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Saito, K., De Kok, L.J., Stulen, I., Hawkesford, M.J., Schnug, E., Sirko, A., Rennenberg, H. (ed.): **Sulfur Transport and Assimilation in Plants in the Post Genomic Era. -** Backhuys Publishers, Leiden 2005. 270 pp. ISBN 90-5782-166-4.

This book contains the invited (8) and contributed (47) papers of the 6th International Workshop on Plant Sulfur Metabolism hosted at the Kazusa Akademia Center, Kisarazu, Chiba, Japan from May 17 to 21, 2005. It covers a various aspects of sulfur metabolism in plants as the previous volumes of this sulfur series do, and as we are living in a post-genomic era it is not surprising that the emphasis is put on the comprehensive analysis termed "omics" approach. The reader can see how the understanding of sulfur metabolism is rapidly progressing in the past few years, particularly at a molecular level.

The book is divided into four sections each of them consists of one to three papers that present comprehensive reviews of the subject and number of short contributions to the subject. The first section dedicated to "Transport and distribution of sulfur-containing compounds" starts with paper that highlights some historical aspects of sulfate transport, presents some of the important biological processes involved, identifies gaps in our knowledge and poses a number of important questions that need to be addressed. The second review provided us a complete set of sulfate transporter gene family in *Arabidopsis*, which consists of 14 isoforms showing homology to one another. The kinetic properties, expression patterns and functional characteristics together with localization data of individual groups of sulfate transporters are discussed. Third paper is more specialized and concerns with the role and importance of sulfur distribution and redistribution in cereal growth and development, especially at low levels of S nutrition. Following 7 short contributions demonstrate transport activities of sulfate transporters and their regulation, techniques that can be used to identify characteristic sulfur groups in natural samples and *in vivo* imaging of glutathione.

The second section "Reduction and metabolism of sulfur", the largest ones is introduced by paper giving comprehensive review on open questions of sulfur metabolism, identifying research areas, which have been neglected or altogether overlooked during last 14 years. This especially concerns areas related to regulation and areas outside of the mainstream. The next review summarizes progress on the regulation of the gene for cystathionine γ-synthase in *Arabidopsis*. The following group of 9 short papers summarizes recent progress on the regulation, the level of expression and functional analysis of the genes for the key-step enzymes of sulfur assimilatory metabolism and structural and biochemical characteristics of these enzymes. Five last short papers are more special, they deal with divergence of the myrosinase gene among *Brassica* species, alliinase among *Allium* species, with the impact of H_2S exposure on sulfur metabolism in onion and effects of S-deprivation on sulfolipid metabolism in *Chlamydomonas reinhardtii*.

The third section devoted to "Sulfur omics" contains the papers evaluating effect of sulfur availability on *Arabidopsis thaliana* primary metabolism, the response of the transcriptome and metabolome to sulfur nutrition especially to sulfur deprivation and analysis of molecular signaling in response to S-deficiency. The last three short papers present the new analytical technology for comprehensive analysis of metabolites (METABOLIX), mathematical model of sulfur metabolism in higher plants, and database system for searching relationships between metabolites and species (KNApSAcK).

The last section "Sulfur metabolism under stress" is concentrated on improved phytoremediation of contaminated soils by changes in sulfur metabolism, molecular analysis of sulfur-based defense reactions in plant-pathogen interactions, the effects of abiotic stresses on the sulfate assimilation pathways and involvement of S-containing compounds in cadmium- or herbicide-tolerance. The final paper of the book is a chronicle of sulfur research with the special view to agricultural production during the past 25 years.

The book is well arranged and produced. All papers written by leading scientists are well arranged and include many tables, figures and schemes. Helpful are also author index and detailed subject index. Photo of participants and "Chiba Sulfur Song 2005" composed by J.W. Anderson are supplemented.

This stimulating book will be certainly enjoyed by all plant physiologists and molecular biologists especially those working in physiology of mineral nutrition.

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