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Fromme, P. (ed.): **Photosynthetic Protein Complexes**. WILEY-VCH Verlag, Weinheim 2008. ISBN 978-3-527-31730. € 159.00.

The book provides a comprehensive overview of current knowledge on membrane protein complexes involved in the photochemical energy conversion performed by photosynthetic bacteria, algae and plants. The subtitle of the book, "A structural approach", clearly expresses the main emphasis of the book, which is given to the high resolution structures of these complexes recently obtained using X ray analysis of protein crystals. Fifteen chapters of the book written by leading scientists in the field from around the world cover architectures of oxygenic and anoxygenic reaction centers, their external light harvesting antennae, connecting electron and proton transferring protein complexes and also chloroplast ATP-synthase. The book is illustrated by a large number of color figures mostly documenting the beauty of the above mentioned molecular machines. It is only unfortunate that despite the advertisement on the back cover, these pictures are not freely available *via* the web site of the book at www.wiley-vch.de/publish/en/books/ ISBN978-3-527-31730-1.

The first chapter by the editor giving a short but very compact and informative survey on photosynthetic "light" reactions is followed by two chapters dedicated to the cyanobacterial and plant Photosystem I complex. The structural data on protein subunits, pigments, secondary electron acceptors and other cofactors document high similarity between complexes from these different organisms. The following chapter deals with overall structure of another cyanobacterial complex, Photosystem II (PSII). One chapter obviously cannot provide such exhaustive information like the recent book "Photosystem II" of the series "Advances in Photosynthesis and Respiration" (volume 22, 2006), nevertheless it provides sufficient, compact and up-to date knowledge for everybody interested in structure and function of this fascinating complex. PSII is the only photosynthetic complex which is able to use water as the source of electrons and therefore a special chapter is focused on the mechanism of water splitting and oxygen evolution. Chapter 6 together with chapters 10 and 11 illustrate differences in the light harvesting strategies between oxygenic prokaryots and eukaryots. Chapters 7, 8 and 15 describe the structural and functional properties of proteins and complexes that catalyze electron transport to and from both photosystems (cytochrome b6-f complex, plastocyanin, cytochrome c6, ferredoxin and flavodoxin). The chapter 9 targets the current structural concept of the chloroplast ATP-synthase which together with plant Photosystem II represents the only photosynthetic membrane complex with limited structural information due to the lack of high resolution models. The remaining chapters12, 13 and 14 are devoted to structure of anoxygenic reaction centres and their antennae. This part of the book also includes discussion on a putative evolution of both anoxygenic and oxygenic reaction centers indicating an existence of the common ancestor for all these energy transducing enzymes.

The book Photosynthetic Protein Complexes is very useful guide through the structural aspects of all photosynthetic membrane complexes for everybody interested in structural biology of membrane proteins and should not be missing in bookshelves of any laboratory working in the field of photosynthesis research.

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