

Mathis, P. (ed.): **Photosynthesis: from Light to Biosphere**. Vol. 2. - Kluwer Academic Publisher, Dordrecht - Boston - London 1995. 988 pp. ISBN 0-7923-3858-8.

This book is the second part of voluminous five-book Proceedings of the Xth International Photosynthesis Congress, held in Montpellier, France, 20-25 August 1995. This volume deals with five topics (numbered as continued from part one): 4. Reaction centres: green bacteria and PS I. 5. Oxygen evolution. 6. Cytochrome complexes. 7. Electron transfer proteins. 8. Alternative electron pathways and regulation.

The first chapter concerns reaction centres, namely of green sulphur bacteria and PS I and contains 48 contributions. It copes with structural and functional characteristics of PS I and begins with crystallographic analysis. Several articles deal with protein and pigment composition and organisation as well as electron transfer within PS I constituents. In many respects the scale is minimized up to nanoseconds and tenth of manometers. Moreover, mutants were prepared and studied for these investigations.

The second part is called oxygen evolution and consists of 66 contributions. It begins with an excellent contribution on water oxidation. Many others are addressed to radical nature of water oxidation therefore suitable methods as EPR and ENDOR spectroscopy were frequently used. Further, special methods using X-ray, as XAS (X-ray absorption spectroscopy), EXAFS (extended X-ray absorption fine structure), and XALDS (X-ray absorption linear dichroism spectroscopy) were used. Specific mutants for investigation of mechanism of oxygen evolution were developed. Two models for manganese function and for water oxidation were also described.

The third chapter deals with the cytochrome complexes in 31 articles. It covers wide area of cytochromes: *bc_L*-complex from bacteria, *b₆f* complex from algae and higher plants, and even *c₅₅₂* complex from anaerobic bacterium. Further, function of cytochrom *b₅₅₉* was investigated in several contributions. Also genetic studies including mutational, were involved.

The fourth part is concerned with electron transfer proteins. Most of 39 contributions deal with proteins of PS I *i.e.* ferredoxin, thioredoxin, ferredoxin-NADP reductase, and plastocyanin. Genetic approach as mutations and cloning are widely used in this area. Also several studies concern cytochrome interactions with other carrier proteins.

The last part is devoted to the topic of alternative electron pathways and regulation and contains 42 papers. This research is pointed to regulation of electron transport generally, mechanism and regulation of cyclic electron flow, and chlororespiration. This process is also called alternative cyanide resistant pathway. Also contributions on Mehler-ascorbate peroxidase cycle are included. Most of these processes occur in adverse conditions, *e.g.*, when there is a lack of electron acceptors.

This book as a whole supplies us with the most recent advances in research of photosynthesis and related processes in mentioned areas in great detail.

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