



Plant Biotechnology: The Genetic Manipulation of Plants.

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Applications is an extremely well-written, easy to read, and highly informative book that discusses the importance of metagenomics and what it brings not only to molecular biology, but also to fields such as microbiology, ecology, evolution, and medicine.

This book is very concise, yet contains 212 extremely informative pages, which highlight the methods associated with metagenomics, the research that has used this molecular approach, and how to find meaning in the multitude of sequences obtained through using metagenomics. It also shows how allowing these sequences to be accessed publicly advances science and benefits many academic fields. This volume is recommended for scientists in any field who are interested in learning more about metagenomics, how to make sense of what this term really means, and how they can benefit from this newly formed and extremely promising field. Finally, this is a book that takes a seemingly complex and convoluted subject, organizes it, and turns it into a volume that is an enjoyable and educational read.

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MICROBIOLOGY

ANTIVIRAL RESEARCH: STRATEGIES IN ANTIVIRAL DRUG DISCOVERY.

Edited by Robert L. LaFemina. Washington (DC): ASM Press. \$169.95. xiii + 373 p. + 29 pl.; ill.; index. ISBN: 978-1-55581-439-7. 2009.

This book contains 20 articles that must have been written in (or before) 2008. Its content is rather comprehensive. It covers antiviral drug approaches toward a number of important human viral pathogens including HIV (human immunodeficiency virus), HSV (herpes simplex virus), HCV (hepatitis C virus), SARS (severe acute respiratory syndrome), coronavirus, influenza virus, pox- and flaviviruses, with a few additional chapters on microbicides, phenotypic susceptibility assays for HIV, metabolism of antiviral nucleosides and nucleotides, interferon response, toll-like receptors, and new HSV replication targets. HIV and HCV are particularly well covered, but several other viruses such as polyoma-, papilloma-, adeno-, picorna-, and hemorrhagic fever (other than the flavi-) viruses are hardly touched upon. And so are the herpesviruses other than HSV—i.e., varicella-zoster virus (VZV), cytomegalovirus (CMV), Epstein-Barr virus (EBV) and human herpesviruses type

6, 7, and 8 (VZV and CMV inhibitors are mentioned in Chapter 1 on antiherpesviral DNA polymerase inhibitors). The clinical aspects of HCV infection and treatment are well covered, but a similar chapter on hepatitis B virus (HBV), yet more prevalent than HCV, is lacking. HIV inhibitors targeted at either viral entry, reverse transcriptase, integrase, or protease are well described, but a synoptic view on the combination therapy with HIV inhibitors in clinical practice is not provided.

From an aesthetic viewpoint, it is regrettable that the nice Chapter 10, Antiviral Targets in Orthopoxviruses, is interrupted (at least in the copy that I received) between pages 178 and 179 by 29 color plates, which should have better fitted in the chapters to which they belong or at the end of the book. All of the chapters have been carefully edited, are extensively referenced, and provide a comprehensive account on the topics they are discussing. The book concludes with an afterword with comments for further directions (although these comments have been apparently written independently from the regular chapters). Such an epilogue sets a laudable example for future volumes of this kind.

In conclusion, the book offers a comprehensive snapshot on important antiviral drug strategies followed in the last decade for most, but not all, important viral pathogens, including HIV, HCV, HSV, influenza, SARS, pox- and flaviviruses. It should be of particular interest to those (experienced) readers who want to acquire recent information on the current state of the art in the antiviral drug research field.

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BOTANY

PLANT BIOTECHNOLOGY: THE GENETIC MANIPULATION OF PLANTS. *Second Edition.*

By Adrian Slater, Nigel W. Scott, and Mark R. Fowler. Oxford and New York: Oxford University Press. \$49.95 (paper). xxiii + 376 p.; ill.; index. ISBN: 978-0-19-928261-6. 2008.

Plant biotechnology and genetic engineering are rapid growing branches in the plant sciences. Our knowledge of plant biology is accelerating as new molecular and genomic tools that enable the discovery of novel regulatory and structural genes that control or influence impor-

tant agronomic traits are created. Compared to conventional breeding approaches, modern plant biotechnologies offer numerous significant benefits such as the production of a range of improved genetically modified (GM) crop varieties that could bring benefits to both the developed and developing world.

The book under review is an update of a previous edition that was published in 2003. It is an interesting and timely volume that will appeal to a wide variety of biological readers who are interested in theoretical and applied plant biotechnology, recombinant DNA technologies, and plant molecular genetics, including plant genetic manipulation and transformation. It is informative, and a textbook of appropriate price and choice to which serious undergraduate and postgraduate students, and researchers of the subject could turn for learning and understanding.

The present edition comprises 13 chapters. The first four chapters provide a comprehensive introduction to plant genomes, principles of micropropagation by plant cell and tissue cultures required to regenerate transgenic plants, and technical aspects of plant transformation and genetic manipulation. The latter subject is further discussed in subsequent chapters that highlight the biotechnological strategies used in case studies of important GM crops transformed with desirable agronomic traits. Four chapters dealt in depth with the so-called first generation of plant biotechnology, including herbicide tolerance as the predominant GM trait (Chapter 5), and resistance to pests with focus on using the bacterial *Bt* gene in corn and cotton (Chapter 6) and to viral diseases (Chapters 7 and 8) that reduce reliance on chemical sprays. The next two chapters focus on up-to-date achievements in tolerance to diverse range of abiotic stresses (Chapter 9), and traits to improve the productivity and yield quality of engineered crops (Chapter 10). The following chapter discusses the concepts and the potential of molecular farming and its contribution to large-scale production of new and selective industrial and pharmaceutical plant-based bioproducts, including carbohydrates, oils, and proteins such as enzymes, antibodies, and vaccines. Challenges that face the GM technologies as public concerns about GM food safety, ethical issues, and regulation of GM crops and products, in addition to some related future prospects, are all addressed in the final two chapters.

The book is clearly written with two-color text design and valuable marginal key points. The chapters are well illustrated with tables, case studies, and descriptive boxes of advanced con-

cepts. The occasional figures are simply drawn but still informative. The chapters conclude with a "further reading" list of Web links and references that are categorized according to the discussed subject in its corresponding chapter. The suggested references are also hyperlinked to connect directly to online abstracts of published journal articles. In short, this great volume is very scientific, quite simply a joy to read, and is worth having.

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PLANT PHYSIOLOGY. *Fifth Edition.*

By Lincoln Taiz and Eduardo Zeiger. Sunderland (Massachusetts): Sinauer Associates. \$124.95. xxxiv + 782 p.; ill.; A1-1-A1-22; A2-1-A2-5; A3-1-A3-14; G-1-G-49; AI-1-AI-7; SI-1-SI-40. ISBN: 978-0-87893-866-7. 2010.

Now in its fifth edition, *Plant Physiology* is considered by many to be the standard textbook in the field. The authors are extremely thorough in covering the three major topics typically discussed in a plant physiology course: transport of water and solutes, metabolism, and growth and development. Included in the introductory chapters of this volume are overviews of basic cell biology, genome organization, and gene expression. There are also three appendixes, which cover basics of bioenergetics, plant growth, and the biosynthetic pathways of the plant hormones. Having the detail of the appendixes available is valuable. The chapter text, particularly the hormone chapters, is more streamlined than in the earlier editions of the book.

In this latest version, the authors have also put chapter material that was found only online in the previous edition back in print. Although adding bulk to the volume, it is convenient to have a hard copy of the complete text. There is still quite a bit of supplemental material online for instructors and students to access.

The use of contributing authors for most chapters gives a thorough overview of the subject matter; it is an excellent reference to have on the bookshelf, even if it is not used as a textbook for a course. Despite the amount of information presented by the authors, the text is still quite easy to follow, although really not designed for a course where students have no background in basic chemistry. This volume is most valuable in an upper-level or graduate-level plant physiology course, where a thorough overview of the subject matter is presented to students.

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