Baker, A., Graham, I.A. (ed.): **Plant Peroxisomes. Biochemistry, Cell Biology and Biotechnical Applications.** - Kluwer Academic Publishers, Dordrecht - Boston - London 2002. 505 pp. EUR 180.00. ISBN 1-4020-0587-3.

Since the first isolation from the plants in 1967, the peroxisomes have emerged as important organelles with variety roles in plant metabolism. They are sites of essential reactions in photorespiration, glyoxylate cycle, and β-oxidation of fatty acids, and might be important in membrane turnover and during senescence.

This up-to-date monograph is focused only on one cell organelle but that is just what enables very deep analysis. It is divided into three sections: Peroxisome functions, Peroxisome biogenesis and protein transport, and Peroxisomes – biotechnological potential.

The largest first section starts with introductory chapter which briefly survives history of the most important discoveries. The following chapters provide comprehensive reviews of the role of peroxisomes in plant metabolism. The second chapter deals with fatty acid transport into peroxisomes, genes and enzymes of β-oxidation, responses to abiotic stresses, and other pathways of fatty acid oxidation. The third chapter focuses on synthesis and function of glyoxylate cycle enzymes and the role of glyoxylate cycle in different phases of plant ontogeny. The photorespiratory pathway and especially the peroxisomal enzymes are the main items of the chapter 5. Further, the role of peroxisomes as a source of reactive oxygen species and in the antioxidant systems is elucidated (chapters 4 and 7). Very specialized is the chapter 6 devoted to the role of root nodule peroxisomes in nitrogen fixation in tropical legumes. The understanding of the functions of peroxisomes requires knowledge of the properties and enzymatic activities of its membrane and this is the topic of chapter 8. The section ends with the chapter describing several peroxisome-deficient mutants (disrupted in specific aspects of peroxisome metabolism and peroxisome biogenesis).

The second section starts with thoughtful discussion on the origin and differentiation of peroxisomes (chapter 10). It continues with the chapter 11 addressing to targeting signals and import of matrix proteins to peroxisomes. The chapter 12 takes a look at all twenty three peroxisome biogenesis (*PEX*) genes which have been recently cloned.

The final section considers the potential to use our growing knowledge of peroxisomes for biotechnological aims. The chapters 13 to 15 suggest the possibilities for engineering peroxisomes to increase plant stress tolerance, production of new fatty acids and lipids, or biopolymers.

The book is well arranged and produced. The readable text, written by well-known specialists in the field, is accompanied with many tables, figures and photographs.

This stimulating book will be certainly enjoyed by all scientists working in plant physiology and cytology.

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