

Siegenthaler, P.-A., Murata, N. (ed.): **Lipids in Photosynthesis: Structure, Function and Genetics**. - Kluwer Academic Publishers, Dordrecht - Boston - London 1998. ISBN 0-7923-5173-8. 321 pp., NLG 265.00; USD 144.00; GBP 90.00.

The ambitious book series *Advances in Photosynthesis* (series editor is Govindjee) is continued by volume 6 (for review of the previous volume see *Photosynthetica* **34**: 178, 1997). Its fifteen chapters were written by 24 authors (France 7, the U.S.A. 5, the Netherlands 4, Japan and the U.K. 2 each, Germany, Hungary, Sweden, and Switzerland 1 each).

An overview on lipids (including fatty acids and glycerolipids) in photosynthesis (written by the Editors) opens the volume. Structure, distribution, and biosynthesis of glycerolipids of higher plant chloroplasts (J. Joyard *et al.*) comes next. Membrane lipids in different algae classes (J.L. Harwood), cyanobacteria (H. Wada and N. Murata), and anoxygenic photosynthetic bacteria (C. Benning) are the topics of chapters 3 to 5.

Chapter 6 (W.P. Williams) reviews papers on the physical properties of thylakoid membrane lipids (phase behaviour, lipid-protein interactions, membrane fluidity) and their relations to photosynthesis (thylakoid ultrastructure, temperature adaptation, mobility of electron carriers). Chapter 7 (P.-A. Siegenthaler) deals with molecular organisation of acyl lipids in photosynthetic membranes of higher plants (distribution, topology, heterogeneity, import and export, *etc.*), chapter 8 (P.-A. Siegenthaler and A. Trémolières) with their functions (leaf and thylakoid senescence, modulation of membrane fluidity, involvement in photosystem 2 structure and electron transport, function in chilling sensitivity, interaction with herbicides, changes in mutants). Chapter 9 (the same authors) deals with the reconstitution of photosynthetic structures and activities (among them, formation of LHCII trimers and their crystallisation, appression of thylakoid membranes). Chapter 10 (B. de Kruijff *et al.*) explains the function of lipid-protein interactions in chloroplast protein import. In chapter 11 (E. Selstam) the development of thylakoid membranes is explained from the point of view of lipid content.

Genetic engineering, fatty acid composition, and structure of triglycerides are reviewed next (D. Facciotti and V. Knauf). Effects of unsaturation of membrane glycerolipids on toleration to high and low temperature stress are described by Z. Gombos and N. Murata: they analyse the modifications induced by genetic engineering (experiments mainly with *Arabidopsis*, *Nicotiana*, *Synechococcus*, and *Synechocystis*). Chapter 14 (P. Vijayan *et al.*) is on genetic studies of membrane lipid structure and their photosynthetic functions (among others, functions at extreme temperatures are discussed). Last chapter (J.L. Harwood) deals with the involvement of chloroplast lipids in plant reactions to stresses (low and high temperature, drought, raised CO₂ concentration, salinity, effects of xenobiotics).

Chapters 2 to 15 contain lists of full references (43 to 193 items). The book is supplemented with a comprehensive subject index. Generally, a very useful book for researchers in photosynthesis.

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