

Sato, K., Murata, N. (ed.): **Stress Responses of Photosynthetic Organisms. Molecular Mechanisms and Molecular Regulations.** - Elsevier, Amsterdam - Laussane - New York - Oxford - Shannon - Singapore - Tokyo 1998. ISBN 0-444-82884-2. 260 pp.

This book collected 16 topics from results in the research project "Molecular Mechanisms for Responses of the Photosynthetic Apparatus to the Environment". The project was performed by two teams of ten members each from Japanese universities and research institutes during four years (1992-1995). The research in this project was focused on elucidating the interactions between photosynthesis and environment, with special emphasis on the molecular aspects of these interactions. The main purpose was to identify specific genes required for repair of the organisms from stress induced damage and for acclimation of photosynthetic processes to changes in environmental conditions. Transgenic plants were important tools for solving these problems.

The book is divided into four parts. The first part is important for everybody interested in photosynthesis. It is concentrated on photooxidative stresses, mainly on essential mechanisms for the protection of plants from photoinhibition and on the structure and expression of genes controlling oxygen scavenging enzymes. The second part deals with high and low temperature stresses. Recent progress in understanding the function of heat-shock proteins in tolerance of plant to high temperatures, and the unsaturation of membrane lipids in tolerance of plants to low temperatures, is described. Effects of salinity and drought are the main items of the third part. From the broad spectrum of tasks, two were chosen for detailed description: (1) genetically engineered enhancement of salt tolerance by increased accumulation of compatible solutes including glycinebetaine, and (2) abscisic acid (ABA) independent and ABA dependent gene expression under drought. The last part is devoted to molecular aspects of nitrogen, sulphur, and phosphate metabolism, and to responses of plants to nutrient deficiencies. From this part, the chapters dealing with nitrogen-responsive expression of C_4 photosynthesis genes and with CO_2 concentration mechanism in cyanobacteria seem to be especially interesting for Photosynthetica readers.

The book is an excellent example of project report that surveys the results obtained by the participating researchers in context with results obtained by other authors. Thus the reader obtains up-to-date information about the state of particular problem solution. The book is well produced and the text is accompanied with many tables and figures.

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