

Microbial Biotechnology Principles And Applications

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Microbial Biotechnology: Basic Research and Applications -

Joginder Singh 2020-07-07

Microbial biotechnology is an important area that promotes advanced research into using microbes for value-added products, human nutrition, and the overall wellbeing of society. This book presents the latest information on the use of microbes for sustainable development, and highlights state-of-the-art biotechnological techniques used to harness microbial biotechnological traits on a commercial scale. Gathering contributions from authoritative researchers in the field, it addresses recent advances in microbial biotechnological approaches that offer sustainable options for future generations. Exploring a broad range of microbial products and their uses, the book specifically places emphasis on the application of microorganisms in healthcare, the environment and industry. It also discusses various compound classes derived from microbial metabolites. Pursuing a holistic approach to recent advances in the utilization of various microbes as biotechnological tools, the book also covers traditional uses, and explores emerging strategies to harness their full potential. Accordingly, it offers a valuable resource for researchers and graduate students alike.

Microbial Fuels - Farshad Darvishi Harzevili 2017-09-18

The book will highlight major trends and developments in the field of microbial fuels, with contributions from a number of highly experienced researchers. It will serve as a comprehensive reference for industrial stakeholders, scientists, researchers and graduate students interested in microbial fuels. The aims of this work are to present the technologies and perspectives taking into account different socio-economical contexts. A specific chapter will focus on the general perspectives of microbial fuels for low-income and emerging countries.

Pharmaceutical Biotechnology - Gary Walsh 2013-04-25

Pharmaceutical Biotechnology offers students taking Pharmacy and related Medical and Pharmaceutical courses a comprehensive introduction to the fast-moving area of biopharmaceuticals. With a particular focus on the subject taken from a pharmaceutical perspective, initial chapters offer a broad introduction to protein science and recombinant DNA technology- key areas that underpin the whole subject. Subsequent chapters focus upon the development, production and analysis of these substances. Finally the book moves on to explore the science, biotechnology and medical applications of specific biotech products categories. These include not only protein-based substances but also nucleic acid and cell-based products. introduces essential principles underlining modern biotechnology- recombinant DNA technology and protein science an invaluable introduction to this fast-moving subject aimed specifically at pharmacy and medical students includes specific 'product category chapters' focusing on the pharmaceutical, medical and therapeutic properties of numerous biopharmaceutical products. entire chapter devoted to the principles of genetic engineering and how these drugs are developed. includes numerous relevant case studies to enhance student understanding no prior knowledge of protein structure is assumed

Biochemical Engineering and Biotechnology - Ghasem Najafpour 2015-02-24

Biochemical Engineering and Biotechnology, 2nd Edition, outlines the principles of biochemical processes and explains their use in the manufacturing of every day products. The author uses a direct approach that should be very useful for students in following the concepts and practical applications. This book is unique in having many solved problems, case studies, examples and demonstrations of detailed experiments, with simple design equations and required calculations. Covers major concepts of biochemical engineering and biotechnology, including applications in bioprocesses, fermentation technologies,

enzymatic processes, and membrane separations, amongst others Accessible to chemical engineering students who need to both learn, and apply, biological knowledge in engineering principals Includes solved problems, examples, and demonstrations of detailed experiments with simple design equations and all required calculations Offers many graphs that present actual experimental data, figures, and tables, along with explanations

Microbial Nanobiotechnology - Agbaje Lateef 2021

This edited book serves as a vital resource on the contributions of microorganisms to advances in nanotechnology, establishing their applications in diverse areas of biomedicine, environment, biocatalysis, food and nutrition, and renewable energy. It documents the impacts of microorganisms in nanotechnology leading to further developments in microbial nanobiotechnology. This book appeals to researchers and scholars of microbiology, biochemistry and nanotechnology.

Environmental Biotechnology and Cleaner Bioprocesses - Gloria Sanchez 1999-12-16

As we enter a new millennium, the environmental issues faced by both developing and industrialised nations are as pressing as ever.

Environmental biotechnologies are increasingly being viewed as a major weapon against environmental damage. Cleaner production is part of this strategy and yet there is still widespread ignorance about this emerging technology. Environmental Biotechnology and Cleaner Bioprocesses provides this information at various levels, from introductory to advanced. The first section covers the development of cleaner bioprocesses within the framework of sustainable development. Aspects of environmental policy for small and medium businesses are then discussed using case studies to illustrate principles. The second section covers the recycling and treatment of organic waste, including the use of aquatic plants and microalgae for wastewater treatment and recovery of nutrients. Section three covers bioremediation technologies and finally, section four is dedicated to emerging cleaner bioprocesses and environmentally sound products. All chapters have been written and edited by leading authorities in the field. Students and professionals interested in environmental biotechnology and cleaner production will find the background information and detail they require in this one convenient source.

Microbial Biotechnology in Agriculture and Aquaculture, Vol. 2 - R C Ray 2005

Provides a new and authoritative account of the complex patterns of development, teaching and practice in the religions of Asia. With individual chapters written by specialists, this volume provides clear, non-technical insight.

Principles and Applications of Fermentation Technology - Arindam Kuila 2018-07-30

The book covers all aspects of fermentation technology such as principles, reaction kinetics, scaling up of processes, and applications. The 20 chapters written by subject matter experts are divided into two parts: Principles and Applications. In the first part subjects covered include: Modelling and kinetics of fermentation technology Sterilization techniques used in fermentation processes Design and types of bioreactors used in fermentation technology Recent advances and future prospect of fermentation technology The second part subjects covered include: Lactic acid and ethanol production using fermentation technology Various industrial value-added product biosynthesis using fermentation technology Microbial cyp450 production and its industrial application Polyunsaturated fatty acid production through solid state fermentation Application of oleaginous yeast for lignocellulosic biomass based single cell oil production Utilization of micro-algal biomass for bioethanol production Poly-lactide production from lactic acid through

fermentation technology Bacterial cellulose and its potential impact on industrial applications

Environmental Microbiology - Patrick K. Jjemba 2004

Environmental Microbiology examines the composition and behavior of microbial communities in their natural habitats as well as their central role in the biosphere, impacting drinking water, waste treatment, nutrient dynamics, hydrothermal activities, and the evolution and spread of pathogens, etc.

Applications of Biotechnology in Traditional Fermented Foods -

National Research Council 1992-02-01

In developing countries, traditional fermentation serves many purposes. It can improve the taste of an otherwise bland food, enhance the digestibility of a food that is difficult to assimilate, preserve food from degradation by noxious organisms, and increase nutritional value through the synthesis of essential amino acids and vitamins. Although "fermented food" has a vaguely distasteful ring, bread, wine, cheese, and yogurt are all familiar fermented foods. Less familiar are gari, ogi, idli, ugba, and other relatively unstudied but important foods in some African and Asian countries. This book reports on current research to improve the safety and nutrition of these foods through an elucidation of the microorganisms and mechanisms involved in their production. Also included are recommendations for needed research.

Microbial Biotechnology - Alexander N. Glazer 2007-10-01

Knowledge in microbiology is growing exponentially through the determination of genomic sequences of hundreds of microorganisms and the invention of new technologies such as genomics, transcriptomics, and proteomics, to deal with this avalanche of information. These genomic data are now exploited in thousands of applications, ranging from those in medicine, agriculture, organic chemistry, public health, biomass conversion, to biomineralization. **Microbial Biotechnology. Fundamentals of Applied Microbiology** focuses on uses of major societal importance, enabling an in-depth analysis of these critically important applications. Some, such as wastewater treatment, have changed only modestly over time, others, such as directed molecular evolution, or 'green' chemistry, are as current as today's headlines. This fully revised second edition provides an exciting interdisciplinary journey through the rapidly changing landscape of discovery in microbial biotechnology. An ideal text for courses in applied microbiology and biotechnology courses, this book will also serve as an invaluable overview of recent advances in this field for professional life scientists and for the diverse community of other professionals with interests in biotechnology.

Environmental Biotechnology - Lawrence K. Wang 2010-04-05

The past 30 years have seen the emergence of a growing desire worldwide that positive actions be taken to restore and protect the environment from the degrading effects of all forms of pollution - air, water, soil, and noise. Since pollution is a direct or indirect consequence of waste production, the seemingly idealistic demand for "zero discharge" can be construed as an unrealistic demand for zero waste. However, as long as waste continues to exist, we can only attempt to abate the subsequent pollution by converting it to a less noxious form. Three major questions usually arise when a particular type of pollution has been identified: (1) How serious is the pollution? (2) Is the technology to abate it available? and (3) Do the costs of abatement justify the degree of abatement achieved? This book is one of the volumes of the Handbook of Environmental Engineering series. The principal intention of this series is to help readers formulate answers to the last two questions above. The traditional approach of applying tried-and-true solutions to specific pollution problems has been a major contributing factor to the success of environmental engineering, and has accounted in large measure for the establishment of a "methodology of pollution control." However, the realization of the ever-increasing complexity and interrelated nature of current environmental problems renders it imperative that intelligent planning of pollution abatement systems be undertaken.

Microbial genetics applied to biotechnology : - Venetia A. Saunders 2012-12-06

This book describes techniques of microbial genetics and how they may be applied to biotechnology. The text is concerned largely with the application of these techniques to microbial technology. We have therefore utilised illustrative material that is given in our own courses in applied microbiology. The book assumes in the reader a basic knowledge of microbial will prove useful to under genetics and industrial microbiology. We hope it graduates, postgraduates and others taking courses in applied microbiology. We would like to thank various colleagues, including John Carter, Julian Davies, Gordon Dougan, David

Hopwood, Gwyn Humphreys, Alan McCarthy, David O'Connor, Tony Hart, Steve Oliver, Roger Pickup, Hilary Richards, Bob Rowlands, David Sherratt, Peter Strike, Richard Sykes and Liz Wellington, all of whom provided information at various stages during the writing of this book. Many thanks are also due to Linda Marsh for patiently typing the many drafts of the manuscript. 1 Introduction Natural genetic variation has always been exploited by man to improve the properties of microbial strains. Spontaneous mutations that arise in microbial populations and that have properties advantageous to man have been gradually selected over centuries of use. However, it is only since the development of modern genetic techniques that more rational approaches have been possible. Such newer technologies have permitted the tailoring of microorganisms, plant or animal cells to manufacture specific products of commercial or social benefit and to manage the environment.

Microbial Polymers - Anukool Vaishnav 2021-05-03

This book covers all types of microbe based polymers and their application in diverse sectors with special emphasis on agriculture. It collates latest research, methods, opinion, perspectives, and reviews dissecting the microbial origins of polymers, their production, design, and processing at industrial level, as well as improvements for specific industrial applications. Book also discusses recent advances in biopolymer production and their modification for amplifying the value. In addition, understanding of the microbial physiology and optimal conditions for polymer production are also explained. This compilation of scientific chapters on principles and practices of microbial polymers fosters the knowledge transfer among scientific communities, industries, and microbiologists and serves students, academicians, researchers for a better understanding of the nature of microbial polymers and application procedure for sustainable ecosystem

Industrial Biotechnology - Loveleen Kaur 2015-02-01

Industrial biotechnology can be defined as the use of modern biological life sciences in various industries. Biotechnology has a myriad of applications in our day to day life such as with simple processes such as the brewing of beer, use of enzymes in detergents, production of fermented food, production of antibiotics, nutritional supplements etc. This book also includes processes (production of biofuels, treatment of effluents) that contribute to creating efficient, eco-friendly environments. This book discusses the different aspects of bioprocesses; media design, fermenter design and the economics of it. It also explains in detail the processes and techniques involved in the production of commercially important products. This book is an up-to-date collection of the latest practices being followed in the field of industrial biotechnology for students both at the undergraduate and postgraduate level.

Protocols and Applications in Enzymology - Seema Anil Belorkar 2021-11-19

Protocols and Applications in Enzymology provides instruction on the experimental procedures of enzyme isolation techniques, innovative screening techniques, and instrument enabled enzyme assays and their underlying principles, among other protocols. The book serves as a one-stop solution for those working with different enzyme protocols in the fields of biochemistry, microbiology, biotechnology and allied subjects. Each chapter offers a full overview of protocol key resources, materials required, quantifiable and statistical analysis, optimization and troubleshooting, safety considerations, and standards. Applications are discussed across distribution and diversity of microbial enzymes, enzyme screening, enzymes in solid state fermentations, enzyme assays, enzyme kinetics, and biotechnological uses. Provides step-by-step instruction on enzyme protocols and applications, with actionable discussions of needed resources, materials, quantification and statistical analysis, optimization and troubleshooting, safety considerations and standards Presents easy to read, reproducible protocols for researchers and students across academia and industry Includes color diagrams that illustrate key concepts

Essentials in Fermentation Technology - Aydin Berenjian 2019-07-15

This textbook teaches the principles and applications of fermentation technology, bioreactors, bioprocess variables and their measurement, key product separation and purification techniques as well as bioprocess economics in an easy to understand way. The multidisciplinary science of fermentation applies scientific and engineering principles to living organisms or their useful components to produce products and services beneficial for our society. Successful exploitation of fermentation technology involves knowledge of microbiology and engineering. Thus the book serves as a must-have guide for undergraduates and graduate students interested in Biochemical Engineering and Microbial Biotechnology

Principles and Applications of Environmental Biotechnology for a Sustainable Future - Ram Lakhan Singh 2016-10-14

This textbook on Environmental Biotechnology not only presents an unbiased overview of the practical biological approaches currently employed to address environmental problems, but also equips readers with a working knowledge of the science that underpins them. Starting with the fundamentals of biotechnology, it subsequently provides detailed discussions of global environmental problems including microbes and their interaction with the environment, xenobiotics and their remediation, solid waste management, waste water treatment, bioreactors, biosensors, biomining and biopesticides. This book also covers renewable and non-renewable bioenergy resources, biodiversity and its conservation, and approaches to monitoring biotechnological industries, genetically modified microorganism and foods so as to increase awareness. All chapters are written in a highly accessible style, and each also includes a short bibliography for further research. In summary this textbook offers a valuable asset, allowing students, young researchers and professionals in the biotechnology industry to grasp the basics of environmental biotechnology.

Environmental Biotechnology - Murray Moo-Young 2013-06-29

Biotechnology offers a 'natural' way of addressing environmental problems, ranging from identification of biohazards to bioremediation techniques for industrial, agricultural and municipal effluents and residues. Biotechnology is also a crucial element in the paradigm of 'sustainable development'. This collection of 66 papers, by authors from 20 countries spanning 4 continents, addresses many of these issues. The material presented will interest scientists, engineers, and others in industry, government and academia. It incorporates both introductory and advanced aspects of the subject matter, which includes water, air and soil treatment, biosensor and biomonitoring technology, genetic engineering of microorganisms, and policy issues in applying biotechnology to environmental problems. The papers present a variety of aspects ranging from current state-of-the-art research, to examples of applications of these technologies.

Microbial Biotechnology in Agriculture and Aquaculture - R C Ray 2005-01-06

In agriculture, microbial biotechnology covers a wide array of subjects ranging from biofertilizers to biological control of pests and diseases; from biological N₂-fixation to lignocellulose degradation; from production of biomass and biofuels to genetically engineered plants. Similarly, microbial biotechnology in aquaculture touches several aspects.

Microbial Biotechnology - Elsa Cooper 2019-06-20

Biotechnology is a broad area of biology concerned with the development or manufacture of products using living organisms, biological systems and their derivatives. It integrates the principles of biological sciences such as biochemistry, cell biology, embryology, microbiology, etc. It overlaps with the fields of bio-engineering, molecular biology, biomanufacturing, biomedical engineering, etc. It has applications in the domains of food production, medicine and agriculture. The production of antibiotics and vaccines, production of wine, cheese and beer through fermentation processes, management and reduction of waste, etc. are some applications of biotechnology that are aided by microbes. This book is a valuable compilation of topics, ranging from the basic to the most complex advancements in the field of microbial biotechnology. It presents this complex subject in the most comprehensible and easy to understand language. As this field is emerging at a rapid pace, the contents of this book will help the readers understand the modern concepts and applications of the subject.

Applied Microbiology and Bioengineering - Pratyosh Shukla 2018-09-27

Applied Microbiology and Bioengineering: An Interdisciplinary Approach discusses recent advances in microbiology and cutting-edge biotechnology that have generated interest among researchers. The book is divided into several sections, including Enzymes in Bioprocessing, Human Health, Microbial Physiology and Biomedical Applications, and Bioprocess Development. Included are some of the latest developments in the field, like smart actuators for innovative biomedical applications, microalgal antenna engineering for improved bioprocess of biofuel, cell line engineering, and synbiotic foods. It is a useful reference for those in the applied microbiology and biotechnology fields, but will also be useful for practitioners in biotech. Provides insight into the various interdisciplinary research avenues which can be utilized to benefit current researchers and students. Covers novel topic areas in the field of applied microbiology, like smart actuators for innovative biomedical application, microbial tyrosinases, production of halophilic alkaline protease, human probiotic applications, and the biotechnological aspects

of methylbacterium. Reviews innovative bio-processing technologies for horticultural products and the bioprocess development for synbiotic foods.

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

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

Microbial Biotechnology in Food and Health - Ramesh C. Ray 2020-09-13

Microbial Biotechnology in Food and Health Science, volume one in the Applied Biotechnology Reviews series, offers two unique sections within the theme of genomics and bioprocessing and the bioengineering of microorganisms in the role of food science and human health. This volume provides review articles as the basis supporting biotechnological research useful to a wide scope of research initiatives. Important relevant information on genomics, proteomics and metabolomics are included as well as the emerging interdisciplinary area of synthetic biology which enables the metabolic engineering of microorganisms to produce pharmaceuticals. Applied Biotechnology Reviews is a series aimed at bringing all aspects of biotechnology as it is applied to food science - from agriculture through product processing into focus through topical volumes. Each volume will cover a relevant application approach in industrial biotechnology. Covers the latest biotechnological research articles on applications of microbes for food and health science. Presents research articles to emphasize research methods and techniques useful for research outcomes. Analysis detoxification properties of microorganisms in foods. Includes methods of bioengineering of microbes to improve human insulin synthesis/recombinant protein.

Molecular Biotechnology - Glick Bernard R 1998

The second edition explains the principles of recombinant DNA technology as well as other important techniques such as DNA sequencing, the polymerase chain reaction, and the production of monoclonal antibodies.

Microbial Biotechnology - Kay Yeoman 2020-07-15

Written primarily for mid-to-upper level undergraduates, this primer will introduce students to topics at the forefront of the subject that are being applied to probe biological problems, or to address the most pressing issues facing society. These topics will include those that form the cornerstone of contemporary research, helping students to make the transition to active researcher. Students will acquire a solid understanding of the essentials of microbial biotechnology, its applications in agriculture, diagnostics and urban and artistic conservation, as well as the potential threats genetic modification may pose to public health, the environment and intellectual property.

Microbial Resources - Ipek Kurtböke 2017-03-31

Microbial Resources: From Functional Existence in Nature to Applications provides an exciting interdisciplinary journey through the rapidly developing field of microbial resources, including relationships to aspects of microbiology. Covers the functional existence of microorganisms in nature, as well as the transfer of this knowledge for industrial and other applications. Examines the economic perspective of revealing the potential value of microbial material and figuring it into socio-economic value; legal perspectives; and how to organize a fair allotment of socio-economic benefits to all stakeholders who have effectively contributed to the preservation, study, and exploitation of microbiological material. Covers aspects of foundational information related to microbiology, microbial ecology, and diversity, as well as new advances in microbial genomics. Provides information on the utilization of microbial resources in biotechnology. Covers legislative issues and related law in biodiscovery. Fills a need for a very broad audience and is a good resource for microbiologists seeking to know the extent of microbiology approaches, the policies associated with microbiology, and potential career paths for researchers. Has significant added value due to the inclusion of comprehensive coverage of the biology, ecology, biochemistry and international legislation surrounding these applications.

Plant Biotechnology and Genetics - C. Neal Stewart, Jr. 2012-12-13

Designed to inform and inspire the next generation of plant biotechnologists. *Plant Biotechnology and Genetics* explores contemporary techniques and applications of plant biotechnology, illustrating the tremendous potential this technology has to change our world by improving the food supply. As an introductory text, its focus is on basic science and processes. It guides students from plant biology and

genetics to breeding to principles and applications of plant biotechnology. Next, the text examines the critical issues of patents and intellectual property and then tackles the many controversies and consumer concerns over transgenic plants. The final chapter of the book provides an expert forecast of the future of plant biotechnology. Each chapter has been written by one or more leading practitioners in the field and then carefully edited to ensure thoroughness and consistency. The chapters are organized so that each one progressively builds upon the previous chapters. Questions set forth in each chapter help students deepen their understanding and facilitate classroom discussions. Inspirational autobiographical essays, written by pioneers and eminent scientists in the field today, are interspersed throughout the text. Authors explain how they became involved in the field and offer a personal perspective on their contributions and the future of the field. The text's accompanying CD-ROM offers full-color figures that can be used in classroom presentations with other teaching aids available online. This text is recommended for junior- and senior-level courses in plant biotechnology or plant genetics and for courses devoted to special topics at both the undergraduate and graduate levels. It is also an ideal reference for practitioners.

Basic Biotechnology - Colin Ratledge 2006-05-25

Biotechnology is one of the major technologies of the twenty-first century. Its wide-ranging, multi-disciplinary activities include recombinant DNA techniques, cloning and the application of microbiology to the production of goods from bread to antibiotics. In this new edition of the textbook *Basic Biotechnology*, biology and bioprocessing topics are uniquely combined to provide a complete overview of biotechnology. The fundamental principles that underpin all biotechnology are explained and a full range of examples are discussed to show how these principles are applied; from starting substrate to final product. A distinctive feature of this text are the discussions of the public perception of biotechnology and the business of biotechnology, which set the science in a broader context. This comprehensive textbook is essential reading for all students of biotechnology and applied microbiology, and for researchers in biotechnology industries.

Bioremediation - Ronald L. Crawford 2005-09-08

Industrial and agricultural activity throughout this century has led to considerable contamination of soil and groundwater resources by hazardous chemicals. The technique of bioremediation uses living organisms--usually bacteria and fungi--to remove pollutants from soil and water with minimal disturbance to these environments. This approach, which is potentially more cost-effective than traditional techniques such as incineration of soils and carbon filtration of water, requires an understanding of how organisms transform chemicals, how they survive in polluted environments, and how they can be used in the field. This book examines these issues for many of the most serious and common environmental contaminants, presenting the most recent position on the application of bioremediation to polluted soil and water.

Principles and Applications of Antimicrobial Nanomaterials -

Joseph L. Graves Jr 2021-08-19

Principles and Applications of Antimicrobial Nanomaterials introduces the reader to the microbial world, antimicrobial nanomaterials, how microbial evolution works, and how knowledge of these areas can facilitate the development of sustainable antimicrobials. Due to the widespread occurrence of multidrug-resistant microbes, there is an increasing interest in the use of novel nanostructured materials as antimicrobials. This book is designed to help researchers from fields such as materials science, nanoscience, and nanoengineering who are attempting to develop these antimicrobial materials. Provides crucial background in microbiology and microbial evolution to help researchers design experiments that can produce sustainable results Offers detailed coverage on the antimicrobial properties of different types of nanomaterials Discusses the major challenges of using nanomaterials for antimicrobial applications

Food Microbiology, 2 Volume Set - Osman Erkmen 2016-06-13

This book covers application of food microbiology principles into food preservation and processing. Main aspects of the food preservation techniques, alternative food preservation techniques, role of microorganisms in food processing and their positive and negative features are covered. Features subjects on mechanism of antimicrobial action of heat, thermal process, mechanisms for microbial control by low temperature, mechanism of food preservation, control of microorganisms and mycotoxin formation by reducing water activity, food preservation by additives and biocontrol, food preservation by modified atmosphere, alternative food processing techniques, and traditional fermented

products processing. The book is designed for students in food engineering, health science, food science, agricultural engineering, food technology, nutrition and dietetic, biological sciences and biotechnology fields. It will also be valuable to researchers, teachers and practising food microbiologists as well as anyone interested in different branches of food.

Environmental Biotechnology - Marian Petre 2013-02-07

Taking into consideration the outstanding importance of studying and applying the biological means to remove or mitigate the harmful effects of global pollution on the natural environment, as direct consequences of quantitative expansion and qualitative diversification of persistent and hazardous contaminants, the present book provides useful information regarding New Approaches and Prospective Applications in Environmental Biotechnology. This volume contains twelve chapters divided in the following three parts: biotechnology for conversion of organic wastes, biodegradation of hazardous contaminants and, finally, biotechnological procedures for environmental protection. Each chapter provides detailed information regarding scientific experiments that were carried out in different parts of the world to test different procedures and methods designed to remove or mitigate the impact of hazardous pollutants on environment. The book is addressed to researchers and students with specialties in biotechnology, bioengineering, ecotoxicology, environmental engineering and all those readers who are interested to improve their knowledge in order to keep the Earth healthy.

Molecular Techniques in the Microbial Ecology of Fermented

Foods - Luca Cocolin 2007-12-15

With the application of new analytical techniques, the field of food fermentation has grown in recent years. This book provides the latest information and relevant advances on the microbial ecology of fermented foods and the application of molecular methods. This book serves as a guide for students and researchers on the most advanced techniques to identify bacteria and helps in choosing the most appropriate tools to study fermented food from a microbiological point of view.

Microbial Biotechnology - Yuan Kun Lee 2013

Focuses on the various applications of microbial-biotechnological principles. This book includes real life examples of how the application of microbial-biotechnological principles has achieved breakthroughs in both research and industrial production. It is also suitable for corporate planners, managers and applied research personnel.

Modern Industrial Microbiology and Biotechnology - Nduka Okafor 2017-11-22

The field of industrial microbiology involves a thorough knowledge of the microbial physiology behind the processes in the large-scale, profit-oriented production of microbe-related goods which are the subject of the field. In recent times a paradigm shift has occurred, and a molecular understanding of the various processes by which plants, animals and microorganisms are manipulated is now central to industrial microbiology. Thus the various applications of industrial microbiology are covered broadly, with emphasis on the physiological and genomic principles behind these applications. Relevance of the new elements such as bioinformatics, genomics, proteomics, site-directed mutation and metabolic engineering, which have necessitated the paradigm shift in industrial microbiology are discussed.

Anaerobic Biotechnology for Bioenergy Production - Samir Kumar Khanal 2011-11-18

Anaerobic biotechnology is a cost-effective and sustainable means of treating waste and wastewaters that couples treatment processes with the reclamation of useful by-products and renewable biofuels. This means of treating municipal, agricultural, and industrial wastes allows waste products to be converted to value-added products such as biofuels, biofertilizers, and other chemicals. *Anaerobic Biotechnology for Bioenergy Production: Principles and Applications* provides the reader with basic principles of anaerobic processes alongside practical uses of anaerobic biotechnology options. This book will be a valuable reference to any professional currently considering or working with anaerobic biotechnology options.

New and Future Developments in Microbial Biotechnology and Bioengineering - Ram Prasad 2018-02-20

Crop Improvement through Microbial Biotechnology explains how certain techniques can be used to manipulate plant growth and development, focusing on the cross-kingdom transfer of genes to incorporate novel phenotypes in plants, including the utilization of microbes at every step, from cloning and characterization, to the production of a genetically engineered plant. This book covers microbial biotechnology in sustainable agriculture, aiming to improve crop

productivity under stress conditions. It includes sections on genes encoding avirulence factors of bacteria and fungi, viral coat proteins of plant viruses, chitinase from fungi, virulence factors from nematodes and mycoplasma, insecticidal toxins from *Bacillus thuringiensis*, and herbicide tolerance enzymes from bacteria. Introduces the principles of microbial biotechnology and its application in crop improvement Lists various new developments in enhancing plant productivity and efficiency Explains the mechanisms of plant/microbial interactions and the beneficial use of these interactions in crop improvement Explores various bacteria classes and their beneficial effects in plant growth and efficiency

Microbial Biotechnology - Yuan Kun Lee 2006

In the second edition of this bestselling textbook, new materials have been added, including a new chapter on real time polymerase chain reaction (RT-PCR) and a chapter on fungal solid state cultivation. There already exist a number of excellent general textbooks on microbiology and biotechnology that deal with the basic principles of microbial biotechnology. To complement them, this book focuses on the various applications of microbial-biotechnological principles. A teaching-based format is adopted, whereby working problems, as well as answers to frequently asked questions, supplement the main text. The book also includes real life examples of how the application of microbial-biotechnological principles has achieved breakthroughs in both research and industrial production. Although written for polytechnic students and undergraduates, the book contains sufficient information to be used as a

reference for postgraduate students and lecturers. It may also serve as a resource book for corporate planners, managers and applied research personnel.

Environmental Biotechnology: Principles and Applications, Second Edition - Bruce E. Rittmann 2020-03-06

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. The classic environmental biotechnology textbook—fully updated for the latest advances This thoroughly revised educational resource presents the biological principles that underlie modern microbiological treatment technologies. Written by two of the field's foremost researchers, *Environmental Biotechnology: Principles and Applications, Second Edition*, clearly explains the new technologies that have evolved over the past 20 years, including direct anaerobic treatments, membrane-based processes, and granular processes. The first half of the book focuses on theory and tools; the second half offers practical applications that are clearly illustrated through real-world examples. Coverage includes: • Moving toward sustainability • Basics of microbiology • Biochemistry, metabolism, genetics, and information flow • Microbial ecology • Stoichiometry and energetics • Microbial kinetics and products • Biofilm kinetics • Reactor characteristics and kinetics • Methanogenesis • Aerobic suspended-growth processes • Aerobic biofilm processes • Nitrogen transformation and recovery • Phosphorus removal and recovery • Biological treatment of drinking water