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Travertine Springer

Bioinformatics has ignited the imagination of scientists, entrepreneurs and the general public. At the meeting place of two fast growth disciplines, biology and computer science Bioinformatics is one of the cornerstones of the new biology. It is clearly pivotal to the translation of high throughput projects such the human genome project into useful knowledge. Yet despite all this attention, there is no consensus on what exactly is Bioinformatics. There are several canonical topics, such as gene structure prediction, protein functional classification or structure prediction. The present book explores new frontiers in bioinformatics, such as Glycomics or the computational modeling of genetic processes. We also discuss confounding factors that we find crucial to the development of the field, such as the ability to protect and restrict intellectual property in the field, or the challenges involved in educating bioinformatics users. Finally, we touch upon some fundamental questions, such as what information is and how it is captured in biological systems. By bringing to the readers such a broad spectrum of reviews, we hope to capture the vibrant spirit of this young science and to truly represent the fast pace with which it is still developing.

Uncovering Student Ideas in Science: 25 formative assessment probes BoD – Books on Demand

This book will be of immense helpful to the students of plant biotechnology, Agricultural sciences, Microbiology of both undergraduate and postgraduate levels in universities, colleges, and Research institutes. Besides the book will be quite supportive researchers who work in the field of plant biotechnology and agricultural sciences. In this book, the main focus will be on advanced genome editing approaches for the production of GM crops besides their socioeconomic, ethical and risk-biosafety assessments. Nanotechnology is the new emerging and fascinating field of science finds its application in almost all the major research areas and its uses in agriculture and food sectors are incipient.The books seems to be first in summarizing the two way interactive approach in the field of plant biotechnology and setting of a new arena in shaping the new bio techniques towards the sustainable cause.

Cumulated Index Medicus Springer Nature

Many individual aspects of the dynamics and assembly of biological membranes have been studied in great detail. Cell biological approaches, advanced genetics, biophysics and biochemistry have greatly contributed to an increase in our knowledge in this field.It is obvious however, that the three major membrane constituents - lipids, proteins and carbohydrates- are studied, in most cases separately and that a coherent overview of the various aspects of membrane biogenesis is not readily available. The NATO Advanced Study Institute on "New Perspectives in the Dynamics of Assembly of Biomembranes" intended to provide such an overview: it was set up to teach students and specialists the achievements obtained in the various research areas and to try and integrate the numerous aspects of membrane assembly into a coherent framework. The articles in here reflect this. Statting with detailed contributions on phospholipid structure, dynamics, organization and biogenesis, an up to date overview of the basic, lipidic backbone of biomembranes is given. Extensive progress is made in the research on membrane protein biosynthesis. In particular the post- and co-translational modification processes of proteins, the mechanisms of protein translocation and the sorting mechanisms which are necessary to direct proteins to their final, intra - or extracellular destination have been characterized in detail. Modern genetic approaches were indispensable in this research area: gene cloning, hybrid protein construction, site directed mutagenesis and sequencing techniques elucidated many functional aspects of specific nucleic acid and amino acid sequences.

Sustainability of Rice in the Global Food System Springer Nature

A look into the phenomena of sex and reproduction in all organisms, taking an innovative, unified and comprehensive approach.

Bioseparations Science and Engineering CRC Press

Tea is an important non-alcoholic beverage plant of the world. Cultivation of tea is very important as it earns revenue for the tea growing nations especially the developing countries such as India. Although conventional breeding is well-established and has contributed significantly for varietal improvement of this plant and other Camellia species with ornamental value, yet applications of biotechnology are required to intervene some of the issues where conventional breeding is restricted particularly for woody plants such as tea. It is note-worthy to mention that some amounts of biotechnology works in several facets of tea and its wild species have also been done. In the present book, a state-of-the-art on various aspects of breeding and biotechnology has been complied in eight chapters. They are: i) Origin and descriptions of health benefits as well as morphological classification as first chapter, ii) Breeding and cytogenetics that comprise with various conventional approaches of varietal improvement of tea along with their genetic resources, iii) Micropropagation which deals with in-depth study of clonal propagation, iv) Somatic embryogenesis along with alternative techniques such as suspension culture, cry-preservation etc. v) Molecular breeding that deals with application of various DNA-based markers, linkage map etc., vi) Genetic transformation and associated factors, vii) Stress physiology complied with various works done in tea along with its wild relatives on abiotic as well as biotic stress, and viii) Functional genomics that describe the various works of molecular cloning and characterizations, differential gene expression, high-throughput sequencing, bioinformatics etc. Importantly, the author has made exclusive tables in most of the chapters that include the summary of the works in particular topic. In a nutshell, the book compiles the work already been done, identifies the problems, analyzes the gaps on breeding and biotechnological works of tea as well as its wild species and discusses the future scope as conclusion. Every effort has been made to include all the published works till June 2013. The book will be a useful resource for post-graduate, doctoral as well post-doctoral students working on tea as well as other woody plants. This will also be useful for the scientists working in the areas of life sciences, genomics, biotechnology and molecular biology.

Microbial Interventions in Agriculture and Environment Springer Science & Business Media

This entirely updated second edition provides an overview on the biology, ecology and biodiversity of extremophiles. Unusual and less explored ecosystems inhabited by extremophiles such as marine hypersaline deeps, extreme cold, desert sands, and man-made clean rooms for spacecraft assembly are presented. An additional focus is put on the role of these highly specialized microorganism in applied research fields, ranging from biotechnology and nanotechnology to astrobiology. Examples such as novel psychrophilic enzymes, compounds from halophiles, and detection strategies for potential extraterrestrial life forms are discussed in detail. The book addresses researchers and advanced students in the fields of microbiology, microbial ecology and biotechnology.

Cytotoxic Anticancer Drugs: Models and Concepts for Drug Discovery and Development NSTA Press

Fungi range from being microscopic, single-celled yeasts to multicellular and heterotrophic in nature. Fungal communities have been found in vast ranges of environmental conditions. They can be associated with plants epiphytically, endophytically, or rhizospherically. Extreme environments represent unique ecosystems that harbor novel biodiversity of fungal communities. Interest in the exploration of fungal diversity has been spurred by the fact that fungi perform numerous functions integral in sustaining the biosphere, ranging from nutrient cycling to environmental detoxification, which involves processes like augmentation, supplementation, and recycling of plant nutrients - a particularly important process in sustainable agriculture. Fungal communities from natural and extreme habitats help promote plant growth, enhance crop yield, and enhance soil fertility via direct or indirect plant growth promoting (PGP) mechanisms of solubilization of phosphorus, potassium, and zinc, production of ammonia, hydrogen cyanides, phytohormones, Fe-chelating compounds, extracellular hydrolytic enzymes, and bioactive secondary metabolites. These PGP fungi could be used as biofertilizers, bioinoculants, and biocontrol agents in place of chemical fertilizers and pesticides in eco-friendly manners for sustainable agriculture and environments. Along with agricultural applications, medically important fungi play a significant role for human health. Fungal communities are useful for sustainable environments as they are used for bioremediation which is the use of microorganisms' metabolism to degrade waste contaminants (sewage, domestic, and industrial effluents) into non-toxic or less toxic materials by natural biological processes. Fungi could be used as mycoremediation for the future of environmental sustainability. Fungi and fungal products have the biochemical and ecological capability to degrade environmental organic chemicals and to decrease the risk associated with metals, semi-metals, and noble metals either by chemical modification or by manipulating chemical bioavailability. The two volumes of Recent Trends in Mycological Research aim to provide an understanding of fungal communities from diverse environmental habitats and their potential applications in agriculture, medical, environments and industry. The books are useful to scientists, researchers, and students involved in microbiology, biotechnology, agriculture, molecular biology, environmental biology and related subjects.

Health and Safety Aspects of Food Processing Technologies Springer

Despite their importance in sustaining livelihoods for many people living along some of the world’s most populous coastlines, tropical mangrove forests are disappearing at an alarming rate. Occupying a crucial place between land and sea, these tidal ecosystems provide a valuable ecological and economic resource as important nursery grounds and breeding sites for many organisms, and as a renewable source of wood and traditional foods and medicines. Perhaps most importantly, they are accumulation sites for sediment, contaminants, carbon and nutrients, and offer significant protection against coastal erosion. This book presents a functional overview of mangrove forest ecosystems; how they live and grow at the edge of tropical seas, how they play a critical role along most of the world’s tropical coasts, and how their future might look in a world affected by climate change. Such a process-oriented approach is necessary in order to further understand the role of these dynamic forests in ecosystem function, and as a first step towards developing adequate strategies for their conservation and sustainable use and management. The book will provide a valuable resource for researchers in mangrove ecology as well as reference for resource managers.

Aquatic Insects Springer Nature

Phosphoinositides play a major role in cellular signaling and membrane organization. During the last three decades we have learned that enzymes turning over phosphoinositides control vital physiological processes and are involved in the initiation and progression of cancer, inflammation, neurodegenerative, cardiovascular, metabolic disease and more. In two volumes, this book elucidates the crucial mechanisms that control the dynamics of phosphoinositide conversion. Starting out from phosphatidylinositol, a chain of lipid kinases collaborates to generate the oncogenic lipid phosphatidylinositol(3,4,5)-trisphosphate. For every phosphate group added, there are specific lipid kinases – and phosphatases to remove it. Additionally, phospholipases can cleave off the inositol head group and generate poly-phosphoinositols, which act as soluble signals in the cytosol. Volume I untangles the web of these enzymes and their products, and relates them to function in health and disease. Phosphoinositide 3-kinases and 3-phosphatases have received a special focus in volume I, and recent therapeutic developments in human disease are presented along with a historical perspective illustrating the impressive progress in the field.

POGIL Activities for High School Biology Springer Science & Business Media

Epigenetics fine-tunes the life processes dictated by DNA sequences, but also kick-starts pathophysiological processes including diabetes, AIDS and cancer. This volume tracks the latest research on epigenetics, including work on new-generation therapeutics.

The Biology of Reproduction Springer Nature

Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, including non-target species, air, water and soil. The extensive reliance on insecticide use reduces biodiversity, contributes to pollinator decline, destroys habitat, and threatens endangered species. This book offers a more effective application of the Integrated Pest Management (IPM) approach, on an area-wide (AW) or population-wide (AW-IPM) basis, which aims at the management of the total population of a pest, involving a coordinated effort over often larger areas. For major livestock pests, vectors of human diseases and pests of high-value crops with low pest tolerance, there are compelling economic reasons for participating in AW-IPM. This new textbook attempts to address various fundamental components of AW-IPM, e.g. the importance of relevant problem-solving research, the need for planning and essential baseline data collection, the significance of integrating adequate tools for appropriate control strategies, and the value of pilot trials, etc. With chapters authored by 184 experts from more than 31 countries, the book includes many technical advances in the areas of genetics, molecular biology, microbiology, resistance management, and social sciences that facilitate the planning and implementing of area-wide strategies. The book is essential reading for the academic and applied research community as well as national and regional government plant and human/animal health authorities with responsibility for protecting plant and human/animal health.

Recent Trends in Mycological Research Springer

The focus of the 22nd Annual Detroit Cancer Symposium was the presentation and discussion of cytotoxic agents, with a significant portion of the symposium including the exciting frontiers of drug discovery being explored by the National Cooperative Drug Discovery Groups (NCDDG) Program. The symposium brought together a large number of investigators from government, universities and pharmaceutical companies involved in the discovery and development of new anticancer agents. Exciting new leads were presented and the status of others presently under development was discussed. Of particular significance has been the initiation of renewed efforts in the area of natural product drug discovery, where the discovery of new cytotoxics is very promising at the moment. A number of major changes have occurred during the last decade in research on drug discovery of cytotoxic agents. Critical reviews of a number of the models and concepts underlying drug discovery represented a continuous thread throughout the meeting, being constantly discussed in terms of their advantages, disadvantages and capabilities of discovering solid tumor active anticancer agents. A recent development which is to be much applauded and which portends to great discoveries is the new relationship formed between Government, University of Industry. The NCDDG mechanism which stimulates this interaction is an inexpensive manner to greatly magnify the drug discovery and development effort nationally. Cytotoxic Anticancer Drugs: Models and Concepts for Drug Discovery and Development represents a forum which will become the major mode for bringing together these three different components in the equation to regularly discuss new results and ideas.

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This edited book, is a collection of 20 articles describing the recent advancements in the application of microbial technology for sustainable development of agriculture and environment. This book covers many aspects like agricultural nanotechnology, promising applications of biofuels production by algae, advancements and application of microbial keratinase, biocontrol agents, plant growth promoting rhizobacteria, bacterial siderophore, use of microbes in detoxifying organophosphate pesticides, bio-surfactants, biofilms, bioremediation degradation of phenol and phenolic compounds and bioprospecting of endophytes. This book intends to bring the latest research advancements and technologies in the area of microbial technology in one platform, providing the readers an up-to-date view on the area. This book would serve as an excellent reference book for researchers and students in the agricultural, environmental and microbiology fields.

Brain-powered Science Springer Science & Business Media

Food processing is expected to affect content, activity and bioavailability of nutrients; the health-promoting capacity of food products depends on their processing history. Traditional technologies, such as the use of antimicrobials and thermal processing, are efficient in increasing nutritional value to an extent, though they may not be effective at addressing food safety, particularly when it comes to maintaining the food's molecular structure. Modern food processing plants improve the quality of life for people with allergies, diabetics, and others who cannot consume some common food elements. Food processing can also add extra nutrients, such as vitamins. Processed foods are often less susceptible to early spoilage than fresh foods and are better suited for long-distance transportation from the source to the consumer. However, food processing can also decrease the nutritional value of foods and introduce hazards not encountered with naturally occurring products. Processed foods often include food additives, such as flavourings and texture-enhancing agents, which may have little or no nutritive value, and may in fact be unhealthy. This book deals with the subject of food processing in a unique way, providing an overview not only of current techniques in food processing and preservation (i.e., dairy, meat, cereal, vegetables, fruits and juice processing, etc.) but also the health and safety aspects: food technologies that improve nutritional quality of foods, functional foods, and nanotechnology in the food and agriculture industry. The text also looks into the future by defining current bottlenecks and future research goals. This work will serve as a ready reference for the subject matter to students and researchers alike.

Morphogenesis in Plant Tissue Cultures Cambridge University Press

This book gathers the latest insights into soil health and its sustainability, providing an up-to-date overview of the various aspects of soil quality and fertility management, e.g., plant-microbe interactions to maintain soil health; and the use of algal, fungal and bacterial fertilizers and earthworms for sustainable soil health and agricultural production. It first discusses the past, present, and future scenarios of soil health, and then explores factors influencing soil health, as well as the consequences of degradation of soil health for sustainable agriculture. Lastly it highlights solutions to improve and maintain soil health so as to achieve greater productivity and sustainability without damaging the soil system or the environment. Soil health is defined as the capacity of a soil to function within ecosystem frontiers, to sustain biological productivity, to maintain environmental quality and to promote plant, animal and human health. Soil health is established through the interactions of physical, chemical and biological properties, e.g., soil texture, soil structure, and soil organisms. Healthy soil provides adequate levels of macro- and micronutrients to plants and contains sufficient populations of soil microorganisms. As a result of the increasingly intensified agriculture over the past few decades, soils are now showing symptoms of exhaustion and stagnating or declining crop yields. Exploring these developments as well as possible solutions based on holistic and sustainable approaches, this book is a valuable resource for researchers in the area of soil and environmental science, agronomy, agriculture, as well as students in the field of botany, ecology and microbiology.

Area-Wide Control of Insect Pests Springer

Insect pests are becoming a problem of ever-more biblical proportions. This new textbook collates a series of selected papers that attempt to address various fundamental components of area-wide insect pest control. Of special interest are the numerous papers on pilot and operational programs that pay special attention to practical problems encountered during program implementation. It’s a compilation of more than 60 papers authored by experts from more than 30 countries.

Area-wide Integrated Pest Management Elsevier

How to achieve sustainable agricultural production without compromising environmental quality, agro-ecosystem function and biodiversity is a serious consideration in current agricultural practices. Farming systems’ growing dependency on chemical inputs (fertilizers, pesticides, nutrients etc.) poses serious threats with regard to crop productivity, soil fertility, the nutritional value of farm produce, management of pests and diseases, agro-ecosystem well-being, and health issues for humans and animals. At the same time, microbial inoculants in the form of biofertilizers, plant growth promoters, biopesticides, soil health managers, etc. have gained considerable attention among researchers, agriculturists, farmers and policy makers. The first volume of the book Microbial Inoculants in Sustainable Agricultural Productivity - Research Perspectives highlights the efforts of global experts with regard to various aspects of microbial inoculants. Emphasis is placed on recent advances in microbiological techniques for the isolation, characterization, identification and evaluation of functional properties using biochemical and molecular tools. The taxonomic characterization of agriculturally important microorganisms is documented, along with their applications in field conditions. The book exploresthe identification, characterization and diversity analysis of endophytic microorganisms in various crops including legumes/ non-legumes, as well as the assessment of their beneficial impacts in the context of promotingplant growth. Moreover, it provides essential updates onthe diversity and role of plant growth promoting rhizobacteria (PGPR) and arbuscular mycorrhizal mycorrhizal fungi (AMF). Further chaptersexamine in detailbiopesticides, thehigh-density cultivation of bioinoculants in submerged culture, seed biopriming strategies for abiotic and biotic stress tolerance, andPGPR as abio-control agent. Given its content,the book offers a valuable resource for researchers involved in research and development concerningPGPR, biopesticides and microbial inoculants.

Soil Health National Academies Press

Biology for AP® courses covers the scope and sequence requirements of a typical two-semester Advanced Placement® biology course. The text provides comprehensive coverage of foundational research and core biology concepts through an evolutionary lens. Biology for AP® Courses was designed to meet and exceed the requirements of the College Board’s AP® Biology framework while allowing significant flexibility for instructors. Each section of the book includes an introduction based on the AP® curriculum and includes rich features that engage students in scientific practice and AP® test preparation; it also highlights careers and research opportunities in biological sciences.

Dissertation Abstracts International Academic Press

Laboratory experiences as a part of most U.S. high school science curricula have been taken for granted for decades, but they have rarely been carefully examined. What do they contribute to science learning? What can they contribute to science learning? What is the current status of labs in our nationÃ¯Â¿Â½s high schools as a context for learning science? This book looks at a range of questions about how laboratory experiences fit into U.S. high schools: What is effective laboratory teaching? What does research tell us about learning in high school science labs? How should student learning in laboratory experiences be assessed? Do all student have access to laboratory experiences? What changes need to be made to improve laboratory experiences for high school students? How can school organization contribute to effective laboratory teaching? With increased attention to the U.S. education system and student outcomes, no part of the high school curriculum should escape scrutiny. This timely book investigates factors that influence a high school laboratory experience, looking closely at what currently takes place and what the goals of those experiences are and should be. Science educators, school administrators, policy makers, and parents will all benefit from a better understanding of the need for laboratory experiences to be an integral part of the science curriculum-and how that can be accomplished.

The New Avenues in Bioinformatics Avery

This volume presents relevant background information to understanding the molecular basis governing unconventional protein secretion (UPS), and in particular explores the latest techniques and protocols that have been successfully applied for the study of this topic. Detailed chapters include an overview of conventional and unconventional secretory pathways along with multidisciplinary approaches and methods used for UPS analysis in different organisms. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, Unconventional Protein Secretion: Methods and Protocols will be useful for all interested in the secretory pathway field as well as applications in cell biology, cell development, biomedical research, and healthcare.