

Plant Physiology And Biochemistry Elsevier

Glucosinolates Biochemical, Physiological and Molecular Avenues for Combating Abiotic Stress in Plants C4 Plant Biology Plant Cell Biology The Evolution of Plant Physiology Cadmium Toxicity and Tolerance in Plants Carnivorous Plants Advances in Phytonanotechnology Physicochemical and Environmental Plant Physiology Light Emission By Plants and Bacteria Biochemistry and Molecular Biology of Plant Hormones Silicon in Plants Plant Physiology Elsevier's Dictionary of Medicine and Biology Ethylene in Plant Biology Transgenic Plant Technology for Remediation of Toxic Metals and Metalloids The Elements of Style Applied Plant Biotechnology for Improving Resistance to Biotic Stress Plant Biochemistry Plant Growth and Development Music and the Aging Brain Biotechnological Utilization of Mangrove Resources Cells to Civilizations Postharvest Physiology and Biochemistry of Fruits and Vegetables Plant Biochemistry The Biochemistry and Physiology of Tetrahymena Physiology of Woody Plants Fundamentals of Pharmacognosy and Phytotherapy E-Book Sugarcane Phytoremediation Approaches for Enhancing Abiotic Stress Tolerance in Plants Soil Microbiology, Ecology and Biochemistry Plant Life under Changing Environment Plant Tolerance to Environmental Stress Encyclopedia of Applied Plant Sciences Plant Biochemistry and Molecular Biology Biochemistry and Physiology of Plant Immunity Plant Biochemistry The Blue Light Syndrome Advances in Botanical Research

Glucosinolates

Glucosinolates, the latest volume in the Advances in Botanical Research series, presents in-depth and up-to-date reviews on a wide range of topics in the plant sciences, with this edition focusing on glucosinolates. The individual chapters cover all aspects of glucosinolate research from biosynthesis, degradation, regulation, and ecology, to the mechanisms of their health benefits. The chapters are written by the world leaders of glucosinolate research. Provides in-depth, up-to-date reviews on a wide range of topics in plant sciences, with this edition focusing on glucosinolates Contains commentary by recognized experts on all aspects of plant genetics, biochemistry, cell biology, molecular biology, physiology, and ecology

Biochemical, Physiological and Molecular Avenues for Combating Abiotic Stress in Plants

Postharvest Physiology and Biochemistry of Fruits and Vegetables presents an updated, interrelated and sequenced view of the contribution of fruits and vegetables on human health, their aspects of plant metabolism, physical and chemical/compositional changes during the entire fruit development lifecycle, the physiological disorders and biochemical effects of modified/controlled atmospheres, and the biotechnology of horticultural crops. The book is written specifically for those interested in preharvest and postharvest crop science and the impact of physiological and biochemical changes on their roles as functional foods. Deals with the developmental aspects of the lifecycle in whole fruits Describes issues, such as the morphology and anatomy of fruits, beginning with the structural organization of the whole plant and explaining the fruit structure and its botanical classification Addresses biotechnological concepts that control firmness,

quality and the nutritional value of fruits

C4 Plant Biology

Plants are frequently exposed to unfavorable and adverse environmental conditions known as abiotic stressors. These factors can include salinity, drought, heat, cold, flooding, heavy metals, and UV radiation which pose serious threats to the sustainability of crop yields. Since abiotic stresses are major constraints for crop production, finding the approaches to enhance stress tolerance is crucial to increase crop production and increase food security. This book discusses approaches to enhance abiotic stress tolerance in crop plants on a global scale. Plants scientists and breeders will learn how to further mitigate plant responses and develop new crop varieties for the changing climate.

Plant Cell Biology

Pharmacognosy (the science of biogenic or nature-derived pharmaceuticals and poisons) has been an established basic pharmaceutical science taught in institutions of pharmacy education for over two centuries. Over the past 20 years though it has become increasingly important given the explosion of new drugs, phytomedicines (plant medicines), nutraceuticals and dietary supplements – all of which need to be fully understood, tested and regulated. From a review of the previous edition: ‘Drawing on their wealth of experience and knowledge in this field, the authors, who are without doubt among the finest minds in pharmacognosy today, provide useful and fascinating insights into the history, botany, chemistry, phytotherapy and importance of medicinal plants in some of today’s healthcare systems. This is a landmark textbook, which carefully brings together relevant data from numerous sources and provides, in an authoritative and exhaustive manner, cutting-edge information that is relevant to pharmacists, pharmacognocists, complementary practitioners, doctors and nurses alike.’ The *Pharmaceutical Journal* ‘This is an excellent text book which provides fascinating insights into the world of pharmacognosy and the authors masterfully integrated elements of orthodox pharmacognosy and phytotherapy. Both the science student and the non-scientific person interested in phytotherapy will greatly benefit from reading this publication. It is comprehensive, easy to follow and after having read this book, one is so much more aware of the uniqueness of phytomedicines. A must read for any healthcare practitioner.’ Covers the history, biology and chemistry of plant-based medicines Covers pharmaceutical and nutraceuticals derived from plants Covers the role of medicinal plants in worldwide healthcare systems Examines the therapeutics and evidence of plant-based medicines by body system Sections on regulatory information expanded New evidence updates throughout New material covering non-medical supplements Therapeutics updated throughout Now on StudentConsult

The Evolution of Plant Physiology

Woody plants such as trees have a significant economic and climatic influence on global economies and ecologies. This completely revised classic book is an up-to-date synthesis of the intensive research devoted to woody plants published in the

second edition, with additional important aspects from the authors' previous book, Growth Control in Woody Plants. Intended primarily as a reference for researchers, the interdisciplinary nature of the book makes it useful to a broad range of scientists and researchers from agroforesters, agronomists, and arborists to plant pathologists and soil scientists. This third edition provides crucial updates to many chapters, including: responses of plants to elevated CO₂; the process and regulation of cambial growth; photoinhibition and photoprotection of photosynthesis; nitrogen metabolism and internal recycling, and more. Revised chapters focus on emerging discoveries of the patterns and processes of woody plant physiology. * The only book to provide recommendations for the use of specific management practices and experimental procedures and equipment * Updated coverage of nearly all topics of interest to woody plant physiologists * Extensive revisions of chapters relating to key processes in growth, photosynthesis, and water relations * More than 500 new references * Examples of molecular-level evidence incorporated in discussion of the role of expansion proteins in plant growth; mechanism of ATP production by coupling factor in photosynthesis; the role of cellulose synthase in cell wall construction; structure-function relationships for aquaporin proteins

Cadmium Toxicity and Tolerance in Plants

This textbook explains the basic principles and major themes in plant biochemistry and molecular biology to students. It provides not only a thorough grounding in the subject to an advanced level, but also describes its many practical applications, for example the use of genetic engineering to improve crop plants and to provide raw materials for the chemical and pharmaceutical industries. The latest research findings have been included wherever possible, and areas of future research are identified. There are full references to the scientific literature.

Carnivorous Plants

A multi-faceted reference work, the Encyclopedia of Applied Plant Sciences addresses the core knowledge, theories, and techniques employed by plant scientists, while also concentrating on applications of these in research and in industry. Plants influence all our lives as sources of sustenance, fuel and building materials. The Encyclopedia of Applied Plant Sciences is a comprehensive yet succinct publication that covers the application of current advances in the biological sciences, through which scientists can now better produce sustainable, safe food, feed and food ingredients, and renewable raw materials for industry and society. This three-volume set also covers the concerns over continuing advances in the application of knowledge in the areas of ecology and plant pathology, genetics, physiology, biochemistry and biotechnology, as well as the ethical issues involved in the use of the powerful techniques available to modern plant science. An invaluable reference, the Encyclopedia of Applied Plant Sciences will be an indispensable addition to the library of anyone involved in the study of plant sciences. The Encyclopedia of Applied Plant Sciences is available online on ScienceDirect. The print edition price for this reference work does not include online access. For more information on pricing for access to the online edition, please review our Licensing Options. The richness and authority of Elsevier reference works is now lent valuable functionality and accessibility through the

online launch of Elsevier Reference Works on ScienceDirect. Features: Extensive browsing and searching across subject, thematic, alphabetical, author and cited author indexes - as applicable to the work Basic and advanced search functionality within volumes, parts of volumes, or across the whole work Ability to build, save and re-run searches as well as combine saved searches Internal cross-referencing between articles in the work, plus dynamic linking to journal articles and abstract databases, making navigation flexible and easy All articles are available as full-text HTML files, and as PDF files that can be viewed, downloaded or printed out in their original print format A dedicated Reference Works navigation tab and homepage on ScienceDirect to enable easy linking from your OPAC or library website For more information about the Elsevier Reference Works on ScienceDirect Program, please visit: http://www.info.sciencedirect.com/reference_works. Comprehensively covers both the key theoretical and practical aspects of plant sciences Edited and written by a distinguished international group of editors and contributors Well-organized format provides for concise, readable entries, easy searches, and thorough cross-references Presents complete up-to-date information on over 25 separate areas of plant science Features many tables and figures, with a color plate section in each volume New terms clearly explained in glossary sections of each article

Advances in Phytonanotechnology

The book summarizes present scientific knowledge in plant physiology with regards to plant production. The authors, mainly professors of plant physiology at agricultural universities in Czechoslovakia, present the individual fields of plant physiology with regard to the demands of agricultural practice and education of students and doctorani at these universities. The first chapters discuss metabolism ie. photosynthesis, respiration, mineral and heterotrophic nutrition, and water regime of plants. What follows is a discussion of the physiology of plant growth, development and movements, and finally resistance of plants against unfavourable abiotic and biotic effects. The book shows how to increase the yield of crops by manipulating photosynthesis and also studies the possible flow of photosynthetic products to the commercially valuable parts of the biomass. Rational plant production, however, cannot do without knowledge of plant nutrition and water regime as a theoretical basis for fertilization and irrigation. The reader will find this knowledge detailed as well as information about the ecological and physiological principles of the resistance of plants against drought, frost, heat, diseases and other unfavourable effects.

Physicochemical and Environmental Plant Physiology

Plant Biochemistry focuses on the biological processes involved in plants, particularly noting metabolism, electron transport, biogenesis, and germination. The manuscript first offers information on the substructures and subfunctions of plant cell, including cell and subcell, enzymes, ribosomes, nucleus, cellular membranes, mitochondria and electron transport, chloroplast, and the substructure and function of the cell wall. The text then elaborates on basic metabolism. Enzymology, the path of carbon in respiratory metabolism, mono- and oligosaccharides, starch, insulin, and other reserve polysaccharides, and the biogenesis of the cell wall are discussed. The publication explains plant metabolism and control. Discussions focus on plant acids, alkaloid biogenesis, coumarins,

phenylpropanes, and lignin, ethylene and polyacetylenes, steroids, and seed development and germination. The book is a valuable source of information for students or professional workers in the plant sciences.

Light Emission By Plants and Bacteria

Investigations on the specific effects of blue light on plants began some fifty years ago. In recent years the growing awareness of blue-light-induced phenomena in plants, microorganisms, and animals has accelerated and expanded this research into an ever-increasing variety of blue light effects in biological systems. In 1977, J.A. Schiff and W.R. Briggs proposed a specific meeting to present and summarize the various blue-light effects and to discuss their mechanisms and possible photoreceptors. In view of the variety of responses and the range of organisms affected by blue light the term Blue Light Syndrome seemed to be the only appropriate one for the meeting. With the help of the International Advisory Committee (W.R. Briggs, Stanford; J. Gressel, Rehovot; W. Kowallik, Bielefeld; S. Miyachi, Tokyo; W. Rau, Munich, and J.A. Schiff, Waltham), and the very generous financial support provided by the Deutsche Forschungsgemeinschaft as well as by the Bundesministerium für Forschung und Technologie, the Kultusminister des Landes Hessen, and the Philipps-Universität Marburg, the "International Conference on the Effect of Blue Light in Plants and Microorganisms" was held in July 1979 in the Philipps-Universität Marburg."

Biochemistry and Molecular Biology of Plant Hormones

Biochemical, Physiological and Molecular Avenues for Combating Abiotic Stress in Plants is a must-have reference for researchers and professionals in agronomy, plant science and horticulture. As abiotic stress tolerance is a constant challenge for researchers and professionals working on improving crop production, this book combines recent advances with foundational content, thus offering in-depth coverage on a variety of abiotic stress tolerance mechanisms that help us better understand and improve plant response and growth under stress conditions. The mechanisms explored in this book include stress perception, signal transduction and synthesis of stress-related proteins and other molecules. In addition, the book provides a critical understanding of the networks of genes responsible for abiotic stress tolerance and their utilization in the development of stress tolerance in plants. Practical breeding techniques and modern genetic analyses are also discussed. Unlocks the physiological, biochemical and molecular basis of abiotic stress response and tolerance in crop plants Presents comprehensive information on abiotic stress tolerance, from gene to whole plant level Includes content on antioxidant metabolism, marker-assisted selection, microarrays, next-generation sequencing and genome editing techniques

Silicon in Plants

Edited by Jean-Claude Kader and Michel Delseny and supported by an international Editorial Board, Advances in Botanical Research publishes in-depth and up-to-date reviews on a wide range of topics in plant sciences. Currently in its 47th volume, the series features a wide range of reviews by recognized experts on all aspects of

plant genetics, biochemistry, cell biology, molecular biology, physiology and ecology. This eclectic volume features six reviews on cutting-edge topics of interest to post-graduates and researchers alike. * Multidisciplinary reviews written from a broad range of scientific perspectives * For over 40 years, series has enjoyed a reputation for excellence * Contributors internationally recognized authorities in their respective fields

Plant Physiology

Applied Plant Biotechnology for Improvement of Resistance to Biotic Stress applies biotechnology insights that seek to improve plant genomes, thus helping them achieve higher resistance and optimal hormone signaling to increase crop yield. The book provides an analysis of the current state-of-the-art in plant biotechnology as applied to improving resistance to biotic stress. In recent years, significant progress has been made towards understanding the interplay between plants and their hosts, particularly the role of plant immunity in regulating, attenuating or neutralizing invading pathogens. As a result, there is a great need to integrate these insights with methods from biotechnology. Applies biotechnology insights towards improving plant genomes, achieving higher resistance and optimizing hormone signaling to increase crop yield Presents the most modern techniques, investigations, diagnostic tools and assays to monitor and detect contaminating agents in crops, such as grape, tomato, coffee and stone fruit Provides encyclopedic coverage of genes, proteins, interaction networks and mechanisms by which plants and hosts seek survival Discusses the methods available to make crops resistant and tolerant to disease without decreased yield or food production Provides insights for policymakers into the difficulties faced by scientific researchers in the use of biotechnology intervention, transgenes and genetically modified sequences

Elsevier's Dictionary of Medicine and Biology

Dictionaries are didactic books used as consultation instruments for self-teaching. They are composed by an ordered set of linguistic units which reflects a double structure, the macrostructure which correspond to the word list and the microstructure that refers to the contents of each lemma. The great value of dictionaries nests in the fact that they establish a standard nomenclature and prevent in that way the appearance of new useless synonyms. This dictionary contains a total of about 27.500 main English entries, and over of 130.000 translations that should normally sufficiently cover all fields of life sciences. The basic criteria used to accept a word a part of the dictionary during the development period in order of importance were usage, up-to-dateness, specificity, simplicity and conceptual relationships. The dictionary meets the standards of higher education and covers all main fields of life sciences by setting its primary focus on the vastly developing fields of cell biology, biochemistry, molecular biology, immunology, developmental biology, microbiology, genetics and also the fields of human anatomy, histology, pathology, physiology, zoology and botany. The fields of ecology, paleontology, systematics, evolution, biostatistics, plant physiology, plant anatomy, plant histology, biometry and lab techniques have been sufficiently covered but in a more general manner. The latest Latin international anatomical terminology "Terminologia Anatomica" or "TA" has been fully

incorporated and all anatomical entries have been given their international Latin TA synonym. This dictionary will be a valuable and helpful tool for all scientists, teachers, students and generally all those that work within the fields of life sciences.

Ethylene in Plant Biology

Due to many issues related to long-term carbon dynamics, an improved understanding of the biology of C4 photosynthesis is required by more than the traditional audience of crop scientists, plant physiologists, and plant ecologists. This work synthesizes the latest developments in C4 biochemistry, physiology, systematics, and ecology. The book concludes with chapters discussing the role of C4 plants in the future development of the biosphere, particularly their interactive effects on soil, hydrological, and atmospheric processes.

Transgenic Plant Technology for Remediation of Toxic Metals and Metalloids

The fourth edition of Soil Microbiology, Ecology and Biochemistry updates this widely used reference as the study and understanding of soil biota, their function, and the dynamics of soil organic matter has been revolutionized by molecular and instrumental techniques, and information technology. Knowledge of soil microbiology, ecology and biochemistry is central to our understanding of organisms and their processes and interactions with their environment. In a time of great global change and increased emphasis on biodiversity and food security, soil microbiology and ecology has become an increasingly important topic. Revised by a group of world-renowned authors in many institutions and disciplines, this work relates the breakthroughs in knowledge in this important field to its history as well as future applications. The new edition provides readable, practical, impactful information for its many applied and fundamental disciplines. Professionals turn to this text as a reference for fundamental knowledge in their field or to inform management practices. New section on "Methods in Studying Soil Organic Matter Formation and Nutrient Dynamics" to balance the two successful chapters on microbial and physiological methodology Includes expanded information on soil interactions with organisms involved in human and plant disease Improved readability and integration for an ever-widening audience in his field Integrated concepts related to soil biota, diversity, and function allow readers in multiple disciplines to understand the complex soil biota and their function

The Elements of Style

In the present era, rapid industrialization and urbanization has resulted in unwanted physiological, chemical, and biological changes in the environment that have harmful effects on crop quality and productivity. This situation is further worsened by the growing demand for food due to an ever increasing population. This forces plant scientists and agronomists to look forward for alternative strategies to enhance crop production and produce safer, healthier foods. Biotic and abiotic stresses are major constraints to crop productivity and have become an important challenge to agricultural scientists and agronomists due to the fact

that both stress factors considerably reduce agriculture production worldwide per year. Silicon has various effects on plant growth and development, as well as crop yields. It increases photosynthetic activity, creates better disease resistance, reduces heavy metal toxicity, improves nutrient imbalance, and enhances drought tolerance. Silicon in Plants: Advances and Future Prospects presents the beneficial effects of silicon in improving productivity in plants and enhancing the capacity of plants to resist stresses from environmental factors. It compiles recent advances made worldwide in different leading laboratories concerning the role of silicon in plant biology in order to make these outcomes easily accessible to academicians, researchers, industrialists, and students. Nineteen chapters summarize information regarding the role of silicon in plants, their growth and development, physiological and molecular responses, and responses against the various abiotic stresses.

Applied Plant Biotechnology for Improving Resistance to Biotic Stress

Music and the Aging Brain describes brain functioning in aging and addresses the power of music to protect the brain from loss of function and how to cope with the ravages of brain diseases that accompany aging. By studying the power of music in aging through the lens of neuroscience, behavioral, and clinical science, the book explains brain organization and function. Written for those researching the brain and aging, the book provides solid examples of research fundamentals, including rigorous standards for sample selection, control groups, description of intervention activities, measures of health outcomes, statistical methods, and logically stated conclusions. Summarizes brain structures supporting music perception and cognition Examines and explains music as neuroprotective in normal aging Addresses the association of hearing loss to dementia Promotes a neurological approach for research in music as therapy Proposes questions for future research in music and aging

Plant Biochemistry

Phytoremediation, Volume 83, the latest release in the Advances in Botanical Research series, covers a variety of new topics, including Metallophytes from calamine and serpentine soils (incl. tolerance mechanisms), The (endophytic) microbiome of plants from metal contaminated environments: small organisms (inhabitants), large influence, the Potential role of plant-associated bacteria in plant metal uptake and implications in phytotechnologies, Plant associated fungi from trace element rich soils and their possible role in metal uptake by their host plants, Phytoextraction: Status and Promise, Molecular and cellular aspects of contaminant toxicity in plants, and a section on Bio- and phytoremediation of pesticide-contaminated environments: a Review. This series publishes in-depth and up-to-date reviews on a wide range of topics in the plant sciences, featuring reviews by recognized experts on all aspects of plant genetics, biochemistry, cell biology, molecular biology, physiology and ecology. Publishes in-depth and up-to-date reviews on a wide range of topics in the plant sciences Presents the latest information on phytoremediation Features a wide range of reviews by recognized experts

Plant Growth and Development

Carnivorous plants have fascinated botanists, evolutionary biologists, ecologists, physiologists, developmental biologists, anatomists, horticulturalists, and the general public for centuries. Charles Darwin was the first scientist to demonstrate experimentally that some plants could actually attract, kill, digest, and absorb nutrients from insect prey; his book *Insectivorous Plants* (1875) remains a widely-cited classic. Since then, many movies and plays, short stories, novels, coffee-table picture books, and popular books on the cultivation of carnivorous plants have been produced. However, all of these widely read products depend on accurate scientific information, and most of them have repeated and recycled data from just three comprehensive, but now long out of date, scientific monographs. The field has evolved and changed dramatically in the nearly 30 years since the last of these books was published, and thousands of scientific papers on carnivorous plants have appeared in the academic journal literature. In response, Ellison and Adamec have assembled the world's leading experts to provide a truly modern synthesis. They examine every aspect of physiology, biochemistry, genomics, ecology, and evolution of these remarkable plants, culminating in a description of the serious threats they now face from over-collection, poaching, habitat loss, and climatic change which directly threaten their habitats and continued persistence in them. <http://harvardforest.fas.harvard.edu/aaron-ellison> Aaron Ellison/a

Music and the Aging Brain

This text is the successor volume to *Biophysical Plant Physiology and Ecology* (W.H. Freeman, 1983). The content has been extensively updated based on the growing quantity and quality of plant research, including cell growth and water relations, membrane channels, mechanisms of active transport, and the bioenergetics of chloroplasts and mitochondria. One-third of the figures are new or modified, over 190 new references are incorporated, the appendixes on constants and conversion factors have doubled the number of entries, and the solutions to problems are given for the first time. Many other changes have emanated from the best laboratory for any book, the classroom.

- Covers water relations and ion transport for plant cells; diffusion, chemical potential gradients, solute movement in and out of plant cells
- Covers interconnection of various energy forms; light, chlorophyll and accessory photosynthesis pigments, ATP and NADPH
- Covers forms in which energy and matter enter and leave a plant; energy budget analysis, water vapor and carbon dioxide, water movement from soil to plant to atmosphere

Biotechnological Utilization of Mangrove Resources

Physiology of Sugarcane looks at the development of a suite of well-established and developing biofuels derived from sugarcane and cane-based co-products, such as bagasse. Chapters provide broad-ranging coverage of sugarcane biology, biotechnological advances, and breakthroughs in production and processing techniques. This single volume resource brings together essential information to researchers and industry personnel interested in utilizing and developing new fuels and bioproducts derived from cane crops.

Cells to Civilizations

Mangroves are typically tropical coastal ecosystems found in the inter-tidal zones of river deltas and back water areas. They represent highly dynamic and fragile ecosystems, yet they are the most productive and biologically diversified habitats of various life forms including plants, animals and microorganisms. Mangroves are a resource of many different products, including; microorganisms that harbor a diverse group of industrially important enzymes, antibiotics, therapeutic proteins and vaccines; timber resistant to rot and insects; and medicinal plants. Divided into three main parts, *Biotechnological Utilization of Mangrove Resources* first provides a broad introduction into mangrove ecology. Subsequent chapters discuss the biodiversity of mangroves, including the diverse nature of the organisms within the mangroves themselves. The final part pays special attention to biotechnological utilization of mangroves. Topics such as antimicrobial activity of mangrove-derived products, anti-oxidant activity of mangrove derived products and pharmaceutical applications, are covered in detail. *Biotechnological Utilization of Mangrove Resources* brings the latest research and technologies in mangrove biology into one platform, providing readers with an up-to-date view on the area. This would serve as an excellent reference book for researchers and students in the field of marine biology especially interested in mangrove ecosystems. Highlights the diversity of different life forms in the mangrove ecosystem, including the importance of mangroves and mangrove-derived products. Focuses on biotechnological utilization of mangrove resources such as antimicrobial and antioxidant properties of microorganisms, and industrial and pharmaceutical applications Discusses the different modern tools and techniques used for the study of mangrove resources

Postharvest Physiology and Biochemistry of Fruits and Vegetables

Biochemistry and Physiology of Plant Immunity details the physiological properties of plant immunity from a biochemical perspective. The book provides a summary and concise explanation of the various studies conducted on the field of biochemistry and physiology of plant immunity. The text first details the evolution of parasitism, and then proceeds to discussing the biochemistry and physiology of heterotrophic micro-organisms. Next, the selection talks about the biochemistry and physiology of diseased plant, before it finally deals with plant immunity. The book will be of great use to researchers and practitioners of disciplines that deal with the health of vegetation, such as botany and horticulture.

Plant Biochemistry

Light Emission by Plants and Bacteria deals mainly with light coming from plants and bacteria as a result of various different reactions. This book emphasizes the light emission from photosynthetic organisms. The major aim of this book is to give insight on light emission studies in plant and bacteria in terms of its physiological, biophysical, and biochemical relevance. The book is divided into six parts. Part I serves as an introduction and at the same time a historical review and development of different concepts of the emission phenomena. Part II tackles the

relationship of light emission to the various photosynthetic reactions. Part III discusses the concept of bioluminescence, with a focus on bacteria and dinoflagellates. Part IV is a description of the light emission from bacteriorhodopsin and rhodopsin. Part V discusses the special light emission characteristics and their relationship to specialized pigment systems found in different bacteria and plant groups. It also reviews the fluorescence properties of photosynthetic bacteria. Lastly, Part VI basically shows the practical applications of light emission from algae as well as higher plants. This book contains not only relevant information about theories and concepts, but also experiments. Thus, it is a recommended reference to researchers and students alike in the field of cell biology, microbiology, plant physiology, biochemistry, biophysics, and agriculture.

The Biochemistry and Physiology of Tetrahymena

Plant Life under Changing Environment: Responses and Management presents the latest insights, reflecting the significant progress that has been made in understanding plant responses to various changing environmental impacts, as well as strategies for alleviating their adverse effects, including abiotic stresses. Growing from a focus on plants and their ability to respond, adapt, and survive, Plant Life under Changing Environment: Responses and Management addresses options for mitigating those responses to ensure maximum health and growth. Researchers and advanced students in environmental sciences, plant ecophysiology, biochemistry, molecular biology, nano-pollution climate change, and soil pollution will find this an important foundational resource. Covers both responses and adaptation of plants to altered environmental states Illustrates the current impact of climate change on plant productivity, along with mitigation strategies Includes transcriptomic, proteomic, metabolomic and ionic approaches

Physiology of Woody Plants

Coupled with biomechanical data, organic geochemistry and cladistic analyses utilizing abundant genetic data, scientific studies are revealing new facets of how plants have evolved over time. This collection of papers examines these early stages of plant physiology evolution by describing the initial physiological adaptations necessary for survival as upright structures in a dry, terrestrial environment. The Evolution of Plant Physiology also encompasses physiology in its broadest sense to include biochemistry, histology, mechanics, development, growth, reproduction and with an emphasis on the interplay between physiology, development and plant evolution. Contributions from leading neo- and palaeobotanists from the Linnean Society Focus on how evolution shaped photosynthesis, respiration, reproduction and metabolism. Coverage of the effects of specific evolutionary forces -- variations in water and nutrient availability, grazing pressure, and other environmental variables

Fundamentals of Pharmacognosy and Phytotherapy E-Book

Plant Biochemistry provides students and researchers in plant sciences with a concise general account of plant biochemistry. The edited format allows

recognized experts in plant biochemistry to contribute chapters on their special topics. Up-to-date surveys are divided into four sections: the cell, primary metabolism, special metabolism, and the plant and the environment. There is a strong emphasis on plant metabolism as well as enzymological, methodological, molecular, biological, functional, and regulatory aspects of plant biochemistry. Illustrations of metabolic pathways are used extensively, and further reading lists are also included. The coverage of the subject is divided into four sections The plant cell-describing both molecular components and function Primary metabolism-including the pathways of carbohydrate, lipid, nitrogen, nucleic acid and protein metabolism as well as gene regulation Special metabolism-chapters on phenolics, isoprenoids and secondary nitrogen compounds The plant and the environment-discussions of pathology, ecology and biotechnology at the molecular level

Sugarcane

Cadmium Toxicity and Tolerance in Plants: From Physiology to Remediation presents a single research resource on the latest in cadmium toxicity and tolerance in plants. The book covers many important areas, including means of Cd reduction, from plant adaptation, including antioxidant defense, active excretion and chelation, to phytoextraction, rhizo filtration, phytodegradation, and much more. In addition, it explores important insights into the physiological and molecular mechanisms of Cd uptake and transport and presents options for improving resistance to Cd stresses. It will be ideal for both researchers and students working on cadmium pollution, plant responses and related fields of environmental contamination and toxicology. Includes all aspects of cadmium toxicity and tolerance in plants Provides a comprehensive overview of advances in cadmium toxicity, tolerance and adaptation in plants Elaborates on the advancement of eco-friendly techniques for cadmium remediation from soil and water Provides real-world, application focused techniques

Phytoremediation

1 A Leaf Cell Consists of Several Metabolic Compartments 2 The Use of Energy from Sunlight by Photosynthesis is the Basis of Life on Earth 3 Photosynthesis is an Electron Transport Process 4 ATP is Generated by Photosynthesis 5 Mitochondria are the Power Station of the Cell 6 The Calvin Cycle Catalyzes Photosynthetic CO₂ Assimilation 7 In the Photorespiratory Pathway Phosphoglycolate Formed by the Oxygenase Activity of RubisCo is Recycled 8 Photosynthesis Implies the Consumption of Water 9 Polysaccharides are Storage and Transport Forms of Carbohydrates Produced by Photosynthesis 10 Nitrate Assimilation is Essential for the Synthesis of Organic Matter 11 Nitrogen Fixation Enables the Nitrogen in the Air to be Used for Plant Growth 12 Sulfate Assimilation Enables the Synthesis of Sulfur Containing Substances 13 Phloem Transport Distributes Photoassimilates to the Various Sites of Consumption and Storage 14 Products of Nitrate Assimilation are Deposited in Plants as Storage Proteins 15 Glycerolipids are Membrane Constituents and Function as Carbon Stores 16 Secondary Metabolites Fulfill Specific Ecological Functions in Plants 17 Large Diversity of Isoprenoids has Multiple Functions in Plant Metabolism 18 Phenylpropanoids Comprise a Multitude of Plant Secondary Metabolites and Cell Wall Components 19 Multiple Signals Regulate the Growth and Development of Plant Organs and Enable Their

Adaptation to Environmental Conditions 20 A Plant Cell has Three Different Genomes 21 Protein Biosynthesis Occurs at Different Sites of a Cell 22 Gene Technology Makes it Possible to Alter Plants to Meet Requirements of Agriculture, Nutrition, and Industry.

Approaches for Enhancing Abiotic Stress Tolerance in Plants

The Elements of Style ("Strunk & White") is an American English writing style guide. It is one of the most influential and best-known prescriptive treatments of English grammar and usage in the United States. This book aims to give in brief space the principal requirements of plain English style. It aims to lighten the task of instructor and student by concentrating attention on a few essentials, the rules of usage and principles of composition most commonly violated. In accordance with this plan it lays down three rules for the use of the comma, instead of a score or more, and one for the use of the semicolon, in the belief that these four rules provide for all the internal punctuation that is required by nineteen sentences out of twenty. Similarly, it gives in Chapter III only those principles of the paragraph and the sentence which are of the widest application. The book thus covers only a small portion of the field of English style. The experience of its writer has been that once past the essentials, students profit most by individual instruction based on the problems of their own work, and that each instructor has his own body of theory, which he may prefer to that offered by any textbook.

Soil Microbiology, Ecology and Biochemistry

Transgenic Plant Technology for Remediation of Toxic Metals and Metalloids covers all the technical aspects of gene transfer, from molecular methods, to field performance using a wide range of plants and diverse abiotic stress factors. It describes methodologies that are well established as a key resource for researchers, as well as a tool for training technicians and students. This book is an essential reference for those in the plant sciences, forestry, agriculture, microbiology, environmental biology and plant biotechnology, and those using transgenic plant models in such areas as molecular and cell biology, developmental biology, stress physiology and phytoremediation. Provides in-depth coverage of transgenic plant technology for environmental problems Discusses background and an introduction to techniques and salient protocols using specific plants systems Includes emerging strategies for application of transgenic plans in remediation

Plant Life under Changing Environment

Plant Cell Biology, Second Edition: From Astronomy to Zoology connects the fundamentals of plant anatomy, plant physiology, plant growth and development, plant taxonomy, plant biochemistry, plant molecular biology, and plant cell biology. It covers all aspects of plant cell biology without emphasizing any one plant, organelle, molecule, or technique. Although most examples are biased towards plants, basic similarities between all living eukaryotic cells (animal and plant) are recognized and used to best illustrate cell processes. This is a must-have reference for scientists with a background in plant anatomy, plant physiology, plant growth

and development, plant taxonomy, and more. Includes chapter on using mutants and genetic approaches to plant cell biology research and a chapter on -omic technologies Explains the physiological underpinnings of biological processes to bring original insights relating to plants Includes examples throughout from physics, chemistry, geology, and biology to bring understanding on plant cell development, growth, chemistry and diseases Provides the essential tools for students to be able to evaluate and assess the mechanisms involved in cell growth, chromosome motion, membrane trafficking and energy exchange

Plant Tolerance to Environmental Stress

Global climate change affects crop production through altered weather patterns and increased environmental stresses. Such stresses include soil salinity, drought, flooding, metal/metalloid toxicity, pollution, and extreme temperatures. The variability of these environmental conditions paired with the sessile lifestyle of plants contribute to high exposure to these stress factors. Increasing tolerance of crop plants to abiotic stresses is needed to fulfill increased food needs of the population. This book focuses on methods of improving plants tolerance to abiotic stresses. It provides information on how protective agents, including exogenous phytoprotectants, can mitigate abiotic stressors affecting plants. The application of various phytoprotectants has become one of the most effective approaches in enhancing the tolerance of plants to these stresses. Phytoprotectants are discussed in detail including information on osmoprotectants, antioxidants, phytohormones, nitric oxide, polyamines, amino acids, and nutrient elements of plants. Providing a valuable resource of information on phytoprotectants, this book is useful in diverse areas of life sciences including agronomy, plant physiology, cell biology, environmental sciences, and biotechnology.

Encyclopedia of Applied Plant Sciences

This book provides up-to-date coverage at an advanced level of a range of topics in the biochemistry and molecular biology of plant hormones, with particular emphasis on biosynthesis, metabolism and mechanisms of action. Each contribution is written by acknowledged experts in the field, providing definitive coverage of the field. No other modern book covers this subject matter at such an advanced level so comprehensively. It will be invaluable to university libraries and scientists in the plant biotechnology industries.

Plant Biochemistry and Molecular Biology

Advances in Phytonanotechnology: From Synthesis to Application guides readers through various applications of nanomaterials on plants by presenting the latest research related to nanotechnology and nanomaterials on plant systems. The book focuses on the effects of these applications on plant morphology, physiology, biochemistry, ecology and genetics. Sections cover the impact on plant yield, techniques, a review of positive and negative impacts, and an overview of current policies regarding the use of nanotechnology on plants. Additionally, the book offers insights into the appropriate application of nanoscience to plants and crops for improved outcome and an exploration of their bioavailability and toxicity in the

environment. Discusses the morphological, physiological and biochemical responses of plants to nanomaterials and the ability of the nanomaterials in modifying the genetic constitution of plants Emphasizes new applications of nanomaterials, including nanosensors technology and nanomaterials as nanocarriers based antimicrobial phytochemicals Presents the role of nanotechnology as a novel technique for the remediation of heavy metals by plants

Biochemistry and Physiology of Plant Immunity

This book provides current information on synthesis of plant hormones, how their concentrations are regulated, and how they modulate various plant processes. It details how plants sense and tolerate such factors as drought, salinity, and cold temperature, factors that limit plant productivity on earth. It also explains how plants sense two other environmental signals, light and gravity, and modify their developmental patterns in response to those signals. This book takes the reader from basic concepts to the most up-to-date thinking on these topics. * Provides clear synthesis and review of hormonal and environmental regulation of plant growth and development * Contains more than 600 illustrations supplementary information on techniques and/or related topics of interest * Single-authored text provides uniformity of presentation and integration of the subject matter * References listed alphabetically in each section

Plant Biochemistry

The Biochemistry and Physiology of Tetrahymena presents a review of the literature covering the physiology and biochemistry of the ciliate genus Tetrahymena, of which Tetrahymena pyriformis is the most studied species. Organized into 10 parts, this book first provides basic information about Tetrahymena, which is found in almost any body of water and is so unusual that one can debate quite rationally as to whether it is an animal or a plant. Other chapters are restricted to specific subjects about this organism, namely, carbohydrate, lipid, energy, protein, amino acid, purine, pyrimidine, and nucleic acid metabolism. The organism's biochemical genetics, vitamin and inorganic requirements, and evolution are also shown. This book also explores the effect of radiation, drugs, and hydrostatic pressure on Tetrahymena. The documented information presented in this book will be sufficient to stimulate even more interest in the organism.

The Blue Light Syndrome

Ethylene in Plant Biology focuses on the role of ethylene in plant physiology and the interrelationship between ethylene, fruit ripening, and respiration. It summarizes the physiology, biochemistry, production, regulation, plant effects, metabolism, and mechanism of action of ethylene. This book presents an introduction to basic chemistry of ethylene and available techniques for its sampling and analysis. Then, it discusses the rate, environmental conditions, and reactions involved in ethylene production. Chapter 4 examines the effects of herbicides and hormones, such as auxin, gibberellins, cytokinins, and abscisic acid,

on ethylene production. Meanwhile, the next chapter studies the so-called stress ethylene phenomenon in plants. In particular, this book examines the role of insects, temperature, water, gamma-irradiation, and mechanical and chemical stimuli in stress ethylene. The biochemical aspects of ethylene are covered in the subsequent chapters. These include its role in growth and development of plant, phytoogerontological activity, role in ethylene synthesis, respiration, pigmentation, and hormone regulation. Chapter 9 presents the activity of ethylene relative to other hydrocarbon analogs and dose-response relationships for a number of ethylene-mediated processes. The concluding chapters tackle the attachment of ethylene to its site of action, including epinasty, root initiation, intumescence formation, and floral initiation. A discussion on the issue of ethylene air pollution is included. This book will be useful to both undergraduate students and professional workers, especially those who have background in plant anatomy, plant physiology, or biochemistry.

Advances in Botanical Research

Cells to Civilizations is the first unified account of how life transforms itself--from the production of bacteria to the emergence of complex civilizations. What are the connections between evolving microbes, an egg that develops into an infant, and a child who learns to walk and talk? Award-winning scientist Enrico Coen synthesizes the growth of living systems and creative processes, and he reveals that the four great life transformations--evolution, development, learning, and human culture--while typically understood separately, actually all revolve around shared core principles and manifest the same fundamental recipe. Coen blends provocative discussion, the latest scientific research, and colorful examples to demonstrate the links between these critical stages in the history of life. Coen tells a story rich with genes, embryos, neurons, and fascinating discoveries. He examines the development of the zebra, the adaptations of seaweed, the cave paintings of Lascaux, and the formulations of Alan Turing. He explores how dogs make predictions, how weeds tell the time of day, and how our brains distinguish a Modigliani from a Rembrandt. Locating commonalities in important findings, Coen gives readers a deeper understanding of key transformations and provides a bold portrait for how science both frames and is framed by human culture. A compelling investigation into the relationships between our biological past and cultural progress, Cells to Civilizations presents a remarkable story of living change.

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