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KEY=EDITION - CALLAHAN JUSTICE

GENE CLONING AND DNA ANALYSIS

AN INTRODUCTION

Why gene cloning and DNA analysis are important -- Vectors for gene cloning : plasmids and bacteriophages -- Purification of DNA from living cells -- Manipulation of purified DNA -- Introduction of DNA into living cells -- Cloning vectors for Escherichia coli -- Cloning vectors for eukaryotes -- How to obtain a clone of a specific gene -- The polymerase chain reaction -- Sequencing genes and genomes -- Studying gene expression and function -- Studying genomes -- Studying transcriptomes and proteomes -- Production of protein from cloned genes -- Gene cloning and DNA analysis in medicine -- Gene cloning and DNA analysis in agriculture -- Gene cloning and DNA analysis in forensic science and archaeology.

GENE CLONING AND DNA ANALYSIS

AN INTRODUCTION

John Wiley & Sons Known world-wide as the standard introductory text to this important and exciting area, the sixth edition of Gene Cloning and DNA Analysis addresses new and growing areas of research whilst retaining the philosophy of the previous editions. Assuming the reader has little prior knowledge of the subject, its importance, the principles of the techniques used and their applications are all carefully laid out, with over 250 clearly presented four-colour illustrations. In addition to a number of informative changes to the text throughout the book, the final four chapters have been significantly updated and extended to reflect the striking advances made in recent years in the applications of gene cloning and DNA analysis

in biotechnology. Gene Cloning and DNA Analysis remains an essential introductory text to a wide range of biological sciences students; including genetics and genomics, molecular biology, biochemistry, immunology and applied biology. It is also a perfect introductory text for any professional needing to learn the basics of the subject. All libraries in universities where medical, life and biological sciences are studied and taught should have copies available on their shelves. "... the book content is elegantly illustrated and well organized in clear-cut chapters and subsections... there is a Further Reading section after each chapter that contains several key references... What is extremely useful, almost every reference is furnished with the short but distinct author's remark." –Journal of Heredity, 2007 (on the previous edition)

GENE CLONING

AN INTRODUCTION

Nelson Thornes Gene Cloning provides a basic introduction for students and researchers who have no previous experience of experiments with DNA, and assumes very little prior knowledge on the part of the reader. A three part structure addresses the basic principles of gene cloning, the application of cloning in gene analysis, and the role of gene cloning in research and biotechnology. The book is written in clear, jargon-free language, and is extensively illustrated with two-color line drawings.

GENE CLONING AND DNA ANALYSIS

AN INTRODUCTION

The fourth edition of Gene Cloning is a fully revised and updated version of this most popular introductory text on the subject. This exciting new edition retains the basic structure and organisation that has proved successful for the previous three editions. Two major changes in the contents of the book are the introduction of the subject of the polymerase chain reaction (PCR) at the beginning of the book with more emphasis being placed on PCR throughout and the inclusion of a new chapter on genome sequencing and functional analysis.

GENE CLONING

AN INTRODUCTION

Nelson Thornes

GENOMES 3

Garland Science The VitalBook e-book version of Genomes 3 is only available in the US and Canada at the present time. To purchase or rent please visit http://store.vitalsource.com/show/9780815341383 Covering molecular genetics from the basics through to genome expression and molecular phylogenetics, Genomes 3is the latest edition of this pioneering textbook. Updated to incorporate the recent major advances, Genomes 3 is an invaluable companion for any undergraduate

throughout their studies in molecular genetics. Genomes 3 builds on the achievements of the previous two editions by putting genomes, rather than genes, at the centre of molecular genetics teaching. Recognizing that molecular biology research was being driven more by genome sequencing and functional analysis than by research into genes, this approach has gathered momentum in recent years.

CLONING

CHRONOLOGY, ABSTRACTS AND GUIDE TO BOOKS

Nova Publishers The terms 'recombinant DNA technology', 'DNA cloning', 'molecular cloning' or 'gene cloning' all refer to the same process: the transfer of a DNA fragment of interest from one organism to a self-replicating genetic element such as a bacterial plasmid. The DNA of interest can then be propagated in a foreign host cell. This technology has been around since the 1970s, and it has become a common practice in molecular biology labs today. Reproductive cloning is a technology used to generate an animal that has the same nuclear DNA as another currently or previously existing animal. Dolly was created by reproductive cloning technology. In a process called 'somatic cell nuclear transfer' (SCNT), scientists transfer genetic material from the nucleus of a donor adult cell to an egg whose nucleus, and thus its genetic material, has been removed. The reconstructed egg containing the DNA from a donor cell must be treated with chemicals or electric current in order to stimulate cell division. Once the cloned embryo reaches a suitable stage, it is transferred to the uterus of a female host where it continues to develop until birth. Therapeutic cloning, also called "embryo cloning," is the production of human embryos for use in research. The goal of this process is not to create cloned human beings, but rather to harvest stem cells that can be used to study human development and to treat disease. Stem cells are important to biomedical researchers because they can be used to generate virtually any type of specialised cell in the human body. This new book presents an up-to-date Chronology of Cloning along with current and selected abstracts dealing with cloning as well as a guide to books on the topic. Access to the abstract and books sections is provided by title, subject and author indexes.

MOLECULAR CLONING

A LABORATORY MANUAL

GENOMES 4

Garland Science Genomes 4 has been completely revised and updated. It is a thoroughly modern textbook about genomes and how they are investigated. As with Genomes 3, techniques come first, then genome anatomies, followed by genome function, and finally genome evolution. The genomes of all types of organism are covered: viruses, bacteria, fungi, plants, and animals including humans and other hominids. Genome sequencing and assembly methods have been thoroughly revised including a survey of four genome projects: human, Neanderthal, giant panda, and barley. Coverage of genome annotation emphasizes genome-wide RNA mapping,

with CRISPR-Cas 9 and GWAS methods of determining gene function covered. The knowledge gained from these techniques forms the basis of the three chapters that describe the three main types of genomes: eukaryotic, prokaryotic (including eukaryotic organelles), and viral (including mobile genetic elements). Coverage of genome expression and replication is truly genomic, concentrating on the genome-wide implications of DNA packaging, epigenome modifications, DNA-binding proteins, non-coding RNAs, regulatory genome sequences, and protein-protein interactions. Also included are applications of transcriptome analysis, metabolomics, and systems biology. The final chapter is on genome evolution, focusing on the evolution of the epigenome, using genomics to study human evolution, and using population genomics to advance plant breeding. Established methods of molecular biology are included if they are still relevant today and there is always an explanation as to why the method is still important. Each chapter has a set of short-answer questions, in-depth problems, and annotated further reading. There is also an extensive glossary. Genomes 4 is the ideal text for upper level courses focused on genomes and genomics.

GENE CLONING : AN INTRODUCTION

Springer An introductory textbook updated to incorporate advances made since the first edition was published in 1986, but retaining its mission to serve undergraduates with no previous experience of the subject and experienced researchers new to gene cloning. Annotation copyrighted by Book News, Inc., Portland, OR

SCIENTIFIC AND MEDICAL ASPECTS OF HUMAN REPRODUCTIVE CLONING

National Academies Press Human reproductive cloning is an assisted reproductive technology that would be carried out with the goal of creating a newborn genetically identical to another human being. It is currently the subject of much debate around the world, involving a variety of ethical, religious, societal, scientific, and medical issues. Scientific and Medical Aspects of Human Reproductive Cloning considers the scientific and medical sides of this issue, plus ethical issues that pertain to human-subjects research. Based on experience with reproductive cloning in animals, the report concludes that human reproductive cloning would be dangerous for the woman, fetus, and newborn, and is likely to fail. The study panel did not address the issue of whether human reproductive cloning, even if it were found to be medically safe, would beâ€"or would not beâ€"acceptable to individuals or society.

MOLECULAR BIOLOGY TECHNIQUES

A CLASSROOM LABORATORY MANUAL

Academic Press This manual is an indispensable tool for introducing advanced undergraduates and beginning graduate students to the techniques of recombinant DNA technology, or gene cloning and expression. The techniques used in basic research and biotechnology laboratories are covered in detail. Students gain hands-

on experience from start to finish in subcloning a gene into an expression vector, through purification of the recombinant protein. The third edition has been completely re-written, with new laboratory exercises and all new illustrations and text, designed for a typical 15-week semester, rather than a 4-week intensive course. The “project approach to experiments was maintained: students still follow a cloning project through to completion, culminating in the purification of recombinant protein. It takes advantage of the enhanced green fluorescent protein - students can actually visualize positive clones following IPTG induction. Cover basic concepts and techniques used in molecular biology research labs Student-tested labs proven successful in a real classroom laboratories Exercises simulate a cloning project that would be performed in a real research lab "Project" approach to experiments gives students an overview of the entire process Prep-list appendix contains necessary recipes and catalog numbers, providing staff with detailed instructions

PRINCIPLES OF CLONING

Academic Press Principles of Cloning, Second Edition is the fully revised edition of the authoritative book on the science of cloning. The book presents the basic biological mechanisms of how cloning works and progresses to discuss current and potential applications in basic biology, agriculture, biotechnology, and medicine. Beginning with the history and theory behind cloning, the book goes on to examine methods of micromanipulation, nuclear transfer, genetic modification, and pregnancy and neonatal care of cloned animals. The cloning of various species—including mice, sheep, cattle, and non-mammals—is considered as well. The Editors have been involved in a number of breakthroughs using cloning technique, including the first demonstration that cloning works in differentiated cells done by the Recipient of the 2012 Nobel Prize for Physiology or Medicine – Dr John Gurdon; the cloning of the first mammal from a somatic cell – Drs Keith Campbell and Ian Wilmut; the demonstration that cloning can reset the biological clock - Drs Michael West and Robert Lanza; the demonstration that a terminally differentiated cell can give rise to a whole new individual – Dr Rudolf Jaenisch and the cloning of the first transgenic bovine from a differentiated cell – Dr Jose Cibelli. The majority of the contributing authors are the principal investigators on each of the animal species cloned to date and are expertly qualified to present the state-of-the-art information in their respective areas. First and most comprehensive book on animal cloning, 100% revised Describes an in-depth analysis of current limitations of the technology and research areas to explore Offers cloning applications on basic biology, agriculture, biotechnology, and medicine

BASIC SCIENCE METHODS FOR CLINICAL RESEARCHERS

Academic Press Basic Science Methods for Clinical Researchers addresses the specific challenges faced by clinicians without a conventional science background. The aim of the book is to introduce the reader to core experimental methods commonly used to answer questions in basic science research and to outline their relative strengths and limitations in generating conclusive data. This book will be a vital companion for clinicians undertaking laboratory-based science. It will support

clinicians in the pursuit of their academic interests and in making an original contribution to their chosen field. In doing so, it will facilitate the development of tomorrow’s clinician scientists and future leaders in discovery science. Serves as a helpful guide for clinical researchers who lack a conventional science background Organized around research themes pertaining to key biological molecules, from genes, to proteins, cells, and model organisms Features protocols, techniques for troubleshooting common problems, and an explanation of the advantages and limitations of a technique in generating conclusive data Appendices provide resources for practical research methodology, including legal frameworks for using stem cells and animals in the laboratory, ethical considerations, and good laboratory practice (GLP)

MOLECULAR BIOTECHNOLOGY

PRINCIPLES AND APPLICATIONS OF RECOMBINANT DNA

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

GENE CLONING AND MANIPULATION

Cambridge University Press Updated to reflect advances in the field, this introduction provides a broad, but concise, coverage of recombinant DNA techniques. Written for advanced undergraduates, graduates and scientists who want to use this technology, emphasis is placed on the concepts underlying particular types of cloning vectors to aid understanding and to enable readers to devise suitable strategies for novel experimental situations. An introduction to the basic biochemical principles is presented first. Then PCR and cloning using E. coli hosts and plasmid, phage and hybrid vectors are described, followed by the generation and screening of libraries and how to modify, inactivate or express cloned sequences. Finally genetic manipulation in a range of other organisms is discussed, including other bacteria, fungi, algae and plants, insects and mammals. A series of 'real-life' biological problems are also presented to enable readers to assess their understanding of the material and to prepare for exams.

PROTEIN-PROTEIN INTERACTIONS

A MOLECULAR CLONING MANUAL

CSHL Press Reflecting the various advances in the field, this book provides comprehensive coverage of protein-protein interactions. It presents a collection of the technical and theoretical issues involved in the study of protein associations, including biophysical approaches. It also offers a collection of computational methods for analyzing interactions.

AN INTRODUCTION TO GENETIC ENGINEERING

Cambridge University Press The author presents a basic introduction to the world

of genetic engineering. Copyright © Libri GmbH. All rights reserved.

BIOCHEMISTRY, 4TH EDITION

Wiley Global Education The Gold Standard in Biochemistry text books. Biochemistry 4e, is a modern classic that has been thoroughly revised. Don and Judy Voet explain biochemical concepts while offering a unified presentation of life and its variation through evolution. It incorporates both classical and current research to illustrate the historical source of much of our biochemical knowledge.

SAFETY OF GENETICALLY ENGINEERED FOODS

APPROACHES TO ASSESSING UNINTENDED HEALTH EFFECTS

National Academies Press Assists policymakers in evaluating the appropriate scientific methods for detecting unintended changes in food and assessing the potential for adverse health effects from genetically modified products. In this book, the committee recommended that greater scrutiny should be given to foods containing new compounds or unusual amounts of naturally occurring substances, regardless of the method used to create them. The book offers a framework to guide federal agencies in selecting the route of safety assessment. It identifies and recommends several pre- and post-market approaches to guide the assessment of unintended compositional changes that could result from genetically modified foods and research avenues to fill the knowledge gaps.

GENE BIOTECHNOLOGY

CRC Press Covering state-of-the-art technologies and a broad range of practical applications, the Third Edition of Gene Biotechnology presents tools that researchers and students need to understand and apply today's biotechnology techniques. Many of the currently available books in molecular biology contain only protocol recipes, failing to explain the princ

GENE MACHINES

CSHL Press An introduction to how genes work, including basic information about cloning and gene therapy.

BIOINFORMATICS

A PRACTICAL GUIDE TO THE ANALYSIS OF GENES AND PROTEINS

John Wiley & Sons "In this book, Andy Baxevanis and Francis Ouellette . . . haveundertaken the difficult task of organizing the knowledge in thisfield in a logical progression and presenting it in a digestibleform. And they have done an excellent job. This fine text will makea major impact on biological research and, in turn, on progress inbiomedicine. We are all in their debt." —Eric Lander from the Foreword Reviews from the First Edition "...provides a broad overview of the basic tools for sequenceanalysis ... For biologists approaching this subject for the firsttime, it will be a very useful handbook to keep on the shelf afterthe first reading, close to the

computer." —Nature Structural Biology "...should be in the personal library of any biologist who usesthe Internet for the analysis of DNA and protein sequencedata." —Science "...a wonderful primer designed to navigate the novice throughthe intricacies of in scripto analysis ... The accomplished genesearcher will also find this book a useful addition to theirlibrary ... an excellent reference to the principles ofbioinformatics." —Trends in Biochemical Sciences This new edition of the highly successful Bioinformatics:A Practical Guide to the Analysis of Genes and Proteinsprovides a sound foundation of basic concepts, with practicaldiscussions and comparisons of both computational tools anddatabases relevant to biological research. Equipping biologists with the modern tools necessary to solvepractical problems in sequence data analysis, the Second Editioncovers the broad spectrum of topics in bioinformatics, ranging fromInternet concepts to predictive algorithms used on sequence,structure, and expression data. With chapters written by experts inthe field, this up-to-date reference thoroughly covers vitalconcepts and is appropriate for both the novice and the experiencedpractitioner. Written in clear, simple language, the book isaccessible to users without an advanced mathematical or computerscience background. This new edition includes: All new end-of-chapter Web resources, bibliographies, andproblem sets Accompanying Web site containing the answers to the problems,as well as links to relevant Web resources New coverage of comparative genomics, large-scale genomeanalysis, sequence assembly, and expressed sequence tags A glossary of commonly used terms in bioinformatics andgenomics Bioinformatics: A Practical Guide to the Analysis of Genesand Proteins, Second Edition is essential reading forresearchers, instructors, and students of all levels in molecularbiology and bioinformatics, as well as for investigators involvedin genomics, positional cloning, clinical research, andcomputational biology.

DNA CLONING: A HANDS-ON APPROACH

Springer This book offers step-by-step instruction on DNA cloning, defined as moving genes around plasmids, mutating genes, or mining new genes. The aim is to provide those new to the field with reliable and up-to-date practical guidance while at the same time conveying the scope for creativity. After a brief synopsis of the history of cloning, the fundamentals and prerequisites are explained, covering, for example, software, vectors commonly used in the lab, appropriate choice of restriction endonucleases, the preparation of agarose gels, competent cells, and LB agar plates, and procedures to be followed upon receipt of new plasmids. The remainder of the book is devoted to the clear description of methods and individual steps in cloning. Guidance is provided on the cut and paste method, DNA sequencing, direct sequencing, primer design, PCR-based gene insertion and deletion, epitope tag insertion, the use of RACE technology, BAC recombineering, and much, much more. Sources of error and a variety of techniques that make life considerably easier when cloning are also examined in detail.

THE CASE AGAINST PERFECTION

Harvard University Press Breakthroughs in genetics present us with a promise and a predicament. The promise is that we will soon be able to treat and prevent a

host of debilitating diseases. The predicament is that our newfound genetic knowledge may enable us to manipulate our nature—to enhance our genetic traits and those of our children. Although most people find at least some forms of genetic engineering disquieting, it is not easy to articulate why. What is wrong with re-engineering our nature? The Case against Perfection explores these and other moral quandaries connected with the quest to perfect ourselves and our children. Michael Sandel argues that the pursuit of perfection is flawed for reasons that go beyond safety and fairness. The drive to enhance human nature through genetic technologies is objectionable because it represents a bid for mastery and dominion that fails to appreciate the gifted character of human powers and achievements. Carrying us beyond familiar terms of political discourse, this book contends that the genetic revolution will change the way philosophers discuss ethics and will force spiritual questions back onto the political agenda. In order to grapple with the ethics of enhancement, we need to confront questions largely lost from view in the modern world. Since these questions verge on theology, modern philosophers and political theorists tend to shrink from them. But our new powers of biotechnology make these questions unavoidable. Addressing them is the task of this book, by one of America's preeminent moral and political thinkers.

MOLECULAR BIOLOGY LABFAX

Elsevier Volume 1.

MOLECULAR BIOLOGY

Elsevier Molecular Biology, Second Edition, examines the basic concepts of molecular biology while incorporating primary literature from today's leading researchers. This updated edition includes Focuses on Relevant Research sections that integrate primary literature from Cell Press and focus on helping the student learn how to read and understand research to prepare them for the scientific world. The new Academic Cell Study Guide features all the articles from the text with concurrent case studies to help students build foundations in the content while allowing them to make the appropriate connections to the text. Animations provided deal with topics such as protein purification, transcription, splicing reactions, cell division and DNA replication and SDS-PAGE. The text also includes updated chapters on Genomics and Systems Biology, Proteomics, Bacterial Genetics and Molecular Evolution and RNA. An updated ancillary package includes flashcards, online self quizzing, references with links to outside content and PowerPoint slides with images. This text is designed for undergraduate students taking a course in Molecular Biology and upper-level students studying Cell Biology, Microbiology, Genetics, Biology, Pharmacology, Biotechnology, Biochemistry, and Agriculture. NEW: "Focus On Relevant Research" sections integrate primary literature from Cell Press and focus on helping the student learn how to read and understand research to prepare them for the scientific world. NEW: Academic Cell Study Guide features all articles from the text with concurrent case studies to help students build foundations in the content while allowing them to make the appropriate connections to the text. NEW: Animations provided include topics in protein purification, transcription, splicing

reactions, cell division and DNA replication and SDS-PAGE Updated chapters on Genomics and Systems Biology, Proteomics, Bacterial Genetics and Molecular Evolution and RNA Updated ancillary package includes flashcards, online self quizzing, references with links to outside content and PowerPoint slides with images. Fully revised art program

PROTEIN PHOSPHORYLATION IN HUMAN HEALTH

BoD – Books on Demand 15 chapters on protein phosphorylation and human health written by expert scientists. Covers most important research hot points, such as Akt, AMPK and mTOR. Bridges the basic protein phosphorylation pathways with human health and diseases. Detailed and comprehensive text with excellent figure illustration.

GENOMES

Garland Science This text provides a new approach to the subject of genomes and redefines how molecular genetics should be taught. Covering all aspects, it includes key research findings and focuses on the changes of the last five years.

RICE

GERMPLASM, GENETICS AND IMPROVEMENT

BoD – Books on Demand Rice is a staple food for half of the worlds population mostly in Asia. Productivity of rice has largely been improved since the Green Revolution in 1960s. Further improvement of rice yield is necessary to keep pace with population growth, which is a challenging task for breeders. This book, Rice - Germplasm, Genetics and Improvement, as its name implies, comprehensively reviews current knowledge in germplasm exploration, genetic basis of complex traits, and molecular breeding strategies in rice. In the germplasm part, we highlight the application of wild rice in rice breeding. In the genetics part, most of the complex traits related with yield, disease, quality have been covered. In the improvement part, Chinese experiences in hybrid rice breeding have been summarized together with many molecular breeding practices scattering in different chapters.

HETEROLOGOUS GENE EXPRESSION IN E.COLI

METHODS AND PROTOCOLS

Humana Press Protein expression in a heterologous host is a cornerstone of biomedical research and of the biotechnology industry. Despite the advanced state of protein expression technology improvements are still needed. For example, membrane proteins constitute a significant percentage of the total cellular proteins but as a class are very difficult to overexpress, especially in a heterologous host. The ideal host would have the ability to express any protein, with relevant post-translational modifications, and be as easy to work with as E. coli. In Heterologous Gene Expression in E. coli: Methods and Protocols, expert scientists intimately familiar with the relevant techniques offer chapters that greatly expand the utility of

this expression host. The contributions in this detailed volume describe methods, for example, to successfully express proteins in E. coli that would otherwise form aggregates in this host, to add post-translational modifications, to incorporate non-standard amino acid residues or moieties into E. coli expressed proteins, to identify binding partners, and to express membrane proteins. Written in the highly successful Methods in Molecular BiologyTM format, chapters include introductions to their respective subjects, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Practical and cutting-edge, Heterologous Gene Expression in E. coli: Methods and Protocols seeks to familiarize the researcher with the myriad of E. coli expression strains available and move E. coli closer to that ideal of the perfect host.

RECOMBINANT DNA METHODOLOGY II

Academic Press The critically acclaimed laboratory standard for forty years, Methods in Enzymology is one of the most highly respected publications in the field of biochemistry. Since 1955, each volume has been eagerlyawaited, frequently consulted, and praised by researchers and reviewers alike. More than 250 volumes have been published (all of them still in print) and much of the material is relevant even today--truly an essential publication for researchers in all fields of life sciences. * Methods for: * DNA isolation and cloning * Synthesizing complementary DNA (cDNA) * Cleaving and manipulating DNA * Selecting useful reporter genes * Constructing vectors for cloning genes * Constructing expression vectors * Site-directed mutagenesis and gene disruption * Identifying and mapping genes * Transforming animal and plant cells * Sequencing DNA * Amplifying and manipulating DNA and PCR * Detecting DNA - protein interaction

YOUR GENES, YOUR CHOICES

EXPLORING THE ISSUES RAISED BY GENETIC RESEARCH

Program discusses the Human Genome Project, the science behind it, and the ethical, legal and social issues raised by the project.

GENETICS

A MOLECULAR APPROACH

International Thomson Publishing Services

INSTANT NOTES IN MOLECULAR BIOLOGY

Taylor & Francis Providing researchers and students with easy access to the key facts in a format specially designed for ease of use and rapid revision, this book in the acclaimed "Instant Notes" series covers studying cells and macromolecules, protein structure, nucleic acids composition properties and structures, and gene manipulation, and bacteriophage and viruses, tumor viruses and oncogenes, and applications. 220 illus.

CRISPR-CAS SYSTEMS

RNA-MEDIATED ADAPTIVE IMMUNITY IN BACTERIA AND ARCHAEA

Springer Science & Business Media CRISPR/Cas is a recently described defense system that protects bacteria and archaea against invasion by mobile genetic elements such as viruses and plasmids. A wide spectrum of distinct CRISPR/Cas systems has been identified in at least half of the available prokaryotic genomes. On-going structural and functional analyses have resulted in a far greater insight into the functions and possible applications of these systems, although many secrets remain to be discovered. In this book, experts summarize the state of the art in this exciting field.

DNA SEQUENCING

Oxford University Press This introduction to the methodology of DNA sequencing should be useful to those embarking on DNA sequencing for the first time. DNA sequencing is a very widely used technique, which has been automated to a certain degree.

SOIL MICROFLORA

When we are standing on the ground, we are really standing on roof-top of other world. Soil might look dirt but it is far more interestings; living in the soil or plant roots, bacteria, fungi, actinomycetes, algae, lichens, protozoan, nematodes etc. These exist in great diversity among various microorganisms and even with in a group of microorganisms, dependng on the habitat and environmental factors. Soils are formed from a stew of geological ingredients or parent material (rock and mineral), water and billions of organisms. The interaction between climate, parent of soil properties that are unique to the soil type and climate. It has been proposed that a micorbe should be considered as a new state symbol in the company of state animals, the state bird, state flower, state fish and state insect. The state microbe will be a living symbol of an organism that reflect the culture and heritage of people and will contribute mightily to the state s economy. The present Volume is compendium of wide ranging modern topics on soil microbiology. It is an assemblage of the up-to-date information of rapid advances and developments taking place in the field of soil microbilogy. The book is a unique compilation of 30 Chapters which discuss exhaustive studies on algae, fungi, lichens, mycorrhizae, bacteria, virus and other microroorganisms. This book will be a mile-stone in the field of soil microbiology, because it will open a new vista in the field of soil microbiology and its applied aspects. The authors have done a tremendous job of synthesizing all the recent and up-to-date information. The present book aimed to emphasise on diverse aspects of soil microflora. The various information incorporated in the book by authors who are internationally acknowledged experts in the microbiology and are the eminent scientists of the Country, they have made sincere efforts to make their papers as recent and comprehensive as possible. The book has been framed with the intention of providing a sufficient depth of the subject to satisfy the needs at a level which will be comprehensive and interesting. The book will be useful to the students,

theacher, scientists and researchers from the different branches of soil microbiology. It is hoped that the will fully meet the objectives of catering the needs of the students and researchers in the fields of Botany, Microbiology, Soil Science, Agricultural Science and Forestry of all Indian Universities. Contents Chapter 1: Soil Microflora: A General Aspect by Mukesh Kumar, Anjali Khare and Rajan Kumar Gupta; Chapter 2: Distribution of Cyanobacteria in Coastal Sandy Soils and Alumina Mine Waste Soils of Orissa by S P Adhikary and Pramila Tripathy; Chapter 3: Significance of Soil Microorganisms in Sustainable Agriculture by Shalini Singh, Rachana Srivastava and Y V Singh; Chapter 4: Impact of Herbicides on Cyanobacterial Flora of Rice Fields by Mihir Kumar Das; Chapter 5: Mycorrhizae: Benefits and Practical Applications in Forest Management by K P Singh, P Srinivas and Bijendra Kumar; Chapter 6: Role of Earthworms in Soil Biology and Crop Production by Y V Singh, Shalini Singh and Rachana Srivastava; Chapter 7: Diversity of Soil Lichens in India by Roshni Khare, D K Upreti, Sanjeeva Nayaka and R K Gupta; Chapter 8: Bacterial and Fungal Diversity in Alkali Affected Soil by Kaushal Pratapo Singh, Dheeraj Mohan and Seema Bhadauria; Chapter 9: Frankia-Actinorhizal Symbiosis: An Overview by Amrita Srivastava, Anju Singh, Satya Shila Singh and Arun Kumar Mishra; Chapter 10: Cyanobacterial Surfactants Enhance the Fertility and Stability of Tropical Soils by Usha Pandey; Chapter 11: Soil Denitrifying Bacteria and Environmental Factros Regulating Denitrification in Soil by Paromita Ghosh; Chapter 12: Molecular Mechanism of Nitrogen Fixation in Rhizobium by Ravi Rajhans and Rajan Kumar Gupta; Chapter 13: Role of Soil Microorganisms in Nutrition and Health of Higher Plants by Dheeraj Mohan, Preetesh Kumari, Kaushal Pratap Singh and Anurahda Chauhan; Chapter 14: Soil Microflora and their Impact on Soil Health by Narendra Kumar, Pawan Kumar and Surendra Singh; Chapter 15: Soil Microbes and their Importance by Anjana K Vala and Anita Suresh Kumar; Chapter 16: Freeze Recovery and Nitrogenase Activity in Antarctic Cyanobacterium Nostoc Commune by Rajan Kumar Gupta and Mukesh Kumar; Chapter 17: Seasonal Variation in Root Colonization and Rhizosphere Soil Spore Population of Mycorrhiza Species in Various Plants Growing in Alkali Soil by Kaushal Pratap Singh, Dheeraj Mohan, Rekha Yadav, Seema Bhadauria and Chatar Singh; Chapter 18: Nitrogen Fixing Soil Microflora by Yashveer Singh; Chapter 19: Agrobacterium: A Natural Genetic Engineer by Ashutosh Bahuguna, Madhuri K Lily and Koushalya Dangwal; Chapter 20: Association of Vesicular Arbuscular Mycorrhizas with Ornamental Plant Petunia by Deepak Vyas Deepali Bilthare, Pramod Kumar Richhariya and Rajan Kumar Gupta; Chapter 21: Cyanobacterial Biodiversity in the Soils of Kumaon Region by Anjali Khare, Mukesh Kumar and Promod Kumar; Chapter 22: Ecological Diversities in Soil Microorganisms by P B Tiwary; Chapter 23: Biocontrol of Leaf Rot of Pan Caused by Phytophthora Parasitica var Piperina by Native Fungal Species by Deepak Vyas, Rajesh Yadav and Rajan Kumar Gupta; Chapter 24: Azotobacter: Recent Advances by Sangeeta Paul and Bishwajeet Paul; Chapter 25: Prospects and Potential of Azolla-Anabaena System by G Abraham, Sudheer Saxena and Dolly Wattal Dhar; Chapter 26: Ecological and Biotechnological Relevance of Cyanobacteria by Kaushal Kishore Choudhary; Chapter 27: Usse of Azolla as Cheap and Sustainable Source of Feed and Other Utililties for Future by G Abraham, Raghubir Shah and Dolly Wattal Dhar; Chapter 28: Soil Micro-diversity and its Importacne in Agriculture by G K Sharma; Chapter 29: Soil Microflora

of Rohilkhand Division by Iqbal Habib and U K Chaturvedi; Chapter 30: Role of Cyanobacteria in Amelioration of Soil by Pramita Jaiswal

GENE CLONING

Garland Science The ability to successfully clone genes underlies the majority of our knowledge in molecular and cellular biology. Gene Cloning introduces the diverse array of techniques available to clone genes and how they can be used effectively both in the research laboratory, to gain knowledge about the gene, and for use in biotechnology, medicine, the pharmaceutical industry, and agriculture. It shows how cloning genes is an integral part of genomics and underlines its relevance in the post-genomic age, as a tool required to test predictions of gene regulation and function made through bioinformatics. Applications of gene cloning in medicine, both for diagnosis and treatment, and in the pharmaceutical industry and agriculture, are also covered in the book. Gene Cloning takes a fresh approach to teaching molecular and cellular biology and will be a valuable resource to both undergraduates and lecturers of biological and biomedical science courses.

FUNDAMENTAL MOLECULAR BIOLOGY, 2ND EDITION

Wiley Global Education Perfect for a single term on Molecular Biology and more accessible to beginning students in the field than its encyclopedic counterparts, Fundamental Molecular Biology provides a distillation of the essential concepts of molecular biology, and is supported by current examples, experimental evidence, an outstanding art program, multimedia support and a solid pedagogical framework. The text has been praised both for its balanced and solid coverage of traditional topics, and for its broad coverage of RNA structure and function, epigenetics and medical molecular biology.