

## BOOK NOTICE

LINCOLN TAIZ, EDUARDO ZEIGER, IAN M. MØLLER, & ANGUS MURPHY. 2015. **Plant Physiology and Development, Sixth Edition.** (ISBN-13: 978-1605352558, hbk). Sinauer Associates, Inc., now Oxford University Press, 2001 Evans Road, Cary, North Carolina 27513, U.S.A. (**Orders:** global.oup.com, highered.us@oup.com, 1-800-280-0280). \$154.95 US, 761 pp, 9" × 11".

*From the publisher:* Throughout its twenty-two year history, the authors of *Plant Physiology* have continually updated the book to incorporate the latest advances in plant biology and implement pedagogical improvements requested by adopters. This has made *Plant Physiology* the most authoritative, comprehensive, and widely used upper-division plant biology textbook. In the Sixth Edition, the Growth and Development section (Unit III) has been reorganized and expanded to present the complete life cycle of seed plants from germination to senescence. In recognition of this enhancement, the text has been renamed *Plant Physiology and Development*. As before, Unit III begins with updated chapters on **Cell Walls** and **Signals and Signal Transduction**. The latter chapter has been expanded to include a discussion of major signaling molecules, such as calcium ions and plant hormones. A new, unified chapter entitled **Signals from Sunlight** has replaced the two Fifth-Edition chapters on **Phytochrome** and **Blue Light Responses**. This chapter includes phytochrome, as well as the blue and UV light receptors and their signaling pathways, including phototropins, cryptochromes, and UVR8. The subsequent chapters in Unit III are devoted to describing the stages of development from embryogenesis to senescence and the many physiological and environmental factors that regulate them. The result provides students with an improved understanding of the integration of hormones and other signaling agents in developmental regulation.

The new organization of Unit III has the added benefit that it minimizes redundancy, making it possible to reduce the number of chapters in the Unit from 13 to 11. **Angus Murphy** of the University of Maryland has headed up a team of authors and editors to implement the revision. **Ian Max Møller** has subsequently edited all the book chapters to ensure an even high quality and consistency level.

In addition to the organizational changes noted above, two new chapters on stress are included:

- \*A new chapter titled **Biotic Interactions**--replacing the Fifth-Edition Chapter 13 on **Secondary Metabolites and Plant Defense**—discusses the integrated signaling responses to a spectrum of biological agents.
- \*A completely rewritten chapter on **Abiotic Stress** discusses the use of genomics, systems biology, imaging, and bioinformatics tools in the study of abiotic stress. Recent efforts to develop drought-tolerant maize and flood-tolerant rice are described, as well as the role of ABA receptors, newly-identified regulatory networks, epigenetic changes in response to abiotic stress, and rapid systemic signaling.

The Sixth Edition of *Plant Physiology and Development* also includes updated and improved versions of the physiological chapters in Units I and II. A new chapter on **Stomatal Biology** has been added to Unit II. The chapters on **Mineral Nutrition** and **Assimilation of Inorganic Nutrients** feature a new treatment of nitrogen metabolism:

- Ammonium and nitrate are often lumped together as inorganic nitrogen although their influences on plants are quite different, almost like two different elements. These two forms of nitrogen are therefore treated separately in the Sixth Edition.
- The pathway of all nutrients essential in the human diet begins with plant roots “mining” the soil for mineral elements; the Sixth Edition explicitly examines the linkage between plant nutrition and human health.
- The response of plants to rising atmospheric levels of carbon dioxide depends most strongly on their nitrogen status. The Sixth Edition describes the newly discovered mechanism for this dependence and how it will influence food quality in the future.
- Exciting new findings on the mechanisms of mycorrhizal associations and symbiotic nitrogen fixation will be added, providing insights about the interdependence of plants and microorganisms.

The goal, as always, is to provide the best educational foundation possible for the next generation of plant biologists.