

Biotechnology And Genetic Engineering

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The Recombinant University - Doogab Yi 2015-03-23

The advent of recombinant DNA technology in the 1970s was a key moment in the history of both biotechnology and the commercialization of academic research. Doogab Yi's *The Recombinant University* draws us deeply into the academic community in the San Francisco Bay Area, where the technology was developed and adopted as the first major commercial technology for genetic engineering. In doing so, it reveals how research patronage, market forces, and legal developments from the late 1960s through the early 1980s influenced the evolution of the technology and reshaped the moral and scientific life of biomedical researchers. Bay Area scientists, university administrators, and government officials were fascinated by and increasingly engaged in the economic and political opportunities associated with the privatization of academic research. Yi uncovers how the attempts made by Stanford scientists and administrators to demonstrate the relevance of academic research were increasingly mediated by capitalistic conceptions of knowledge, medical innovation, and the public interest. Their interventions resulted in legal shifts and moral realignments that encouraged the privatization of academic research for public benefit. *The Recombinant University* brings to life the hybrid origin story of biotechnology and the ways the academic culture of science has changed in tandem with the early commercialization of recombinant DNA technology.

Beyond Biotechnology - Craig Holdrege 2010-09-12

In 2001 the Human Genome Project announced that it had successfully mapped the entire genetic content of human DNA. Scientists, politicians, theologians, and pundits speculated about what would follow, conjuring everything from nightmare scenarios of state-controlled eugenics to the hope of engineering disease-resistant newborns. As with debates surrounding stem-cell research, the seemingly endless possibilities of genetic engineering will continue to influence public opinion and policy into the foreseeable future. *Beyond Biotechnology: The Barren Promise of Genetic Engineering* distinguishes between the hype and reality of this technology and explains the nuanced and delicate relationship between science and nature. Authors Craig Holdrege and Steve Talbott evaluate the current state of genetic science and examine its potential applications, particularly in agriculture and medicine, as well as the possible dangers. The authors show how the popular view of genetics does not include an understanding of the ways in which genes actually work together in organisms. Simplistic and reductionist views of genes lead to unrealistic expectations and, ultimately, disappointment in the results that genetic engineering actually delivers. The authors explore new developments in genetics, from the discovery of "non-Darwinian" adaptative mutations in bacteria to evidence that suggests that organisms are far more than mere collections of genetically driven mechanisms. While examining these issues, the authors also answer vital questions that get to the essence of genetic interaction with human biology: Does DNA "manage" an organism any more than the organism manages its DNA? Should genetically engineered products be labeled as such? Do the methods of the genetic engineer resemble the centuries-old practices of animal husbandry? Written for lay readers, *Beyond Biotechnology* is an accessible introduction to the complicated issues of genetic engineering and its potential applications. In the unexplored space between nature and laboratory, a new science is waiting to emerge. Technology-based social and environmental solutions will remain tenuous and at risk of reversal as long as our culture is alienated from the plants and animals on which all life depends.

Plant Biotechnology - Adrian Slater 2008-03-27

Plant Biotechnology presents a balanced, objective exploration of the technology behind genetic manipulation, and its application to the growth and cultivation of plants. The book describes the techniques underpinning genetic manipulation and makes extensive use of case studies to illustrate how this influential tool is used in practice.

Biotechnology and Genetic Engineering - Kathy Wilson Peacock 2010

Explains why biotechnology is a relevant and volatile issues. Begins with a history of biotechnology and its effect on agriculture, medicine, and the environment. Equal space is devoted to discussing the efforts of human-rights advocates, animal-rights advocates, and environmentalists to create definitive governmental regulations for this budding industry.

Genetic Engineering and Biotechnology - Yves Tourte 2019-03-29

Introductory text for students of genetics is general and the students of agronomy as the book gives numerous agronomic applications.

An Introduction to Genetic Engineering - Desmond S. T. Nicholl 2002-02-07

The author presents a basic introduction to the world of genetic engineering. Copyright © Libri GmbH. All rights reserved.

Molecular Biology and Genetic Engineering - P. K. Gupta 2008

PART I Molecular Biology 1. Molecular Biology and Genetic Engineering Definition, History and Scope 2. Chemistry of the Cell: 1. Micromolecules (Sugars, Fatty Acids, Amino Acids, Nucleotides and Lipids) Sugars (Carbohydrates) 3. Chemistry of the Cell . 2. Macromolecules (Nucleic Acids; Proteins and Polysaccharides) Covalent and Weak Non-covalent Bonds 4. Chemistry of the Gene: Synthesis, Modification and Repair of DNA DNA Replication: General Features 5. Organisation of Genetic Material 1. Packaging of DNA as Nucleosomes in Eukaryotes Techniques Leading to Nucleosome Discovery 6. Organization of Genetic Material 2. Repetitive and Unique DNA Sequences 7. Organization of Genetic Material: 3. Split Genes, Overlapping Genes, Pseudogenes and Cryptic Genes Split Genes or .Interrupted Genes 8. Multigene Families in Eukaryotes 9. Organization of Mitochondrial and Chloroplast Genomes 10. The Genetic Code 11. Protein Synthesis Apparatus Ribosome, Transfer RNA and Aminoacyl-tRNA Synthetases Ribosome 12. Expression of Gene . Protein Synthesis 1. Transcription in Prokaryotes and Eukaryotes 13. Expression of Gene: Protein Synthesis: 2. RNA Processing (RNA Splicing, RNA Editing and Ribozymes) Polyadenylation of mRNA in Prokaryotes Addition of Cap (m7G) and Tail (Poly A) for mRNA in Eukaryotes 14. Expression of Gene: Protein Synthesis: 3. Synthesis and Transport of Proteins (Prokaryotes and Eukaryotes) Formation of Aminoacyl tRNA 15. Regulation of Gene Expression: 1. Operon Circuits in Bacteria and Other Prokaryotes 16. Regulation of Gene Expression . 2. Circuits for Lytic Cycle and Lysogeny in Bacteriophages 17. Regulation of Gene Expression 3. A Variety of Mechanisms in Eukaryotes (Including Cell Receptors and Cell Signalling) PART II Genetic Engineering 18. Recombinant DNA and Gene Cloning 1. Cloning and Expression Vectors 19. Recombinant DNA and Gene Cloning 2. Chimeric DNA, Molecular Probes and Gene Libraries 20. Polymerase Chain Reaction (PCR) and Gene Amplification 21. Isolation, Sequencing and Synthesis of Genes 22. Proteins: Separation, Purification and Identification 23. Immunotechnology 1. B-Cells, Antibodies, Interferons and Vaccines 24. Immunotechnology 2. T-Cell Receptors and MHC Restriction 25. Immunotechnology 3. Hybridoma and Monoclonal Antibodies (mAbs) Hybridoma Technology and the Production of Monoclonal Antibodies 26. Transfection Methods and Transgenic Animals 27. Animal and

Human Genomics: Molecular Maps and Genome Sequences Molecular Markers 28. Biotechnology in Medicine: 1. Vaccines, Diagnostics and Forensics Animal and Human Health Care 29. Biotechnology in Medicine 2. Gene Therapy Human Diseases Targeted for Gene Therapy Vectors and Other Delivery Systems for Gene Therapy 30. Biotechnology in Medicine: 3. Pharmacogenetics / Pharmacogenomics and Personalized Medicine Pharmacogenetics and Personalized 31. Plant Cell and Tissue Culture' Production and Uses of Haploids 32. Gene Transfer Methods in Plants 33. Transgenic Plants . Genetically Modified (GM) Crops and Floricultural Plants 34. Plant Genomics: 35. Genetically Engineered Microbes (GEMs) and Microbial Genomics References

PLANT BIOTECHNOLOGY AND GENETIC ENGINEERING - C.M. Govil, Ashok Aggarwal and Jitender Sharma 2017-08-01

The book is primarily designed for B.Sc. and M.Sc. students of Biotechnology, Botany, Plant Biotechnology, Plant Molecular Biology, Molecular Biology and Genetic Engineering as well as for those pursuing B.Tech. and M.Tech. in Biotechnology. It will also be of immense value to the research scholars and academics in the field. Though ample literature is available on this subject, still a textbook combining biotechnology and genetic engineering has always been in demand by the readers. Hence, with this objective, the authors have presented this compact yet comprehensive text to the students and the teaching fraternity, providing clear and concise understanding of the principles of biotechnology and genetic engineering. It has a special focus on tissue culture, protoplasm isolation and fusion, and transgenic plants in addition to the basic concepts and techniques of the subject. It gives sound knowledge of gene structure, manipulation and plant transformation vectors. KEY FEATURES • Combines knowledge of Plant Biotechnology and Genetic Engineering in a single volume. • Text interspersed with illustrative examples. • Graded questions and pedagogy, Multiple choice questions, Fill in the blanks, True-false, Short answer questions, Long answer questions and discussion problems in each chapter. • Clear, self-explanatory, and labelled diagrams. • Solutions to all MCQs in the respective chapters.

Rice Biotechnology and Genetic Engineering - Paul Christou 1994-09-27

Rice represents a unique opportunity for improvement through genetic engineering. This new book provides a detailed review of past and present developments in the genetic engineering of rice, as well as an informed examination of current genetic engineering material and methods.

Universities Press Dictionary Of Biotechnology And Genetic Engineering - Sharon D. Cosloy 2003

Revised And Expanded By More Than 300 New Terms, The Universities Press Dictionary Of Biotechnology And Genetic Engineering, New Edition Is An Essential Reference Tool On Modern Biotechnology And Genetic Engineering That Lucidly Articulates The Flood Of Advances And Discoveries In These Areas. In Addition To 100 Black-And-White Line Drawings, The Dictionary Includes Four Helpful Appendixes. The Universities Press Dictionary Of Biotechnology And Genetic Engineering, New Edition Will Benefit Students, Teachers, Physicians, Science And Technical Writers, Or Others Looking For A Concise Source Of Current Information On These Interdisciplinary Fields.

The Recombinant University - Doogab Yi 2015-03-23

This title examines the history of biotechnology when it was new, especially when synonymous with recombinant DNA technology. It focuses on the academic community in the San Francisco Bay Area where recombinant DNA technology was developed and adopted as the first major commercial technology for genetic engineering at Stanford in the 1970s. The book argues that biotechnology was initially a hybrid creation of academic and commercial institutions held together by the assumption of a positive relationship between private ownership and the public interest.

Genetic Engineering - Verma P.S. & Agarwal V.K. 2009-07

The book Genetic Engineering although developed for B.Sc., students of all Indian Universities is also useful to students of M.Sc. BE/B.Tech and Medical entrance exams. The matter is presented in simple, lucid language and student friendly style. Well illustrated pictures support to clarify the text. Glossary and Index at the end of the book helps students for easy reference and understanding.

Plunkett's Biotech & Genetics Industry Almanac 2006: The Only Complete Reference to the Business of Biotechnology and Genetic Engineering - Plunkett Research, Ltd 2005

Plunkett's Biotech & Genetics Industry Almanac is a complete reference guide to the business side of

biotechnology, genetics, proteomics and related services. This new book contains complete profiles of the leading biotech companies, in-depth chapters on trends in genetics, technologies, statistics and finances, a handy glossary and thorough indexes. Plunkett's Biotech & Genetics Industry Almanac, our easy-to-understand reference to the biotech and genetics industry, is an absolutely vital addition to your office. For the first time, in one carefully-researched volume, you'll get all of the data you need. Topics include: A Short History of Biotechnology; The State of the Biotechnology Industry Today; Biotechnology funding and investments; Patents; Biotech activities in Singapore and China; FDA; Gene Therapies; Personalized Medicine; Systems Biology; Drug Development; Clinical Trials; Controversy over Drug Prices; Stem Cells Research; Therapeutic Cloning; Regenerative Medicine Nanotechnology; Agricultural Biotechnology; Drug Delivery Systems; HapMap Project; BioShield; Ethical Issues. The book also includes complete profiles on nearly 450 Biotech & Genetics companies, our own unique list of companies that are the leaders in biotechnology. These are the largest, most successful corporations in all facets of this exploding business. All of the corporate profile information is indexed and cross-indexed, including contact names, addresses, Internet addresses, fax numbers, toll-free numbers, plus growth and hiring plans, finances, research, marketing, technology, acquisitions and much more for each firm! Purchasers of either the book or PDF version can request a free copy of the company profiles database on CD-ROM, enabling export of contact names, addresses and more.

Techniques in Genetic Engineering - Isil Aksan Kurnaz 2015-05-08

Although designed for undergraduates with an interest in molecular biology, biotechnology, and bioengineering, this book—Techniques in Genetic Engineering—IS NOT: a laboratory manual; nor is it a textbook on molecular biology or biochemistry. There is some basic information in the appendices about core concepts such as DNA, RNA, protein, genes, and genomes; however, in general it is assumed that the reader has a background on these key issues. Techniques in Genetic Engineering briefly introduces some common genetic engineering techniques and focuses on how to approach different real-life problems using a combination of these key issues. Although not an exhaustive review of these techniques, basic information includes core concepts such as DNA, RNA, protein, genes, and genomes. It is assumed that the reader has background on these key issues. The book provides sufficient background and future perspectives for the readers to develop their own experimental strategies and innovations. This easy-to-follow book presents not only the theoretical background of molecular techniques, but also provides case study examples, with some sample solutions. The book covers basic molecular cloning procedures; genetic modification of cells, including stem cells; as well as multicellular organisms, using problem-based case study examples.

Plant Biotechnology and Genetics - C. Neal Stewart, Jr. 2016-03-21

Focused on basics and processes, this textbook teaches plant biology and agriculture applications with summary and discussion questions in each chapter. Updates each chapter to reflect advances / changes since the first edition, for example: new biotechnology tools and advances, genomics and systems biology, intellectual property issues on DNA and patents, discussion of synthetic biology tools Features autobiographical essays from eminent scientists, providing insight into plant biotechnology and careers Has a companion website with color images from the book and PowerPoint slides Links with author's own website that contains teaching slides and graphics for professors and students: <http://bit.ly/2CI3mjp>

Pocket Guide to Biotechnology and Genetic Engineering - Rolf D. Schmid 2003-03-14

Biotechnology and genetic engineering are the key technologies of the 21st century. They allow the findings in cell biology and genetics, biochemistry and microbiology, biochemical engineering and bioinformatics to be applied to health care, agriculture, food production, environmental protection and alternative production methods for chemicals. This handy book provides broad coverage of the relevant facts on products, methods and applications. It discusses the opportunities and risks involved in these new technologies, combined with ethical, economic and safety considerations. Instructive and attractive color illustrations as well as an excellent didactic approach throughout make this a perfect introduction to the field -- for professionals and students alike.

Genetic Engineering and Biotechnology - Rosanna Mann 2018-02-07

Genetic engineering has been studied for a number of years for understanding the formation of cells and cell structures as well as the processes involved in evolution. The scientific advancements in the field of

genetic engineering and biotechnology have resulted in the manipulation of genes of organisms as well as plants to enhance their traits for commercial purposes. Protein expression and DNA sequencing are key topics of research in this field. This book on genetic engineering and biotechnology discusses the theories and practices related to genes and genetic modification. While understanding the long-term perspectives of the topics, the book makes an effort in highlighting their impact as a modern tool for the growth of the discipline. This book is an essential guide for both academicians and those who wish to pursue this discipline further.

Plant Biotechnology: The Genetic Manipulation of Plants - Ava Gibson 2021-11-16

Plant biotechnology refers to the application of various principles and methods of life sciences to create improved varieties of plants. Cross breeding and mutation breeding are the most widely used practices studied under it. Modern plant biotechnology can be classified into two major fields, namely, plant tissue culture and recombinant DNA technology. In plant tissue culture, the excised part of a living plant, also known as explant, is grown in a sterile plant tissue culture medium. The joining together of DNA molecules from two different species takes place within recombinant DNA technology. Some of the other techniques studied under it are micropropagation and genetic engineering. This book presents the complex subject of plant biotechnology in the most comprehensible and easy to understand language. Different approaches, evaluations and methodologies and advanced studies on plant biotechnology have been included herein. This book will serve as a source of knowledge to a wide spectrum of readers

Introduction to Biotechnology and Genetic Engineering - A. J. Nair 2008

Biotechnology is a fast-developing 21st century technology and interdisciplinary science that has already made an impact on commercial and non-commercial aspects of human life, such as stem cell research, cloning, pharmaceuticals, food and agriculture, bioenergetics, and information technology. This book, appropriate for novices to the biotechnology / genetics fields and also for engineering and biology students, covers all of the fundamental principles of these modern topics. It has been written in a very simple manner for self-study and to explain the concepts and techniques in detail. In addition to the comprehensive coverage of the standard topics, such as cell growth and development, genetic principles (mapping, DNA, etc), protein structure, plant and animal cell cultures, and applications, the book includes up-to-date discussions of modern topics, e.g., medical advances, quality control, stem cell technology, genetic manipulation, patents, bioethics, and a review of mathematics. The accompanying CD-ROM provides simulations, figures, white papers, related Web sites and numerous other resources.

Plant Biotechnology, The Genetic Manipulation Of Plants, 2/E - Adrian Slater 2008-09

Principles of Biochemistry and Genetic Engineering - Dr. A.J. Nair 2010-12

Biotechnology and Genetic Engineering for Development in the Islamic World - 'Abd al-Salām Majālī 2004

Glossary of Biotechnology and Genetic Engineering - Abdelouahhab Zaid 1999

An up-to-date list of terms currently in use in biotechnology, genetic engineering and allied fields. The terms in the glossary have been selected from books, dictionaries, journals and abstracts. Terms are included that are important for FAO's intergovernmental activities, especially in the areas of plant and animal genetic resources, food quality and plant protection.

The Facts on File Dictionary of Biotechnology and Genetic Engineering - Mark L. Steinberg 2006

Dictionary covering the basic vocabulary of modern biotechnology and genetic engineering.

Genetic Engineering and Biotechnology - Yves Tourte 2019-04-17

Introductory text for students of genetics is general and the students of agronomy as the book gives numerous agronomic applications.

Biotechnology and Genetic Engineering - Facts On File, Incorporated 2008

Provides an overview, chronology of events, glossary and annotated bibliography on biotechnology and genetic engineering.

Genetically Engineered Crops - National Academies of Sciences, Engineering, and Medicine 2017-01-28

Genetically engineered (GE) crops were first introduced commercially in the 1990s. After two decades of

production, some groups and individuals remain critical of the technology based on their concerns about possible adverse effects on human health, the environment, and ethical considerations. At the same time, others are concerned that the technology is not reaching its potential to improve human health and the environment because of stringent regulations and reduced public funding to develop products offering more benefits to society. While the debate about these and other questions related to the genetic engineering techniques of the first 20 years goes on, emerging genetic-engineering technologies are adding new complexities to the conversation. Genetically Engineered Crops builds on previous related Academies reports published between 1987 and 2010 by undertaking a retrospective examination of the purported positive and adverse effects of GE crops and to anticipate what emerging genetic-engineering technologies hold for the future. This report indicates where there are uncertainties about the economic, agronomic, health, safety, or other impacts of GE crops and food, and makes recommendations to fill gaps in safety assessments, increase regulatory clarity, and improve innovations in and access to GE technology.

Genetic Engineering - Fouad Sabry 2022-10-05

What Is Genetic Engineering The alteration and manipulation of the genes in an organism via the use of technology is referred to as genetic engineering and is also known as genetic modification or genetic manipulation. It is a collection of techniques that may alter the genetic make-up of cells, including the transfer of genes both inside and across species, with the goal of producing creatures that are superior to or unique from those that already exist. Either by isolating and copying the genetic material of interest using recombinant DNA techniques or by chemically synthesising the DNA, new DNA may be created. Recombinant DNA methods can be found here. In most cases, a construct is built and then used for the purpose of inserting this DNA into the host organism. Paul Berg created the first recombinant DNA molecule in 1972 by mixing the DNA of two different viruses, namely SV40 from monkeys and lambda from lambda viruses. The method may also be used to delete genes, often known as "knocking out" genes, in addition to introducing new genes. It is possible to insert the new DNA in a random pattern, or it may be targeted to a particular region of the genome. How You Will Benefit (I) Insights, and validations about the following topics: Chapter 1: Genetic engineering Chapter 2: Biotechnology Chapter 3: Genetically modified maize Chapter 4: Genetically modified organism Chapter 5: Agricultural biotechnology Chapter 6: Genetically modified food Chapter 7: Modifications (genetics) Chapter 8: Genetically modified crops Chapter 9: Transgene Chapter 10: Genetically modified food controversies Chapter 11: Genetically modified plant Chapter 12: Plant genetics Chapter 13: Genetically modified animal Chapter 14: The Non-GMO Project Chapter 15: Genetically modified bacteria Chapter 16: Genetically modified soybean Chapter 17: Genetically modified canola Chapter 18: Genetically modified tomato Chapter 19: Regulation of genetic engineering Chapter 20: History of genetic engineering Chapter 21: Genetic engineering techniques (II) Answering the public top questions about genetic engineering. (III) Real world examples for the usage of genetic engineering in many fields. (IV) 17 appendices to explain, briefly, 266 emerging technologies in each industry to have 360-degree full understanding of genetic engineering' technologies. Who This Book Is For Professionals, undergraduate and graduate students, enthusiasts, hobbyists, and those who want to go beyond basic knowledge or information for any kind of genetic engineering.

Genetic Engineering - Harry LeVine 2006

Introduces major concepts in the modification of genes in plants, animals, and humans, including coverage of such topics as DNA and the law, genetically modified foods, and the stem-cell debate.

Intervention - Denise Caruso 2006

INTERVENTION challenges two of the most sacred tenets of modern society, innovation and technology, from the perspective of the unique risks they present. Using genetic engineering as its model, it paints a vivid picture of the scientific uncertainties that biotech risk evaluations dismiss or ignore, and lays bare the power and money conflicts between academia, industry and regulators that have sped these risky innovations to the market. Intervention champions an alternative method for assessing the risks of technology, developed by the world's top risk experts, that can eliminate such conflicts, help regain public trust in science and government, and drive research and development toward more useful, safer products.

Genetic Engineering in Agriculture - Miguel A. Altieri 2004

Looks at the costs and benefits of genetically engineered crops.

Dinner at the New Gene Café - Bill Lambrecht 2007-04-01

Biotech companies are racing to alter the genetic building blocks of the world's food. In the United States, the primary venue for this quiet revolution, the acreage of genetically modified crops has soared from zero to 70 million acres since 1996. More than half of America's processed grocery products-from cornflakes to granola bars to diet drinks-contain gene-altered ingredients. But the U.S., unlike Europe and other democratic nations, does not require labeling of modified food. Dinner at the New Gene Café expertly lays out the battle lines of the impending collision between a powerful but unproved technology and a gathering resistance from people worried about the safety of genetic change.

Biotechnology and Genetic Engineering Reviews - Stephen E. Harding 2004-01

Safety of Genetically Engineered Foods - National Research Council 2004-07-08

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.

Biotechnology and Genetic Engineering - Lisa Yount 2004-01

Provides background on the controversial technologies and the social, political, ethical, and legal issues they raise; offers a guide to further research; and includes material on biotechnology as a business, stem cells, and bioterrorism.

Biotechnology and Genetic Engineering Reviews - Stephen E. Harding 2008-12-01

A well-established hardcover review series with one new volume published each year. Each volume contains approximately 15 original, major review articles covering important developments in industrial, agricultural, and medical applications of biotechnology (wide sense), with particular emphasis on the genetic manipulation of the organisms concerned.

Biotechnology: Genetic engineering, mutagenesis, separation technology - Jack G. Chirikjian 1995

Vol. II The work presented in these two volumes is the collaborative effort of over twenty undergraduate science faculty, whose common goal was to develop a text of unique and flexible laboratory activities focusing on the theory and practice of biotechnology for undergraduate students. The books are designed to provide flexibility for easy integration into any course in the life sciences with an experimental emphasis.

Biotechnology & Genetic Engineering Reviews - Russell, Gordon 1988

Applied Molecular Biotechnology - Muhammad Sarwar Khan 2019-12-14

Applied Molecular Biotechnology: The Next Generation of Genetic Engineering explains state-of-the-art advances in the rapidly developing area of molecular biotechnology, the technology of the new millennium. Comprised of chapters authored by leading experts in their respective fields, this authoritative reference text: Highlights the latest omics-based tools and approaches used in modern biotechnology Explains how various molecular biology technologies can be used to develop transgenic plants and how those plants can meet growing food and plant-derived product demands Discusses chloroplast gene expression systems, mitochondrial omics, plant functional genomics, and whole-genome resequencing for crop improvement Explores plant-microbe and plant-insect interactions affecting plant protection and productivity Covers animal models, pharmacogenomics, human tissue banking, and the molecular diagnosis of diseases such as cervical cancer, obesity, and diabetes Examines the molecular aspects of viral diseases, production of industrial commodities using viral biotechnology, and biotechnological uses of magnetic nanoparticles Describes the use of biotechnology in the food, chemical, pharmaceutical, environmental conservation, and renewable energy sectors Applied Molecular Biotechnology: The Next Generation of Genetic Engineering serves as a springboard for new discoveries in molecular biology and its applications. Thus, this book is an invaluable resource for students and researchers of molecular biotechnology.

Plant Genetic Engineering - A.D. Arencibia 2000-02-14

Plant biotechnology offers important opportunities for agriculture, horticulture, and the pharmaceutical and food industry by generating transgenic varieties with altered properties. This is likely to change farming practice and reduce the potential negative impact of plant production on the environment. This volume shows the worldwide advances and potential benefits of plant genetic engineering focusing on the third millennium. The authors discuss the production of transgenic plants resistant to biotic and abiotic stress, the improvement of plant qualities, the use of transgenic plants as bioreactors, and the use of plant genomics for genetic improvement and gene cloning. Unique to this book is the integrative point of view taken between plant genetic engineering and socioeconomic and environmental issues. Considerations of regulatory processes to release genetically modified plants, as well as the public acceptance of the transgenic plants are also discussed. This book will be welcomed by biotechnologists, researchers and students alike working in the biological sciences. It should also prove useful to everyone dedicated to the study of the socioeconomic and environmental impact of the new technologies, while providing recent scientific information on the progress and perspectives of the production of genetically modified plants. The work is dedicated to Professor Marc van Montagu.