

Green, B.R., Parson, W.W. (ed.): **Light-Harvesting Antennas in Photosynthesis**. – Kluwer Academic Publishers, Dordrecht – Boston – London 2003. ISBN 0-7923-6335-3. 513 pp., € 210.00, USD 231, GBP 145 (hb).

The reviewed book is the 13th volume of the well known series "Advances in Photosynthesis and Respiration" (information on all previous volumes was already published in *Photosynthetica*). Authors of its 17 chapters are 35 specialists in this field of research. They work mostly in the U.S. laboratories (15), but also in Australia (2), Canada (2), France (1), Germany (5), Japan (3), the Netherlands (3), Sweden (3), and the U.K. (1). The texts are based on broad literature (up to 320 references per chapter) and are accompanied by figures (12 of them as colour plates preceding the chapters) and tables.

The chapters are arranged into three parts. The first of them (4 chapters) is an introduction to the topic. It describes general characteristics of photosynthetic membranes, chlorophylls, carotenoids, and phycobiliproteins contained in them, their chemical structure and biosynthesis, their presence in organisms and in light-harvesting antennas, their optical properties (*in vitro* and *in vivo* absorption, fluorescence, linear and circular dichroism, Raman scattering, charge transfer, resonance energy transfer, transition dipoles, *etc.*), basic information on analytics, and evolution from prokaryotes to eukaryotes including genetics and endosymbiotic hypothesis. Special attention is given to pigments of different metabolic types of photosynthetic bacteria and to phylogenetic connections.

Seven chapters of part II are devoted to structure and

function in light harvesting with special attention to green and purple photosynthetic bacteria, Cyanobacteria, red algae, and algae containing chlorophyll *c*. The chapters deal with special bacterial, algal, and higher plant proteins, core and peripheral antennas, reaction centre complexes, molecular architecture of antenna systems of photosystems 1 and 2 in thylakoids and chromophores, chlorosomes, phycobilisomes, electronic states, *etc.* Genetic bases of syntheses and many models of complexes and mechanisms are shown.

Part III consists of six chapters on biogenesis, regulation, and adaptation in various types of photosynthesising organisms. Special topics are pulse amplitude modulated chlorophyll fluorometry and its application in plant studies (including those with mutants), stresses (high irradiance, drought, high temperature, and nutrients) and photostasis, and photoacclimation (xanthophyll cycle, state transitions), chromatic adaptation, and multilevel or environmental regulation in algae and bacteria.

It is difficult to find any weak place in this monograph that deals with all details of light-harvesting antennas. And as usually, a perfect subject index is supplemented. The texts are easily understandable, the respective literature is cited, so generally, it is a useful manual for all, from students to top scientists and university teachers.

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