

Book review

Plant Proteomics, edited by Christine Finnie, Annual Plant Reviews Volume 28, Fall 2006, Blackwell Publishing.

The book 'Plant Proteomics' is volume 28 of an annual Plant review series by Blackwell Publishing. This volume, edited by C. Finnie (Technical University of Denmark), has nine chapters and the stated aim in the preface is "to highlight ways in which proteome analysis has been used to probe the complexities of plant biochemistry and physiology". An overview of plant proteomics is given in the first chapter (by Heazlewood and Millar), followed by an excellent, detailed and up-to-date chapter on post-translational modifications in plant proteomes (Gruhler and E. N. Jensen). Many practical details are provided e.g. on phosphopeptide identification. Chapter 3 summaries protein-protein interaction studies discussing both protein based techniques (e.g. native gel electrophoresis), DNA based techniques (e.g. yeast hybrid systems) and fluorescence based techniques (BiFC and FRET). The important topic of monitoring the redox state of plant proteomes, with emphasis on cystein based modifications is discussed in Chapter 4 by B. Svensson and colleagues. The chapter includes a very useful and exhaustive list of thiol-reactive reagents with their references. Chapter 5 discusses large scale approaches in plant structural proteomics by members of the Center for Eukaryotic Structural Genomics (CESG) at the University of Wisconsin-Madison. The chapter provides a welcome update on the successes and bottlenecks of large scale protein overexpression and purification systems (including *E. coli* overexpression, wheat germ cell-free protein production), as well a structure determination by X-ray crystallography and NMR. A list of *Arabidopsis* protein structures solved by the CESG (upto Oct 2005) is provided. While the title of Chapter 6

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is ‘cereal proteomics’ (by S. Momatsu), the emphasis of this chapter is very much on rice proteomics (mostly using 2D gel approaches), with little mention of work on e.g. maize and barley. Chapter 7 describes in great detail proteome analysis of developmental processes, with a strong focus on seed ripening and germination. This chapter provides an exhaustive overview and references in seed proteomics (of *Arabidopsis* and *Medicago*) and is written by members of the Job lab (L. Rajjou, K. Gallardo, C. Job and D. Job). 8 discusses the topic of plant cell wall proteomics (by JKC Rose and colleagues) and includes a detailed table of plant cell wall (including the apoplast) projects, with their respective techniques, pitfalls and references. The topic of the final chapter is mitochondrial proteomics (NV Bykova and IM Moller) providing a useful set of references and overview of mitochondrial protein identification and responses of the mitochondrial proteome to various stress conditions (oxidative stress, anoxia, etc.)

Given the rapid development of mass spectrometry based techniques and the abundance (proliferation) of reviews regarding plant proteomics published in various journals, one can wonder about the value and lifetime of bundled reviews in hardcopy books as the one discussed here. The advantage of such books is to have the reviews bundled together. In the case of this volume 28, the content of in particular chapters 2, 5 and 7 seem novel and updated and not well covered by existing reviews. The book also carries a useful and elaborate keyword index, which may provide a good starting point for those less familiar with the history and recent developments in plant proteomics.