - Marcello Maresca 2022-03-29

GENOME EDITING IN DRUG DISCOVERY A practical guide for researchers and professionals applying genome editing techniques to drug discovery In Genome Editing in Drug Discovery, a team of distinguished biologists delivers a comprehensive exploration of genome editing in the drug discovery process, with coverage of the technology's history, current issues and techniques, and future perspectives and research directions. The book discusses techniques for disease modeling, target identification with CRISPR, safety studies, therapeutic editing, and intellectual property issues. The safety and efficacy of drugs and new target discovery, as well as next-generation therapeutics are also presented. Offering practical suggestions for practitioners and academicians involved in drug discovery, Genome Editing in Drug Discovery is a fulsome treatment of a technology that has become part of nearly every early step in the drug discovery pipeline. Selected contributions also include: A thorough introduction to the applications of CRISPRi and CRISPRa in drug discovery Comprehensive explorations of genome-editing applications in stem cell engineering and regenerative medicine Practical discussions of the safety aspects of genome editing with respect to immunogenicity and the specificity of CRISPR-Cas9 gene editing In-depth examinations of critical socio-economic and bioethical challenges in the CRISPR-Cas9 patent landscape Perfect for academic researchers and professionals in the biotech and pharmaceutical industries, Genome Editing in Drug Discovery will also earn a place in the libraries of medicinal chemists, biochemists, and molecular biologists.

New and Future Developments in Microbial Biotechnology and Bioengineering - Vijai G. Gupta 2016-11-15

New and Future Developments in Microbial Biotechnology and Bioengineering: Microbial Cellulase System Properties and Applications covers the biochemistry of cellulase system, its mechanisms of action, and its industrial applications. Research has shed new light on the mechanisms of microbial cellulase production and has led to the development of technologies for production and applications of cellulose degrading enzymes. The biological aspects of processing of cellulosic biomass have become the crux of future research involving cellulases and cellulolytic microorganisms, as they are being commercially produced by several industries globally and are widely being used in food, animal feed, fermentation, agriculture, pulp and paper, and textile applications. The book discusses modern biotechnology tools, especially in the area of microbial genetics, novel enzymes, and new enzyme and the applications in various industries. As a professional reference, this new book is useful to all researchers working with microbial cellulase system, both academic institutions and industry-based research bodies, as well as to teachers, graduate, and postgraduate students with information on continuous developments in microbial cellulase system. The book provides an indispensable reference source for chemists, biochemical engineers/bioengineers, biochemists, biotechnologists and researchers who want to know about the unique properties of this microbe and explore its future applications. Compiles the latest developments made and currently undergoing in the area of microbial cellulase system Chapters are contributed from top researchers on this area around the globe Includes information related to almost all areas of microbial cellulase system Extensive cover of current industrial applications and discusses potential future applications

Recent Advancement in White Biotechnology Through Fungi

- Ajar Nath Yadav 2019-10-01
Over the last decade considerable progress has been made in white biotechnology research and further major scientific and technological breakthroughs are expected in the future. The first large-scale industrial applications of modern biotechnology have been in the areas of food and animal feed production (agricultural/green biotechnology) and in pharmaceuticals (medical/red biotechnology). In contrast, the productions of bioactive compounds through fermentation or enzymatic conversion are known as industrial or white biotchnology. The fungi are ubiquitous in nature and have been sorted out from different habitats, including extreme environments (high temperature, low temperature, salinity and pH); and associated with plants (Epiphytic, Endophytic and Rhizospheric). The fungal strains are beneficial as well as harmful for human beings. The beneficial fungal strains may play important roles in the agricultural, industrial, and medical sectors. The fungal strains and its product (enzymes, bioactive compounds, and secondary metabolites) are very useful for industry (e.g., the discovery of penicillin from Penicillium chrysogenum). This discovery was a milestone in the development of white biotechnology as the industrial production of penicillin and antibiotics using fungi moved industrial biotechnology into the modern era, transforming it into a global industrial technology. Since then, white biotechnology has steadily developed and now plays a key role in several industrial sectors providing both high value nutraceutical and pharmaceutical products. The fungal strains and bioactive compounds also play an important role in environmental cleaning. This volume covers the latest research developments related to value-added products in white biotechnology through fungi.
Chloroplast Biotechnology for Crop Improvement - Clelia De-la-Peña 2022-03-03

Journal of Crop Science and Biotechnology - 2007

Biotechnology of Microbial Enzymes - Goutam Brahmachari 2023-01-20
Biotechnology of Microbial Enzymes: Production, Biocatalysis, and Industrial Applications, Second Edition provides a complete survey of the latest innovations on microbial enzymes, highlighting biotechnological advances in their production and purification along with information on successful applications as biocatalysts in several chemical and industrial processes under mild and green conditions. The application of recombinant DNA technology within industrial fermentation and the production of enzymes over the last three decades have produced a host of useful chemical and biochemical substances. The power of these technologies results in novel transformations, better enzymes, a wide variety of applications, and the unprecedented development of biocatalysts through the ongoing integration of molecular biology methodology, all of which is covered insightfully and in-depth within the book. This fully revised, second edition is updated to address the latest research developments and applications in the field, from microbial enzymes recently applied in drug discovery to penicillin biosynthetic enzymes and penicillin acylase, xylose reductase, and microbial enzymes used in antitubercular drug design. Across the chapters, the use of microbial enzymes in sustainable development and production processes is fully considered, with recent successes and ongoing challenges highlighted. Explores advances in microbial enzymes from basic science through application in multiple industry sectors Includes up-to-date discussions of metabolic pathway engineering, metagenomic screening, microbial genomes, extremophiles, rational design, directed evolution, and more Provides a holistic approach to the research of microbial enzymes and their use in sustainable processes and innovation Features all new chapters discussing microbial enzyme classes of growing interest, as well as enzymes recently applied in drug discovery and other applications
Functional Foods - Hari Niwas Mishra 2016-03-03
The book presents practical information for use in functional food product development. It is also intended for use by practitioners in functional food companies and food technology centres and will also be of interest to researchers and students of food science and technology. With recent scientific studies, this book provides readers with a comprehensive and up-to-date scientific knowledge about the functional food science and technology. The book presents a most updated knowledge on the regulatory status of functional food in different countries. This information, which is seldom available, is essential for the commercial aspect of functional food. Also, core discussion on the reliable and economical scale up of laboratory-based extraction and purification techniques for different functional ingredients is also presented in the detailed manner in the book. A critical issue in the development of functional foods is health aspects and its role in disease control. In section V, Functional food products: Prevention, Disease Control and bioavailability, a variety of examples are discussed indicating the role and action of functional ingredients in preventing disease. The present book also addresses the key issue of processing and its effects on the bioavailability of bioactives. With the advent of the latest scientific technique in the latter half of the 20th century, area of functional food has evolved to the current state of the art.
Nanobiotechnology Applications in Plant Protection - Kamel A. Abd-Elsalam 2018-08-14
Nanotechnology can target specific agricultural problems related to plant pathology and provide new techniques for crop disease control. Plant breeders and phytopathologists are needed who can apply nanogenomics and develop nanodiagnostic technologies to accurately advance the improvement process and take advantage of the potential of genomics. This book serves as a thorough guide for researchers working with nanotechnology to address plant protection problems. Novel nanobiotechnology methods describe new plant gene transfer tools that improve crop resistance against plant diseases and increase food security. Also, quantum dots (QDs) have emerged as essential tools for fast and accurate detection of particular biological markers. Biosensors, QDs, nanostructured platforms, nanoimaging, and nanopore DNA sequencing tools have the potential to raise sensitivity, specificity, and speed in pathogen detection, thereby facilitating high-throughput analysis and providing high-quality monitoring and crop protection. Also, this book deals with the application of nanotechnology for quicker, more cost-effective, and precise diagnostic procedures of plant diseases and mycotoxins. Applications of nanotechnology in plant pests and disease control, antimicrobial mechanisms, pesticides remediation and nanotoxicity on plant ecosystem and soil microbial communities are discussed in detail. Moreover, the application of specific nanomaterials including silver, copper, carbon- or polymer-based nanomaterials and nanoemulsions are also discussed. Crops treated with safe nanofertilizers and nanopesticides will gain added value because they are free of chemical residues, decay and putative pathogens for human health, sustaining the global demand for high product quality.
Biotechnology in Sustainable Biodiversity and Food Security - B. N. Prasad 2003
This volume contains papers which indicate how biodiversity can be used in a sustainable and equitable manner. Various uses of biotechnology, including bioremediation and genetic engineering are dealt with by various authors.
Biological Diversity: Current Status and Conservation Policies - Vinod Kumar 2021-10-25
The present book has been designed to bind prime knowledge of climate change-induced impacts on various aspects of our environment and its biological diversity. The book also contains updated information, methods and tools for the monitoring and conservation of impacted biological diversity.
Advances in Biotechnology - Pankaj K. Bhowmik 2010-01-09
"The first volume of this Ebook series brings together the most recent advances from leading experts in the burgeoning field of biotechnology. This comprehensive text adopts a multidisciplinary approach and covers agricultural biotechnology, industrial and"
New and Future Developments in Microbial Biotechnology and Bioengineering - H.B Singh 2018-10-19
New and Future Developments in Microbial Biotechnology and Bioengineering: Microbial Genes Biochemistry and Applications consolidates the most widely used genetic methods available, bringing together the fields of biochemistry, biotechnology, and microbiology. The chapters outlined give clear and concise direction on

both standard and applied microbial genetic improvements, presenting undergraduates, postgraduates, and researchers with the latest developments in microbial gene technology. In addition, the book describes the background and usefulness of each experiment in question. All chapters covered in the book are derived from current peer-reviewed literature as accepted by the international scientific community. Compiles the latest developments made in the area of microbial gene systems Includes exhaustive information on almost all areas of microbial gene technology Relates microbial engineering and its direct application to the production of many useful compounds Written by an international team of authors and compiled by award winning editors

An Introduction to Biotechnology - W T Godbey 2014-12-08
An Introduction to Biotechnology is a biotechnology textbook aimed at undergraduates. It covers the basics of cell biology, biochemistry and molecular biology, and introduces laboratory techniques specific to the technologies addressed in the book; it addresses specific biotechnologies at both the theoretical and application levels. Biotechnology is a field that encompasses both basic science and engineering. There are currently few, if any, biotechnology textbooks that adequately address both areas. Engineering books are equation-heavy and are written in a manner that is very difficult for the non-engineer to understand. Numerous other attempts to present biotechnology are written in a flowery manner with little substance. The author holds one of the first PhDs granted in both biosciences and bioengineering. He is more than an author enamoured with the wow-factor associated with biotechnology; he is a practicing researcher in gene therapy, cell/tissue engineering, and other areas and has been involved with emerging technologies for over a decade. Having made the assertion that there is no acceptable text for teaching a course to introduce biotechnology to both scientists and engineers, the author committed himself to resolving the issue by writing his own. The book is of interest to a wide audience because it includes the necessary background for understanding how a technology works. Engineering principles are addressed, but in such a way that an instructor can skip the sections without hurting course content The author has been involved with many biotechnologies through his own direct research experiences. The text is more than a compendium of information - it is an integrated work written by an author who has experienced first-hand the nuances associated with many of the major biotechnologies of general interest today.

Nutritional Quality Improvement in Plants - Pawan Kumar Jaiwal 2019-11-01
This book presents a detailed overview and critical evaluation of recent advances and remaining challenges in improving nutritional quality and/or avoiding the accumulation of undesirable substances in plants using a variety of strategies based on modern biological tools and techniques. Each review chapter provides an authoritative and insightful account of the various aspects of nutritional enhancement of plants. In the course of the last two decades, several food crops rich in macro- and micronutrients have been developed to improve health and protect a large section of the populace in developing countries from chronic diseases. Providing extensive information on these developments, this book offers a valuable resource for all researchers, students and industrialists working in agriculture, the plant sciences, agronomy, horticulture, biotechnology, food and nutrition, and the soil and environmental sciences.

Introduction to Biotechnology - Dr. B.L. Saini 2010-02

Biotechnology for Zero Waste - Chaudhery Mustansar Hussain 2022-01-18
Biotechnology for Zero Waste The use of biotechnology to minimize waste and maximize resource valorization In Biotechnology for Zero Waste: Emerging Waste Management Techniques, accomplished environmental researchers Drs. Chaudhery Mustansar Hussain and Ravi Kumar Kadeppagari deliver a robust exploration of the role of biotechnology in reducing waste and creating a zero-waste environment. The editors provide resources covering perspectives in waste management like anaerobic co-digestion, integrated biosystems, immobilized enzymes, zero waste biorefineries, microbial fuel cell technology, membrane bioreactors, nano biomaterials, and more. Ideal for sustainability professionals, this book comprehensively sums up the state-of-the-art biotechnologies powering the latest advances in zero-waste strategies. The renowned contributors address topics like bioconversion and biotransformation and detail the concept of the circular economy. Biotechnology for Zero Waste effectively guides readers on the path to creating sustainable products from waste. The book also includes: A thorough introduction to modern perspectives on zero waste drives, including anaerobic co-digestion as a smart approach for enhancing biogas production Comprehensive explorations of bioremediation for zero waste, biological degradation systems, and bioleaching and biosorption of waste Practical discussions of bioreactors for zero waste and waste2energy with biotechnology An in-depth examination of emerging technologies, including nanobiotechnology for zero waste and the economics and commercialization of zero waste biotechnologies Perfect for process engineers, natural products, environmental, soil, and inorganic chemists, Biotechnology for Zero Waste: Emerging Waste Management Techniques will also earn a place in the libraries of food technologists, biotechnologists, agricultural scientists, and microbiologists.

Innovative Technologies in Beverage Processing - Ingrid Aguilo-Aguayo 2017-05-22
An in-depth look at new and emerging technologies for non-alcoholic beverage manufacturing The non-alcoholic beverage market is the fastest growing segment of the functional food industry worldwide. Consistent with beverage consumption trends generally, the demand among consumers of these products is for high-nutrient drinks made from natural, healthy ingredients, free of synthetic preservatives and artificial flavor and color enhancers. Such drinks require specialized knowledge of exotic ingredients, novel processing techniques, and various functional ingredients. The latest addition to the critically acclaimed IFST Advances in Food Science series this book brings together edited contributions from internationally recognized experts in their fields who offer insights and analysis of the latest developments in non-alcoholic beverage manufacture. Topics covered include juices made from pome fruits, citrus fruits, prunus fruits, vegetables, exotic fruits, berries, juice blends and non-alcoholic beverages, including grain-based beverages, soups and functional beverages. Waste and by-products generated in juice and non-alcoholic beverage sector are also addressed. Offers fresh insight and analysis of the latest developments in non-alcoholic beverage manufacture from leading international experts Covers all product segments of the non-alcoholic beverage market, including juices, vegetable blends, grain-based drinks, and alternative beverages Details novel thermal and non-thermal technologies that ensure high-quality nutrient retention while extending product shelf life Written with the full support of The Institute of Food Science and Technology (IFST), the leading qualifying body for food professionals in Europe Innovative Technologies in Beverage Processing is a valuable reference/working resource for food scientists and engineers working in the non-alcoholic beverage industry, as well as academic researchers in industrial food processing and nutrition.

The Seabuckthorn Genome - Prakash C. Sharma 2022-11-23
This work is the first compilation of comprehensive deliberations on botany, cytogenetics and sex determination, genetic resources and diversity, classical breeding, molecular markers and genome sequence resources, and application of omics technology including transcriptomics, proteomics, and metabolomics resources in the multipurpose medicinal plant seabuckthorn. The book also presents a detailed narrative on antioxidative, radioprotective nutraceutical, and medicinal applications of seabuckthorn products. A detailed treatment has been included on analytical techniques and processing technologies. Altogether, the book contains about 300 pages over 17 chapters contributed by globally reputed experts on the relevant field in this important plant species. This book will be useful to the research students, teachers, and scientists in the academia and private sector engaged in horticulture, genetics, breeding, molecular biology, biotechnology, and breeding. The book will also be a useful source for workers involved in the development of plant-based medicines, nutraceuticals, therapeutics, and

cosmeceuticals and extension workers involved in the development of rural farmers and small-scale industries.
Reactive Oxygen, Nitrogen and Sulfur Species in Plants - Mirza Hasanuzzaman 2019-07-02
Presents a multidisciplinary analysis of the integration among reactive oxygen species (ROS), reactive nitrogen species (RNS), and reactive sulfur species (RSS). Since plants are the main source of our food, the improvement of their productivity is the most important task for plant biologists. In this book, leading experts accumulate the recent development in the research on oxidative stress and approaches to enhance antioxidant defense system in crop plants. They discuss both the plant responses to oxidative stress and mechanisms of abiotic stress tolerance, and cover all of the recent approaches towards understanding oxidative stress in plants, providing comprehensive information about the topics. It also discusses how reactive nitrogen species and reactive sulfur species regulate plant physiology and plant tolerance to environmental stresses. Reactive Oxygen, Nitrogen and Sulfur Species in Plants: Production, Metabolism, Signaling and Defense Mechanisms covers everything readers need to know in four comprehensive sections. It starts by looking at reactive oxygen species metabolism and antioxidant defense. Next, it covers reactive nitrogen species metabolism and signaling before going on to reactive sulfur species metabolism and signaling. The book finishes with a section that looks at crosstalk among reactive oxygen, nitrogen, and sulfur species based on current research done by experts. Presents the newest method for understanding oxidative stress in plants. Covers both the plant responses to oxidative stress and mechanisms of abiotic stress tolerance Details the integration among reactive oxygen species (ROS), reactive nitrogen species (RNS) and reactive sulfur species (RSS) Written by 140 experts in the field of plant stress physiology, crop improvement, and genetic engineering Providing a comprehensive collection of up-to-date knowledge spanning from biosynthesis and metabolism to signaling pathways implicated in the involvement of RONSS to plant defense mechanisms, Reactive Oxygen, Nitrogen and Sulfur Species in Plants: Production, Metabolism, Signaling and Defense Mechanisms is an excellent book for plant breeders, molecular biologists, and plant physiologists, as well as a guide for students in the field of Plant Science.
Marine Enzymes Biotechnology: Production and Industrial Applications, Part II - Marine Organisms Producing Enzymes - 2016-10-18
Marine Enzymes Biotechnology: Production and Industrial Applications, Part II - Marine Organisms Producing Enzymes provides a huge treasure trove of information on marine organisms. Nowadays, marine organisms are good candidates for enzymes production and have been recognized as a rich source of biological molecules that are of potential interest to various industries. Marine enzymes such as amylases, carboxymethylcellulases, proteases, chitinases, keratinases, xylanases, agarases, lipases, peroxidase and tyrosinases are widely used in the industry for the manufacture of pharmaceuticals, foods, beverages, and confectioneries, as well as in textile and leather processing, and in waste water treatment. The majority of the enzymes used in the industry are of microbial origin because microbial enzymes are relatively more stable than the corresponding enzymes derived from plants and animals. Focuses on the isolation, characterization, and industrial application of marine enzymes Provides current trends and development of industrial important marine enzymes, including amylases, carboxymethylcellulases, proteases, chitinases, keratinases, xylanases, agarases, lipases, peroxidase, and tyrosinases Presents insights into current trends and approaches for marine enzymes
Enzymes in Food Biotechnology - Mohammed Kuddus 2018-08-23
Enzymes in Food Biotechnology: Production, Applications, and Future Prospects presents a comprehensive review of enzyme research and the potential impact of enzymes on the food sector. This valuable reference brings together novel sources and technologies regarding enzymes in food production, food processing, food preservation, food engineering and food biotechnology that are useful for researchers, professionals and students. Discussions include the process of immobilization, thermal and operational stability, increased product specificity and specific activity, enzyme engineering, implementation of high-throughput techniques, screening to relatively unexplored environments, and the development of more efficient enzymes. Explores recent scientific research to innovate novel, global ideas for new foods and enzyme engineering Provides fundamental and advanced information on enzyme research for use in food biotechnology, including microbial, plant and animal enzymes Includes recent cutting-edge research on the pharmaceutical uses of enzymes in the food industry
Biotechnology in India I - T.K. Ghose 2003-07-03
The biotechnology business in India with an increase from USD 500 million in 1997 and reaching an estimated USD I billion next year health related prod ucts accounting for 60%, agro and veterinary products together 15%, and con tract R&D, reagents, devices and supplies adding up to the remaining 25% of which the diagnostics share was about 10% of the total surely presented an encouraging picture even five years ago. While volumes have increased, the pat tern has not. According to a report, prepared by McKinsey & Co, India's Phar maceutical industry including domestic and export sales and contract services totals nearly USD 5 billion. Furthermore, the company optimistically projects the growth to a factor of five fold only if both the industry and the government are able to put in place achievable solutions that must take care of the formida ble obstacles preventing further growth. If this assessment is correct, then the established transformation made by IT growth should also provide the confi dence required by the high expectations for biotechnology which have arisen in the country in recent years. Some contributors to this are overenthusiastic these are bureaucrats, some retired scientists and of course the complacent politicians who have the least knowledge of what the new biotechnology is all about. However, there are clear indications of biotechnology growth demon strated by a few but rapidly expanding biotech companies such as Biocon Ltd, Shantha Biotech (P) Lid, Dr.
Plant OMICS and Crop Breeding - Sajad Majeed Zargar 2017-05-08
Due to the advent of state-of-the-art technologies in the field of biotechnology, much progress has been achieved since the last decade. OMICS technologies are being extensively used to address various issues pertaining to agriculture. Recent advances in genomics, transcriptomics, proteomics, and metabolomics techniques have revolutionized the understanding of genetic response of plants to various biotic and abiotic stresses. Strategic application of this revolutionary technology will eventually lead towards attaining sustainability in agriculture. This new book, Plant OMICS and Crop Breeding, addresses this important issue.
Genetic Enhancement of Crops for Tolerance to Abiotic Stress: Mechanisms and Approaches, Vol. I - Vijay Rani Rajpal 2019-04-24
Abiotic stresses such as drought (water deficit), extreme temperatures (cold, frost and heat), salinity (sodicity) and mineral (metal and metalloid) toxicity limit productivity of crop plants worldwide and are big threats to global food security. With worsening climate change scenarios, these stresses will further increase in intensity and frequency. Improving tolerance to abiotic stresses, therefore, has become a major objective in crop breeding programs. A lot of research has been conducted on the regulatory mechanisms, signaling pathways governing these abiotic stresses, and cross talk among them in various model and non-model species. Also, various 'omics' platforms have been utilized to unravel the candidate genes underpinning various abiotic stresses, which have increased our understanding of the tolerance mechanisms at structural, physiological, transcriptional and molecular level. Further, a wealth of information has been generated on the role of chromatin assembly and its remodeling under stress and on the epigenetic dynamics via histones modifications. The book consolidates outlooks, perspectives and updates on the research conducted by scientists in the abovementioned areas. The information covered in this book will therefore interest workers in all areas of plant sciences. The results presented on multiple crops will be useful to scientists in building strategies to counter these stresses in plants. In addition, students who are beginners in the areas of abiotic stress tolerance will find this book handy to clear their concepts and to get an update on the

research conducted in various crops at one place
Biology and Biotechnology of Environmental Stress Tolerance in Plants - Aryadeep Roychoudhury 2023-07-21
Abiotic stresses such as drought, high salt, cold, heat, UV radiation, heavy metal pollution, etc., are increasingly responsible for restricting plant growth and agricultural production and are becoming more alarming due to threats from global climate change. To combat these threats, this new 3-volume set provides a comprehensive understanding of the mechanisms that mediate biosynthesis, accumulation, and degradation of plant metabolites to improve crop production and enhance abiotic stress tolerance in plants. Volume 1: Secondary Metabolites in Environmental Stress Tolerance focuses exclusively on the diverse secondary metabolites that play a major role in the adaptation of plants to the environment and in overcoming stress conditions as well as their implications for enhancing tolerance mechanisms. The book presents available information on the protective roles rendered by a wide array of antioxidative secondary metabolites and their regulation during diverse environmental stress. Volume 2: Trace Elements in Environmental Stress Tolerance throws light on the different inorganic trace elements, including metal nanoparticles, that help to deal with environmental stresses. While these elements at high level create considerable phytotoxicity and halt metabolic and enzymatic activity, they also promote growth and development in limited quantity, so that they have significant potential in revamping plant morphology and physiology under stressed conditions. Hence, optimum concentration management of these elements can help to mitigate world hunger and contribute toward sustainable agriculture and food security under challenging environments. Volume 3: Sustainable Approaches for Enhancing Environmental Stress Tolerance focuses on the agronomic and biochemical approaches as well as biotechnological and high-throughput technologies, including the prospects of genetic engineering, epigenetics and the latest CRISPR/Cas technology, in generating stress-tolerant plants. The volume provides a clear roadmap for the implementation of techniques for improving abiotic stress tolerance in plants for better sustenance.
Microbial Fermentation and Enzyme Technology - Hrudayanath Thatoi 2020-04-29
The discovery of enzymes as biocatalysts has led to various biotechnological developments. The capability of enzymes to catalyse various chemical reactions both in vivo and in vitro has led them to applications in various industries, such as food, feed, pharmaceutical, diagnostics, detergent, textile, paper, leather, and fine chemical industries. Microbial Fermentation and Enzyme Technology mainly focuses on production and application of enzymes in various industries. Further, it also discusses recent developments in enzyme engineering particularly those involved in creating and improving product formations through enzyme and fermentation technology. Salient features: Includes current research and developments in the area of microbial aspects in different fields like food, chemicals, pharmaceutical, bioprocess, etc. Discusses various enzymes that are used in refinement of environmental pollutions and its application in different industrial sectors Focuses on production and application of enzymes in various industries Highlights recent developments in enzyme engineering with respect to its application in textile, pharmaceutical, nanobiotechnology, bioremediation and many other related fields.
Mechanism of Plant Hormone Signaling under Stress - Girdhar K. Pandey 2017-03-15
Plant hormone signaling plays an important role in many physiological and developmental processes including stress response. With the advent of new post-genomic molecular techniques, the potential for increasing our understanding of the impact of hormone signaling on gene expression and adaptive processes has never been higher. Unlocking the molecular underpinnings of these processes shows great promise for the development of new plant biotechnologies and improved crop varieties. The topics included in this book emphasize on genomics and functional genomics aspects, to understand the global and whole genome level changes upon particular stress conditions. With the functional genomics tools, the mechanism of phytohormone signaling and their target genes can be defined in a more systematic manner. The integrated analysis of phytohormone signaling under single or multiple stress conditions may prove exceptional to design stress tolerant crop plants in the field conditions. Bringing together the latest advances, as well as the work being done to apply these findings to plant and crop science, Mechanism of Plant Hormone Signaling Under Stress will prove extremely useful to plant and stress biologists, plant biotechnology researchers, as well as students and teachers.
Production and Management of Beverages - Alexandru Grumezescu 2018-12-07
Production and Management of Beverages, Volume One in the Science of Beverages series, introduces the broad world of beverage science, providing an overview of the emerging trends in the industry and the potential solutions to challenges such as sustainability and waste. Fundamental information on production and processing technologies, safety, quality control, and nutrition are covered for a wide range of beverage types, including both alcoholic and nonalcoholic beverages, fermented beverages, cocoa and other powder based beverages and more. This is an essential resource for food scientists, technologists, chemists, engineers, microbiologists and students entering into this field. • Describes different approaches to waste management and eco-innovative solutions for the wine and beer industry • Offers information on ingredient traceability to ensure food safety and quality • Provides overall coverage of hot topics and scientific principles in the production and management of beverages for sustainable industry
Sensory Biology of Plants - Sudhir Sopory 2019-11-09
Plants provide a source of survival for all life on this planet. They are able to capture solar energy and convert it into food, feed, wood and medicines. Though sessile in nature, over many millions of years, plants have diversified and evolved from lower to higher life forms, spreading from sea level to mountains, and adapting to different ecozones. They have learnt to cope with challenging environmental conditions and various abiotic and biotic factors. Plants have also developed systems for monitoring the changing environment and efficiently utilizing resources for growth, flowering and reproduction, as well as mechanisms to counter the impact of pests and diseases and to communicate with other biological systems, like microbes and insects. This book discusses the “awareness” of plants and their ability to gather information through the perception of environmental cues, such as light, gravity, water, nutrients, touch and sound, and stresses. It also explores plants’ biochemical and molecular “computing” of the information to adjust their physiology and development to the advantage of the species. Further, it examines how plants communicate between their different organs and with other organisms, as well as the concepts of plant cognition, experience and memory, from both scientific and philosophical perspectives. Lastly, it addresses the phenomenon of death in plants. The epilogue presents an artist’s view of the beauty of the natural world, especially plant “architecture”. The book provides historical perspectives, comparisons with animal systems where needed, and general biochemical and molecular concepts and themes. Each chapter is selfcontained, but also includes cross talk with other chapters to offer an integrated view of plant life and allow readers to appreciate and admire the functioning of plant life from within and without. The book is a tribute by the Editor to his students, colleagues and co-workers and to those in whose labs he has worked.