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Review of "Photosynthesis - Regulation Under Varying Light Regimes"

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Comments

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chapter discusses the use of nonvertebrate hosts as models of pathogenesis in mammals.

Genomics and proteomics have provided additional and powerful means to study host-pathogen relationships. Taking this into account, this second edition includes a new chapter on bacterial genomes and another on genome-scale methods for studying microbes. Another welcome addition is a chapter devoted to the infection of cells by virus, although bacterial pathogens remain the focus of this edition. The cell biology side of the textbook has also expanded with a valuable chapter on the host cell membrane and some methods for studying it. Each of the additions has improved the textbook, so it may just be greedy to suggest that a future edition would benefit from a more detailed look at viruses and an expanded section on the immune system.

This textbook is organized well and written clearly. It has many helpful pictures and diagrams but, unfortunately, a CD-ROM is not available. This edition is suitable for undergraduate and graduate students who are interested in either cell biology or microbiology. I recommend this excellent textbook, which is helping to define a new and exciting discipline.

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PLANT SCIENCES

PHOTOSYNTHESIS: REGULATION UNDER VARYING LIGHT REGIMES.

By V S Rama Das. *Enfield (New Hampshire): Science Publishers*. \$65.00. viii + 175 p; ill.; author and subject indexes. ISBN: 1-57808-343-5. 2004.

In this short book, the author focuses on biochemical responses of plants to excess light, including photodamage and photoprotection. The discussion is principally drawn from biochemical measurements in laboratory and greenhouse experiments, and Rama Das provides an extensive review of current work within this scope. However, there are few references to leaf and whole-plant responses to varying light in either laboratory or field grown plants. Overall, the text is difficult to follow owing to poor organization of material within chapters, insufficient illustrations, and extensive grammatical errors.

As an introductory chapter, I found Chapter 1 a bit limited in scope. Although it provides a com-

prehensive description of the structure of Photosystems I and II, it does not discuss light absorption in the overall scheme of photosynthesis. This chapter also fails to describe processes and terms that are used in subsequent chapters. For example, terms associated with chlorophyll fluorescence are referenced throughout the book, but are not defined. The actual process of fluorescence is not described.

Chapters 2 through 4 focus on photoinhibition and mechanisms of photoprotection, including the xanthophyll cycle and heliotropism. These chapters are rich in mechanistic detail, but readers will be left wondering how often photoinhibition occurs and how environmental factors (either alone or in combination) influence these processes. The author points to interesting areas for future research but, for some, these ideas may be lost in the arduous biochemical descriptions. In Chapter 5, Rama Das discusses short- and long-term responses of photosynthesis to varying light environments. The ideas presented in this chapter are (at times) confusing because the author does not effectively distinguish between acclimation and phenotypic plasticity, which occur on different temporal and spatial scales. Furthermore, interspecific differences in biochemical and morphological (e.g., changes in leaf thickness) responses to varying light availability are only briefly mentioned. All chapters could have benefited from fewer species-specific examples and more elaboration of generalizations across studies.

The book assumes readers have strong background knowledge of photosynthesis. It may appeal to anyone interested in the mechanistic detail of biochemical responses to excess light.

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MEMBRANE TRANSPORT IN PLANTS. *Annual Plant Reviews, Volume 15.*

Edited by Michael R Blatt. *Oxford: Blackwell Publishing and Boca Raton (Florida): CRC Press*. \$199.95. xx + 372 p + 8 pl; ill.; index. ISBN: 1-4051-1803-2 (Blackwell Publishing); 0-8493-2351-7 (USA and Canada). 2004.

This excellent volume is one of a very few that deals with the transport of solutes and water across membranes in plant cells. The main emphasis is on the ways in which the flow of ions and nonelectrolytes across the various plant cell membranes are regulated by the kinetics of transmembrane protein ion channels, pumps, and transporters, and their roles in cell processes. Following an introduction to the topic by the editor, Chapters 2 through 8 consider experimental techniques, the basic properties and