

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.

Respiration in Archaea and Bacteria Diversity of Prokaryotic Respiratory Systems

Edited by Davide Zannoni

The book summarizes the achievements of the past decade in the biochemistry, bioenergetics, structural and molecular biology of respiratory processes in selected genera of the domain Bacteria along with an extensive coverage of the redox chains of extremophiles belonging to the Archaeal domain. The volume is a unique piece of work since it contains a series of chapters dealing with metabolic features having important microbiological and ecological relevance such as the use of ammonium, iron, methane, sulfur and hydrogen as respiratory substrates or nitrous compounds in denitrification processes. Particular attention is also dedicated to peculiar groups of prokaryotes such as Gram positives, acetic acid bacteria, pathogens of the genera *Helicobacter* and *Campylobacter*, nitrogen fixing symbionts and free-living species, oxygenic phototrophs (Cyanobacteria) and anoxygenic (purple non-sulfur) phototrophs. The book is intended to be a long-term source of information for Ph.D. students, researchers and undergraduates from disciplines such as microbiology, biochemistry and ecology, studying basic and applied sciences, medicine and agriculture.

Forthcoming titles

Plant Respiration: From Cell to Ecosystem

Edited by Hans Lambers and Miquel Ribas-Carbo

Chlorophylls and Bacteriochlorophylls: Biochemistry, Biophysics and Biological Function

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

Photosystem II: The Water-Plastoquinone Oxidoreductase in Photosynthesis

Edited by Thomas J. Wydrzynski and Kimiyuki Satoh

Photosystem I: Plastocyanin-Ferredoxin Oxidoreductase in Photosynthesis

Edited by John Golbeck

Discoveries in Photosynthesis

Edited by Govindjee, John F. Allen, J. Thomas Beatty and Howard Gest

ISBN 1-4020-2002-3

