

ADVANCES IN PHOTOSYNTHESIS AND RESPIRATION

Series Editor: Govindjee

The scope of our series, beginning with volume 11, reflects the concept that photosynthesis and respiration are intertwined with respect to both the protein complexes involved and to the entire bioenergetic machinery of all life. *Advances in Photosynthesis and Respiration* is a book series that provides a comprehensive and state-of-the-art account of research in photosynthesis and respiration. Photosynthesis is the process by which higher plants, algae, and certain species of bacteria transform and store solar energy in the form of energy-rich organic molecules. These compounds are in turn used as the energy source for all growth and reproduction in these and almost all other organisms. As such, virtually all life on the planet ultimately depends on photosynthetic energy conversion. Respiration, which occurs in mitochondrial and bacterial membranes, utilizes energy present in organic molecules to fuel a wide range of metabolic reactions critical for cell growth and development. In addition, many photosynthetic organisms engage in energetically wasteful photorespiration that begins in the chloroplast with an oxygenation reaction catalyzed by the same enzyme responsible for capturing carbon dioxide in photosynthesis. This series of books spans topics from physics to agronomy and medicine, from femtosecond processes to season long production, from the photophysics of reaction centers, through the electrochemistry of intermediate electron transfer, to the physiology of whole organisms, and from X-ray crystallography of proteins to the morphology of organelles and intact organisms. The goal of the series is to offer beginning researchers, advanced undergraduate students, graduate students, and even research specialists, a comprehensive, up-to-date picture of the remarkable advances across the full scope of research on photosynthesis, respiration and related processes.

Lipids in Photosynthesis Essential and Regulatory Functions

Edited by Hajime Wada and Norio Murata

This book provides an essential summary of an exciting decade of research on relationships between lipids and photosynthesis. This book, designed both for scientists whose work focuses on photosynthesis and lipids and for graduate students who are developing an interest in the field, brings together extensively cross-referenced and peer-reviewed chapters by 52 prominent researchers, from 9 countries. The topics covered include the structure, molecular organization and biosynthesis of fatty acids, glycerolipids and non-glycerolipids in plants, mosses, lichens, algae, and cyanobacteria, as well as in chloroplasts and mitochondria. Several chapters deal with the manipulation of the extent of unsaturation of fatty acids and the effects of such manipulation on photosynthesis and responses to various forms of stress. The final chapters focus on lipid trafficking, signaling and advanced analytical techniques. Ten years ago, Paul André Siegenthaler and Norio Murata had edited *Lipids in Photosynthesis: Structure, Function and Genetics*, which has been a unique and an authoritative book in the field. The current new volume belongs, beside its predecessor, on every plant and microbiological researcher's bookcase.

Forthcoming titles:

C₄ Photosynthesis and Related CO₂ Concentrating Mechanisms
Edited by Agepati S. Raghavendra and Rowan Sage

The Chloroplast: Biochemistry and Molecular Biology

Edited by Constantin Rebeiz, Hans Bohnert, Christoph Benning, Henry Daniell, Beverley R. Green, J. Kenneth Hoöber, Hartmut Lichtenthaler, Archie R. Portis and Baishnab C. Tripathy

Photosynthesis: Perspectives on Plastid Biology, Energy Conversion and Carbon Metabolism

Edited by Julian Eaton-Rye and Baishnab C. Tripathy

Functional Genomics and Evolution of Photosynthetic Systems

Edited by Robert L. Burnap and Wim Vermaas

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