Applied Molecular Genetics Of Filamentous Fungi 1st Edition

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Fungal Genetics - Cees Bos 2020-11-25
This is a concise guide to the combined use of classical and molecular methods for the genetic analysis and breeding of fungi. It presents basic concepts and experimental designs, and demonstrates the power of fungal genetics for applied research in biotechnology and phytopathology. Case studies of Saccharomyces cerevisiae, Candida albicans, Aspergillus niger, Neurospora crassa, Podospora anserina, Phytophthora infestans and others are included.
The Microbial Models of Molecular Biology - Rowland H. Davis 2003
The Microbial Models of Molecular Biology covers the history of molecular biology, focusing on the microorganisms used -- how they were chosen, what they contributed, and how they were displaced by others. The research described has prepared molecular biologists to appreciate the variety and complexity of living things in the genomic era.
Microbes: Health and Environment Volume III - Ashok K. Chauhan 2007
Microbes: Health and Environment highlights the interrelatedness of microbes with life and the environment. It stresses that microbes have a beneficial impact on human life and environment. It covers the various aspects of microbes such as molecular biology, interrelationships, microbial intervention in our environment, microbial biotechnology, genetics, their immunology, biochemistry, economic importance, interaction with medicinal plants, human beings, industrial relevance, influence on our health and so on. It is an asset for enterprising students, teachers, and scientists.
Applied Molecular Genetics of Fungi - British Mycological Society. Symposium 1991-10-31
The interactions of fungi with mankind are both beneficial and harmful and are deeply rooted in the history of human society and agriculture. This book highlights the ways in which fungal recombinant DNA technology is being used in species of economic importance.
Trichoderma And Gliocladium. Volume 1 - Gary E. Harman 2014-04-21

This volume gives an account of the morphology and taxonomy of "Trichoderma" and "Gliocladium", before disscusing their ecology and basic biology.

Gene Expression in Recombinant Microorganisms - Alan Smith 1994-11-23

Describing the scientific and commercial applications of microbial recombinant DNA technology, this outstanding, single-source reference offers state-of-the-art reviews of gene expression in the most important classes of recombinant microorganisms-providing numerous examples of the expression of homologous genes or heterologous gene products. Presents a unique collection of safety and regulatory considerations from around the world and addresses specific measures to be taken for large-scale industrial operations!

Manual of Techniques in Insect Pathology - Lawrence A. Lacey 1997-02-27

Biological Techniques is a series of volumes aimed at introducing to a wide audience the latest advances in methodology. The pitfalls and problems of new techniques are given due consideration, as are those small but vital details not always explicit in the methods sections of journal papers. In recent years, most biological laboratories have been invaded by computers and a wealth of new DNA technology and this will be reflected in many of the titles appearing in the series. The books will be of value to advances researches and graduate students seeking to learn and apply new techniques, and will be useful to teachers of advanced undergraduate courses involving practical or project work. This manual describes the broad array of techniques that are used in insect pathology. It will provide biologists, insect pathologists, entomologists, and those interested in biological control, with the necessary information to work on a variety of pathogen groups. This book will be an essential laboratory reference for insect pathologists. Features include: * Step by-step instructions on how to isolate, identify, culture, bioassay and store the major groups of entomopathogens * Details of the practical knowledge needed by beginners to apply the techniques * Chapters written by an international group of experts * Discussion of safety testing of entomopathogens in mammals and also broader methods such as microscopy and molecular techniques * Provides extensive supplemental literature and recipes for media, fixatives and stains

Molecular Biology and Biotechnology - John M Walker 2007-10-31

As a textbook, Molecular Biology and Biotechnology has always been immensely popular. Now in its fourth edition, it has been completely revised and updated to provide a comprehensive overview and to reflect all the latest developments in this rapidly expanding area. Written by recognised experts, the book aims to identify the impact that molecular biology has had on the development of biotechnology, with each of the nineteen chapters describing a specific subject area relevant to the subject. The impressive breadth of coverage includes areas such as plant biotechnology; food technology; vaccine development; the production of transgenic plants and animals; and the addition of an appropriate and timely new chapter devoted to bioinformatics. Presenting information in an easily assimilated form, Molecular Biology and Biotechnology makes an ideal undergraduate text. It will be of particular interest to students of biology and chemistry, as well as to

scientists from outside the field requiring a rapid introduction to the subject.

Cellular and Molecular Biology of Filamentous Fungi - Katherine Borkovich 2010-02-02

An ideal starting point for any research study of filamentous fungi. • Incorporates the latest findings from such disciplines as physiology, taxonomy, genomics, molecular biology and cell biology. • Begins with an historical perspective, cell morphology and taxonomy, and moves on to such topics as cell growth, development, metabolism, and pathogenesis. • Presents the full range of the fungal kingdom and covers important topics as saprophytes, pathogens and endophytes. • Serves as a recommended text for graduate and undergraduate students.

Molecular Fungal Biology - Richard P. Oliver 1999-08-05

An advanced undergraduate textbook for courses in biotechnology, fungal biology and fungal genetics.

Genetic Transformation Systems in Fungi, Volume 1 - Marco A. van den Berg 2014-10-28

Several different transformation techniques have been developed over the years and readily shown to be decisive methods in fungal biotechnology. This book will cover the basics behind the most commonly used transformation methods, as well as associated tools and techniques. Each chapter will provide protocols along with examples used in laboratories worldwide. Not only will this text provide a detailed background on applications in industrial and pharmaceutical relevant microbes, but also the importance of fungal pathogens in agricultural production (Phytophthora and Botrytis) and mammalian infection (Penicillium marneffei and Candida). Genetic Transformation Systems in Fungi, Volume 1 provides in-depth coverage of how the transformation of DNA is used to understand the genetic basis behind these fungal traits.

Aspergillus - J.E. Smith 2012-12-06

The genus Aspergillus has a worldwide distribution and is one of the most common of all groups of fungi. They are possibly the greatest contami nants of natural and man-made organic products, and a few species can cause infections in man and animals. The aspergilli are also one of the most important mycotoxin-producing groups of fungi when growing as contaminants of cereals, oil seeds, and other foods. Not all aspergilli are viewed as troublesome contaminants, however, as several species have had their metabolic capabilities harnessed for commercial use. The aspergilli have long been associated in the Far East with the koji stage of several food fermentations, particularly soy sauce and miso, and subsequently as a source of useful enzymes. The ability of these fungi to produce several organic acids, especially citric acid, has created major industrial complexes worldwide. Traditional methods of strain develop ment have been extensively studied with the industrial strains, while more recently, recombinant DNA technology has been applied to the aspergilli with emphasis on heterologous protein production. In compiling this book, I have been fortunate to have the full enthu siastic involvement of the authors, and to them I extend my very grateful thanks for mostly being on time and for producing such readable and authoritative chapters. Collectively, we hope that our efforts will strengthen the scientific understanding of this intriguing group of filamentous fungi and further their use in the field of biotechnology.

Fungal Genomics - Minou Nowrousian 2014-03-24

The volume is divided into four sections, the first of which, Genome Sequences and Beyond, illustrates the impact of genome-based information and techniques on research ranging from model organisms like yeast to less-studied basal fungal lineages. Furthermore, it highlights novel types of analysis made possible by multi-genome comparisons as well as the impact of genomics on culture collections and vice versa. The second section, Cell and Developmental Biology, addresses questions that are important for fungal biology, e.g. the development of fungal fruiting bodies, and biology in general, e.g. chromatin organization and circadian rhythms. The third section, Genomics for Biotechnology, covers the search for plant biomass-converting enzymes in fungal genomes and work with industrially important fungi. The fourth section, focusing on Pathogenicity, offers chapters on the genomic analysis of plant and animal/human pathogens. It illustrates how genomics at all levels, from genome to metabolome, is used to study mechanisms of the interactions of fungi with other organisms.

Applied Molecular Genetics of Filamentous Fungi - J.R. Kinghorn 1992-08-31

This book, written by an international team of authors, provides a comprehensive overview of recent developments in the molecular biology of filamentous fungi and the application of these developments to a wide range of commercially useful fungi. Problems, successes, and future prospects are examined.

Genetics and Biotechnology - Ulrich Kück 2003-11-20

Since publication of the first edition of Volume II in 1995, several developments in fungal molecular biology - such as fungal genome projects - have progressed tremendously. This in turn has affected fundamental genetics as well as biotechnology. To accommodate these developments, the second edition has been completely updated and all chapters have been revised. In addition, the volume contains five new chapters dealing with different aspects of fungal molecular genetics. Topics include: Nuclear and extranuclear genetics; functional genomics; biotechnical genetics; yeasts and filamentous fungi.

Progress in Botany / Fortschritte der Botanik - Karl Esser 2012-12-06

With one new volume each year, this series keeps scientists and advanced students informed of the latest developments and results in all areas of botany. The present volume in-cludes reviews on structural botany, taxonomy, geobotany, plant physiology, genetics, and floral ecology.

Recombinant Microbes for Industrial and Agricultural Applications - Yoshikatsu Murooka 2020-08-27

Bridging the gap between laboratory observations and industrial practices, this work presents detailed information on recombinant micro-organisms and their applications in industry and agriculture. All recombinant microbes, bacteria, yeasts and fungi are covered.

The Neurospora Compendium - David D. Perkins 2000-10-16

The fungi have been major players in the molecular revolution that has transformed biology. Because they can be manipulated as microorganisms, yeast and Neurospora provide information that is difficult to acquire with plants and animals, and experimental findings with fungi often throw light on corresponding processes in plants and animals. The filamentous fungus Neurospora crassa has become a valuable model organism

because of its favorable features for genetic analysis and because of the vast store of information that has been acquired during 75 years of research. This compendium provides researchers and students with a concise account of current knowledge about the genes and genome of Neurospora, setting the stage for research that will follow completion of the genome sequence. This book, which is fully documented and abundantly illustrated, will be an indispensable tool in any laboratory that uses fungi for research in molecular genetics, classical genetics, developmental genetics, or cell biology. Molecular, genetic, and phenotypic information for over 1000 nuclear genes Genetic maps Linkage group assignments for 1000 loci 2300 references, 68 figures Guide to electronic and other sources of information Summary information on the mitochondrial genome cDNAs identified from different stages of life Classical, cytogenetic, and molecular data, anticipating completion of the genome sequence

Genetics and Biotechnology - Ulrich Kück 2013-03-09

Since publication of the first edition of Volume II in 1995, several developments in fungal molecular biology - such as fungal genome projects - have progressed tremendously. This in turn has affected fundamental genetics as well as biotechnology. To accommodate these developments, the second edition has been completely updated and all chapters have been revised. In addition, the volume contains five new chapters dealing with different aspects of fungal molecular genetics. Topics include: Nuclear and extranuclear genetics; functional genomics; biotechnical genetics; yeasts and filamentous fungi.

Biotechnology of Filamentous Fungi - David B. Finkelstein 2013-10-22

Biotechnology of Filamentous Fungi: Technology and Products provides a comprehensive discussion of the molecular biology, genetics, and biochemistry of filamentous fungi. It also deals with general principles of biochemical engineering such as process design and scaleup. The book's main emphasis, however, is on the commercial significance of filamentous fungi. The book highlights the unique aspects of filamentous fungi along with those aspects common to most microorganisms studied in industries that use biotechnology. Filamentous fungi can generate a wide range of industrial products including primary metabolites such as organic acids, secondary metabolites such as ß-lactam antibiotics, nonantibiotic drugs, and enzymes for use in food production. Whole organisms such as mushrooms can be used as well as organisms used as insecticides and herbicides. Filamentous fungi also qualify as potential hosts for the secretion of certain heterogeneous proteins such as mammalian proteins. However, not all things related to fungi are beneficial. Mycotoxins products by fungi can be lethal to humans; there is also a need to develop antifungal agents to destroy fungi that can kill animals and plants. These topics are important aspects of the biotechnology of filamentous fungi and are dealt with in this text.

Trichoderma And Gliocladium - Gary E. Harman 2002-04-12

This volume gives an account of the morphology and taxonomy of "Trichoderma" and "Gliocladium", before disscusing their ecology and basic biology.

Physiological Engineering Aspects of Penicillium Chrysogenum - Jens Nielsen 1997

The book gives a review of penicillin production by Penicillium

chrysogenum, and also deals with a number of general aspects of fungal cultivations, e.g. primary metabolism of filamentous fungi, morphology, monitoring of fungal cultivations, and bioreactor performance (more than 750 references).The first two chapters give an introduction to the area of penicillin production; with a review of the history and a survey of the present status of this industrially very important process in the first chapter. In the second chapter is given an introduction to the microorganism, i.e. its nutritional requirements, its taxonomy, and an overview of different strain development programmes.Chapter 3 gives an introduction to the concept of Physiological Engineering. This is followed by a review of various monitoring techniques and different theoretical techniques for analysis of cultivation processes, e.g. mathematic modeling, metabolic flux analysis, and metabolic control analysis.Chapter 4 and 5 give a review of the metabolism, with the primary metabolism being the topic of Chapter 4 and the secondary metabolism, i.e. penicillin biosynthesis, being the topic of Chapter 5. The review of the penicillin biosynthetic pathway is followed by a description of a number of results obtained using metabolic flux and metabolic control analysis.Chapter 6 is devoted to the morphology of the fungus, and it gives a detailed description of the growth mechanisms of filamentous fungi.Chapter 7 deals with the bioreactor performance during fungal cultivations, i.e. medium rheology, gas-liquid mass transfer, and mixing.Finally is the fed-batch process applied for penicillin production described in Chapter 8. It gives an overview of the most important factors influencing penicillin production.

Growing Fungus - N.A. Gow 2007-08-28

This book is about the growth and differentiation processes underlying the growth and differentia of filamentous fungi. The impetus for this work tion of fungi and that it provides the reader with stems from our perception that the coverage of adequate source references for further information. this highly diverse and important group of organ It is estimated conservatively that there are more isms has been neglected in recent years, despite than 1. 5 million species of fungi - more than five many significant advances in our understanding of times the number of vascular plants and second the underlying mechanisms of growth. This situ only in diversity to the insects. The extreme ation contrasts with the treatment of Saccharomyces diversity of form in the fungi has always been a cerevisiae, for example, which because of its ideal source of inspiration for mycologists. This book is properties for genetic analyses, has established concerned mainly with those systems that have itself as the model eukaryote for the analysis of the been well characterized from the biochemical, cell cycle, and basic studies of biochemical and physiological or genetic points of view. Although genetic regulation. This book does not deal with it has not been possible to illustrate the breadth of the detailed growth phYSiology of S.

Degradation of plant cell wall polymers -

Fungi and their Role in Sustainable Development: Current Perspectives - Praveen Gehlot 2018-09-09

This book illustrates the multiple roles of fungi in everyday life. Fungi are the large group of organisms with tremendous diversity

and economic importance. Their ability to produce commercially efficient useful products makes them the vulnerable sustainable tool for the future generation. This book describes a systems approach and provides a means to share the latest developments and advances about the benefits of fungi including their wide application, traditional uses, modern practices, along with designing of strategies to harness their potential. The chapters are organized with data, providing information related to different sustainable aspects of fungi in agriculture, its cultivation and conservation strategies, industrial and environmental utilization, advanced bioconversion technologies and modern biotechnological interventions. Updated information and current opinion related to its application for sustainable agriculture, environment, and industries as futuristic tools have been presented and discussed in different chapters. The book also elucidates a comprehensive yet a representative description of the challenges associated with the sustained application of fungi to achieve the goals of sustainability.

Biotechnology and Biology of Trichoderma - Vijai G. Gupta 2014-02-17

Biotechnology and Biology of Trichoderma serves as a comprehensive reference on the chemistry and biochemistry of one of the most important microbial agents, Trichoderma, and its use in an increased number of industrial bioprocesses for the synthesis of many biochemicals such as pharmaceuticals and biofuels. This book provides individuals working in the field of Trichoderma, especially biochemical engineers, biochemists and biotechnologists, important information on how these valuable fungi can contribute to the production of a wide range of products of commercial and ecological interest. Provides a detailed and comprehensive coverage of the chemistry, biochemistry and biotechnology of Trichoderma, fungi present in soil and plants Includes most important current and potential applications of Trichoderma in bioengineering, bioprocess technology including bioenergy & biofuels, biopharmaceuticals, secondary metabolites and protein engineering Includes the most recent research advancements made on Trichoderma applications in plant biotechnology and ecology and environment

Oxford Textbook of Medical Mycology - Christopher C. Kibbler 2017-12-14

The Oxford Textbook of Medical Mycology is a comprehensive reference text which brings together the science and medicine of human fungal disease. Written by a leading group of international authors to bring a global expertise, it is divided into sections that deal with the principles of mycology, the organisms, a systems based approach to management, fungal disease in specific patient groups, diagnosis, and treatment. The detailed clinical chapters take account of recent international guidelines on the management of fungal disease. With chapters covering recent developments in taxonomy, fungal genetics and other 'omics', epidemiology, pathogenesis, and immunology, this textbook is well suited to aid both scientists and clinicians. The extensive illustrations, tables, and in-depth coverage of topics, including discussion of the non-infective aspects of allergic and toxin mediated fungal disease, are designed to aid the understanding of mechanisms and pathology, and extend the usual approach to fungal disease. This textbook is essential reading

for microbiologists, research scientists, infectious diseases clinicians, respiratory physicians, and those managing immunocompromised patients. Part of the Oxford Textbook in Infectious Disease and Microbiology series, it is also a useful companion text for students and trainees looking to supplement mycology courses and microbiology training.

Genetics and Biotechnology - Karl Esser 2004-01-22

Keywords: Fungi, biotechnology, fungal molecular biology, molecular genetics, mycology, yeast.

More Gene Manipulations in Fungi - Gerard Meurant 2012-12-02

The original work, published in 1985, appeared at the first interface between classical fungal genetics and modern genetic engineering, reflecting the excitement of a young and promising discipline. Since then, molecular mycology has come of age. The entirely new More Gene Manipulations in Fungi reviews state-of-the-art research with an intent to inform the researcher about what can be achieved by studying fungal systems with the tools of molecular biology. This book is a current reference providing overviews as well as practical information. Updates Bennett and Lasure's classic Gene Manipulations in Fungi published in 1985**Describes fungi for the study of fundamental problems in biology and biochemistry**Explains both classical and molecular genetics for the study of fungi**Contains special appendixes on genetic analysis, growth media, and coding conventions**Demonstrates the progress of molecular mycology since the seminal paper published by Beadle and Tatum in 1941

Symbiotic Fungi - Ajit Varma 2009-09-01

Symbiotic Fungi – Principles and Practice presents current protocols for the study of symbiotic fungi and their interactions with plant roots, such as techniques for analyzing nutrient transfer, ecological restoration, microbial communication, and mycorrhizal bioassays, AM inoculum procedures and mushroom technology. The protocols offer practical solutions for researchers and students involved in the study of symbiotic microorganisms. The volume will be of great use for basic research, biotechnological applications, and the development of commercial products.

Genetics and Biotechnology - Ulrich Kück 2013-03-09

Mycology, the study of fungi, originated as a subdiscipline of botany and was a descriptive discipline, largely neglected as an experimental science until the early years of this century. A seminal paper by Blakeslee in 1904 provided evidence for self incompatibility, termed "heterothallism", and stimulated interest in studies related to the control of sexual reproduction in fungi by mating-type specificities. Soon to follow was the demonstration that sexually reproducing fungi exhibit Mendelian inheritance and that it was possible to conduct formal genetic analysis with fungi. The names Burgeff, Kniep and Lindegren are all associated with this early period of fungal genetics research. These studies and the discovery of penicillin by Fleming, who shared a Nobel Prize in 1945, provided further impetus for experimental research with fungi. Thus began a period of interest in mutation induction and analysis of mutants for bio chemical traits. Such fundamental research, conducted largely with Neurospora crassa, led to the one gene: one enzyme hypothesis and to a second Nobel Prize for fungal research awarded to Beadle and Tatum in 1958. Fundamental

research in biochemical genetics was extended to other fungi, especially to Saccharomyces cere visiae, and by the mid-1960s fungal systems were much favored for studies in eukaryotic molecular biology and were soon able to compete with bacterial systems in the molecular arena.

Food Biotechnology - Y. H. Hui 1996-12-17

This handbook discusses how microorganisms (bacteria, fungi, yeasts) can be modified to various extents by means of molecular genetics or genetic engineering. Compiled and written by the world's leading experts and practioners in food science and food technology, it presents the latest research and development in the discipline. It is easy-to-understand and can be used directly by readers interested in practical and commercial applications. So this book is important for researchers as a reference guide, and it can be used in various disciplines as microbiology, chemistry, biochemistry and engineering. 'Food Biotechnology' also is interesting for the industries, in addition to food processing, because commercial products and services affected include fine chemicals, enzymes, cultures, equipment and supplies.

Laboratory Protocols in Fungal Biology - Vijai Kumar Gupta 2012-12-09

Laboratory Protocols in Fungal Biology presents the latest techniques in fungal biology. This book analyzes information derived through real experiments, and focuses on cutting edge techniques in the field. The book comprises 57 chapters contributed from internationally recognised scientists and researchers. Experts in the field have provided up-to-date protocols covering a range of frequently used methods in fungal biology. Almost all important methods available in the area of fungal biology viz. taxonomic keys in fungi; histopathological and microscopy techniques; proteomics methods; genomics methods; industrial applications and related techniques; and bioinformatics tools in fungi are covered and complied in one book. Chapters include introductions to their respective topics, list of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and notes on troubleshooting. Each chapter is self-contained and written in a style that enables the reader to progress from elementary concepts to advanced research techniques. Laboratory Protocols in Fungal Biology is a valuable tool for both beginner research workers and experienced professionals. Coming Soon in the Fungal Biology series: Goyal, Manoharachary / Future Challenges in Crop Protection Against Fungal Pathogens Martín, García-Estrada, Zeilinger / Biosynthesis and Molecular Genetics of Fungal Secondary Metabolites Zeilinger, Martín, García-Estrada / Biosynthesis and Molecular Genetics of Fungal Secondary Metabolites, Volume 2 van den Berg, Maruthachalam / Genetic Transformation Systems in Fungi Schmoll, Dattenbock / Gene Expression Systems in Fungi Dahms / Advanced Microscopy in Mycology

Exploitation of Fungi - G. D. Robson 2007-05-24

The fungi are a highly diverse kingdom of eukaryotic microbes. Recent advances in molecular genetics, together with the release of whole genome sequences of an increasing number of fungi, are facilitating their exploitation and commercialisation. Fungi have the ability to secrete large quantities of proteins of commercial value, and their complex secondary metabolic pathways produce a diverse range of

bioactive compounds which have had a major impact in the pharmaceuticals market. In addition, the fungi themselves are increasingly being developed as alternatives to conventional chemically-based pest control strategies, and as bioremediation agents capable of transforming pollutants in the soil environment. With chapters written by international experts, this volume highlights current and future biological, biochemical, and molecular exploitation of the fungi in biotechnology. It will have broad appeal, not only to mycologists and microbiologists, but also to biomedical scientists, biotechnologists, environmental and molecular scientists, plant pathologists and geneticists.

Fungi in Bioremediation - G. M. Gadd 2001-11-15

An authoritative account of the application of fungi to the treatment of environmental pollution.

Thermophilic Moulds in Biotechnology - B.N. Johri 2013-04-17

All important aspects of thermophilic moulds such as systematics, ecology, physiology and biochemistry, production of extracellular and intracellular enzymes, their role in spoilage of stores products and solid and liquid waste management, and general and molecular genetics have been dealt with comprehensively by experts in this book which covers progress in the field over the last 30 years since the seminal book Thermophilic Fungi published by Cooney and Emerson in 1964. The experts have reviewed extensive literature on all aspects of thermophilic moulds in a very comprehensive manner. This book will be useful for graduates as well as post-graduate students of life sciences, mycology, microbiology and biotechnology, and as a reference book for researchers.

Insect Pathogens - S. Patricia Stock 2009-01-01

This book attempts to bring together a broad array of molecular techniques and approaches currently used in insect pathology. It is divided into four parts: (i) identification and diagnostics; (ii) evolutionary relationships and genetics; (iii) host-pathogen interactions; and (iv) genomics and genetic engineering. Sixteen chapters have been written by leading researchers in the field which provide comprehensive and up-to-date information on each part.

Recombinant Gene Expression - Paulina Balbas 2008-02-04

Since newly created beings are often perceived as either wholly good or bad, the genetic alteration of living cells impacts directly on a symbolic meaning deeply imbedded in every culture. During the earlier years of gene expression research, te- nological applications were confined mainly to academic and industrial laboratories, and were perceived as highly beneficial since molecules that were previously unable to be separated or synthesized became accessible as therapeutic agents. Such were the success stories of hormones, antibodies, and vaccines produced in the bacterium Escherichia coli. Originally this bacterium gained fame among humans for being an unwanted host in the intestine, or worse yet, for being occasionally dangerous and pathogenic. H- ever, it was easily identified in contaminated waters during the 19th century, thus becoming a clear indicator of water pollution by human feces. Tamed, cultivated, and easily maintained in laboratories, its fast growth rate and metabolic capacity to adjust to changing environments fascinated the minds of scientists who studied and modeled such complex phenomena as growth, evolution, genetic exchange, infection, survival, adaptation, and

further on—gene expression. Although at the lower end of the complexity scale, this microbe became a very successful model system and a key player in the fantastic revolution kindled by the birth of recombinant DNA technology.

Handbook of Fungal Biotechnology - Dilip K. Arora 2003-12-17

The Handbook of Fungal Biotechnology offers the newest developments from the frontiers of fungal biochemical and molecular processes and industrial and semi-industrial applications of fungi. This second edition highlights the need for the integration of a number of scientific disciplines and technologies in modern fungal biotechnology and reigns as

Fungal Secondary Metabolism - Nancy P. Keller 2012-10-14

Filamentous fungi have long been known for their ability to produce an enormous range of unusual chemical compounds known as secondary metabolites, many of which have potentially useful antibiotic or pharmacological properties. Recent focus on fungal genomics coupled with advances in detection and molecular manipulation techniques has galvanized a revitalization of this field. Fungal Secondary Metabolism: Methods and Protocols is aimed at providing the key methodologies currently in use and necessary for accessing and exploiting the natural product information provided by the genomes of this large and varied kingdom. Written by active researchers in the field, the chapters deal with all the steps necessary, from optimization of fungal culture conditions for metabolite production, through rapid genome sequencing and bioinformatics, and genetic manipulations for functional analysis, to detection and testing of metabolites. In addition, chapters on basic science address approaches to the genetic regulation, protein biochemistry, and cellular localization of the biosynthetic pathways. Written in the highly successful Methods in Molecular BiologyTM 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. Practical and hands-on, Fungal Secondary Metabolism: Methods and Protocols encourages new investigators to enter the field and expands upon the expertise and range of skills of those already researching fungal natural products.