

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.

The Structure and Function of Plastids

Edited by Robert R. Wise and J. Kenneth Hooper

This volume provides a comprehensive look at the biology of plastids, the multifunctional biosynthetic factories that are unique to plants and algae. Fifty-six international experts have contributed 27 chapters that cover all aspects of this large and diverse family of plant and algal organelles. The book is divided into five sections: (I): Plastid Origin and Development; (II): The Plastid Genome and Its Interaction with the Nuclear Genome; (III): Photosynthetic Metabolism in Plastids; (IV): Non-Photosynthetic Metabolism in Plastids; (V): Plastid Differentiation and Response to Environmental Factors. Each chapter includes an integrated view of plant biology from the standpoint of the plastid. The book is intended for a wide audience, but is specifically designed for advanced undergraduate and graduate students and scientists in the fields of photosynthesis, biochemistry, molecular biology, physiology, and plant biology.

Forthcoming titles

Photosystem I: The Light-Driven Plastocyanin:Ferredoxin Oxidoreductase

Edited by John H. Golbeck

Chlorophylls and Bacteriochlorophylls: Biochemistry, Biophysics, Functions and Applications

Edited by Bernhard Grimm, Robert J. Porra, Wolfhart Rüdiger and Hugo Scheer

Biophysical Techniques in Photosynthesis II

Edited by Thijs J. Aartsma and Jörg Matysik

Photosynthesis: A Comprehensive Treatise:

Physiology, Biochemistry, Biophysics and Molecular Biology, Part 1

Edited by Julian Eaton-Rye and Baishnab Tripathy

Photosynthesis: A Comprehensive Treatise:

Physiology, Biochemistry, Biophysics and Molecular Biology, Part 2

Edited by Baishnab Tripathy and Julian Eaton-Rye

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