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Hell, R., Dahl, C., Knaff, D., Leustek, T. (ed.): **Sulfur Metabolism in Phototrophic Organisms**. – Springer, Dordrecht 2008. ISBN 978-1-4020-6862-1 (hard bound), ISBN 978-1-4020-6863-8 (e-book). 516 pp., € 229.00, CHF 399.00, USD 329.00, GBP 176.00.

This book is volume 27 of the series “Advances in Photosynthesis and Respiration”. Two of its editors work in Germany, the other two in the U.S.A. This is reflected in the relatively high amount of chapter authors working in these two countries: out of the 55 authors, 18 are from Germany and 16 from the U.S.A. As concerns the remaining 21 authors, they are from the U.K. (5), Australia (4), Canada, Italy, and Japan (3 each), and Denmark, Israel, and the Netherlands (1 each). Only four chapters were prepared by one author. The majority of authors are scientists well known from the literature. One of them comes even from the Czech Republic (Stanislav Kopřiva), even if he works now in the U.K.

The relatively narrow research field enables to discuss all possible questions connected with sulfur in relation to photosynthesis. Twenty four chapters are divided into four parts. Seven chapters of Part I are dedicated to general questions such as sulfur uptake, distribution, and sub-cellular transport, phylogeny of sulfate assimilation, and biosynthesis and metabolic roles of the most important sulfur substances (cysteine and methionine) and enzymes (sulfotransferases and cysteine desulfurase) in plants and phototrophic bacteria. They deal also with the respective signal transduction pathways and regulation, genetics, differences among classes and species, and related substances (iron-sulfur assembly, thiamine, molybdenum co-factor).

The six chapters of Part II (Sulfur in Plants and Algae) are dedicated to molecular biology of plant sulfate uptake and assimilation, compartmentation and cellular functions of sulfur containing substances, sulfolipids, secondary sulfur metabolites and their function in plant defence, sulfur cycling, sulfate reduction, sulfite oxidation, their ecology, *etc.* Part III (Sulfur in Phototrophic Prokaryotes; 5 chapters) overviews the systematics of anoxygenic phototrophic bacteria, analyzes the function of inorganic sulfur compounds as electron donors, deals with sulfide oxidation in the wide organism range from

cyanobacteria to humans, *etc.* Green and purple sulfur bacteria are the most discussed organisms in this part. Part IV (4 chapters) is on sulfur ecology and biotechnology in nature, namely in sulfur bacteria, algae, and agricultural ecosystems. Sulfur requirements in nutrition of agrosystems, sulfur and food quality, adaptations to stress and pests are among the discussed questions. Molecular fossils containing sulfur are also included. A special chapter is on the use of anoxygenic photosynthetic bacteria for the removal of sulfide from wastewater (suitable bacteria, reactor concepts and models, direction of future research). The last part contains a chapter on using X-ray absorption spectroscopy for the detection and identification of sulfur compounds, and a chapter on imaging thiol-based redox processes in live cells.

I understand why the scientists working in systematics continuously change the genus and species names of plants and bacteria, but in case of well known organisms it does not help understanding in other fields of research. Thus in 2003 the often used genus name *Chlorobium* was re-named to *Chlorobaculum* (cf. Chapter 18).

The book is supplemented by many instructive tables and figures (pages CP1-CP4 present them in colour) and by a detailed numerical and alphabetical subject index. I found only one inconsistency in editorial work: the form of references in Chapter 13 differs from the standard one used in other chapters. It also seems strange that the position of acknowledgements is included in the list of contents.

The advantage of the recently published volumes of this book series is that they are produced in two forms – in printed and in electronic ones; the last one has some advantage for rapid finding the respective topic or reference according to authors’ names. One of these forms of volume 27 should certainly be on bookshelves of photosynthesis laboratories and university or research libraries.

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