McIntosh, L. (ed.): **Photosynthesis: Molecular Biology of Energy Capture**. [Abelson, J.N., Simon, M.I. (ed.): Methods in Enzymology. Vol. 297.] - Academic Press, San Diego - London - Boston - New York - Sydney - Tokyo - Toronto 1998. ISBN 0-12-182198-6. 395 pp., USD 99.95.

The series "Methods in Enzymology" embraces already more than 300 books and is thus one of the largest scientific book series published until now. Its content is not any more restricted to enzymology, but to all fields of experimental biology and biochemistry. Vol. 297 contains 23 chapters dealing with modern photosynthetic topics (the main approach being molecular biology) divided into five sections. The chapters were written by 58 authors (43 from the U.S.A., 5 from Sweden, 2 each from Israel, Switzerland, and the U.K., and 1 each from the Czech Republic, France, Israel, and the Netherlands).

Five chapters of Section I deal with genetic approaches to dissect complex functions. They include transpozon mutagenesis of heterocyst-forming filamentous cyanobacteria (M.F. Cohen *et al.*), isolation and characterisation of pseudorevertants from photosystem (PS) 1 mutants in *Synechocystis* (J. Yu and L. McIntosh), unclear transformation of *Chlamydomonas* (K.L. Kindle), functioning of nuclear genes in chloroplast biogenesis of land plants (A. Barkan), and obtaining crystal structures from bacterial reaction centres (G. Fritzsch). Section II (four chapters) is on the structure and function of photosynthetic complexes: H.-G. Koch *et al.* deal with cytochromes and structure in *Rhodobacter*, J.H. Golbeck compares *in vitro* and *in vivo* mutants of PsaC in PS1, J. Sun *et al.* deal with PS1 subunits in *Synechocystis*, and R.E. McCarty and J.A. Cruz with ε-subunit of ATP synthesis.

Section III contains six chapters on gene expression of photosynthetic components. They bring methods for transcriptional regulation of photosynthetic operons in *Rhodobacter* (J.H. Zeilstra-Ryalls *et al.*), for studying expression of *psbA* gene family, including *Synechocystis* cultivation and DNA and RNA isolation (C. Jansson *et al.*), for analysing light-regulated gene expression in *Chlamydomonas* (A. Cohen *et al.*), for studying the regulation of ribulose-1,5-bisphosphate carboxylase/oxygenase and photosynthetic rate during leaf development in antisense mutants (S. Rodermel), and for chloroplast plastoquinone redox regulation of nuclear gene expression (D.G. Durnford *et al.*).

Four chapters of Section IV (biogenesis and adaptation of photosynthetic components) deal with light-dependent chlorophyll biosynthesis (G. Armstrong and K. Apel), carotenoid biosynthesis (M. Harker and J. Hirschberg), adaptation to copper deficiency (J.M. Quinn and S. Merchant), and complementary chromatic adaptation (D.M. Kehoe and A.R. Grossman). The last Section contains four papers on the construction and analysis of photosynthetic mutants: W.F.J. Vermaas deals with mutations for studying PS2, H. Lee *et al.* with mutagenesis of reaction centre proteins, T.M. Bricker *et al.* with the CP 47 protein, and B.A. Diner with spectroscopic techniques used for studying PS2 mutations in algae.

Individual chapters are accompanied with lists of brief references to original papers (this book is fortunately supplemented with an Author Index). Their text is understandable, each chapter starts with a theoretical introduction, and the methods are presented in the form of cook book. A detailed subject index is also supplemented. As every good methodical book, also this one is a must for bookshelves of all photosynthesis laboratories.

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