Baker, A., Graham, I.A. (ed.): **Plant Peroxisomes.** (**Biochemistry, Cell Biology and Biotechnical Applications.)** – Kluwer Academic Publishers, Dordrecht – Boston – London 2002. ISBN 1-4020-0587-3. 505 pp., € 180.00, USD 155.00, GBP 110.00.

In the two decades since the last comprehensive work on plant peroxisomes appeared in 1983 the scientific approaches have changed beyond all recognition. The best proof of this is the fact that the majority of literature cited in this book was published during the last ten years. The accelerating pace of plant research in the post-genomic era has led us to appreciate the fact that peroxisomes have many important roles in plant cells including reserve mo-bilisation, nitrogen assimilation, the metabolism of plant hormones, defence against stress, *etc.*, all of which are vital for normal plant development.

The fifteen chapters in three sections of this book, written by 26 leading experts in this field from 9 countries, survey peroxisomal metabolic pathways, protein targeting and biogenesis of the organelle, and prospects for the manipulation of peroxisomal function for biotechnological purposes.

The first section surveys the functions of plant peroxisomes. Chapter 1 provides a personal historical perspective of the pioneering work in this field and provides a link between the past and the present. Chapters 2, 3, and 5 are comprehensive reviews of fatty acid oxidation, the glyoxylate cycle, and the photorespiratory pathway, integrating older observations with new data arising from mutants, genome, and EST sequences about gene families, expression, and function. Chapter 5 also deals with the compartmentalisation of pathways in the context of glycolate and glycerate pathways of photorespiration. Chapter 4 deals with the complexities of catalase function and biogenesis with multiple genes regulated at different levels, giving rise to a wide range of isoforms to defend plants against oxidative stress. Chapter 6 addresses the role of root nodule peroxisomes in nitrogen fixation in tropical legumes. Chapter 7 addresses the role of peroxisomes as a source of reactive oxygen species (ROS) and ROS related signal molecules and as a first line of defence against these potentially harmful species. Chapter 8 deals with the composition and function of the peroxisome membrane. The last chapter of this section describes several peroxisome-deficient mutants including those that are disrupted in specific aspects of peroxisome metabo-lism and peroxisome biogenesis.

The second section deals with peroxisome biogenesis and protein import in detail. Chapter 10 discusses the origin and differentiation of peroxisomes and reviews the current knowledge of the targeting and insertion of peroxisome membrane proteins. Chapter 11 deals with the targeting and import of peroxisome matrix proteins. Chapter 12 deals with genes required for peroxisome biogenesis in other organisms and their counterparts in plants. And with the question whether these components for peroxisome biogenesis are universal.

The third section considers our potential to exploit the growing knowledge of peroxisome biogenesis and function for biotechnical ends. Chapter 13 deals with the current possibilities for engineering plant peroxisomes to increase plant resistance to stress. Chapter 14 addresses the problem of futile cycling through β-oxidation as a potential barrier to increased yields of novel oils in transgenic plants. Chapter 15 reviews the use of peroxisomes as a compartment for the synthesis of biodegradable plastics and other novel biopolymers.

The aim of this book is to draw together the current state of the art as a convenient starting point for anyone who wishes to know about plant peroxisomes. There is another aspect to this book. Its English could serve as a textbook of wonderfully clear, concise English in this field.

D. PROCHÁZKOVÁ (*Praha*)