Briggs, W.R., Jones, R.L., Walbot, V. (ed.): **Annual Review of Plant Physiology and Plant Molecular Biology. Vol. 44, 1993.** - Annual Reviews, Palo Alto 1993. 708 pp.

Volume 44 continues in good tradition of this book series that has both a high impact factor and a high immediacy factor (in SCI 1991 17.757 and 1.120, respectively). As usual, the volume is started with a prefatory chapter in which Harry Beevers reports his life and his studies in plant metabolism (photosynthesis, respiration, metabolic cycles), its compartmentation, organelles, *etc.* 25 highly specialised reviews follow.

The opening four reviews are in the field of genetics and molecular biology: they are on cytosolic, chloroplast and mitochondrial transfer DNAs and the respective genes (L. Maréchal-Drouard *et al.*), on molecular genetics of development of cyanobacteria (W.J. Buikema and R. Haselkorn), on genome imprinting (M. Matzke and A.J.M. Matzke), and on post-transcriptional regulation by mRNA elements, developmental programme (including irradiance and hormones) and stresses (heat, hypoxia, wounding, water and nutrient stresses) of gene expression (D.R. Gallie).

A special review is devoted to methods for quantitative analysis of plant hormones, including purification, high pressure liquid chromatography, gas chromatography, ethylene analysis, and immunoassays (P. Hedden). Next topic is plasma membrane redox activity, its components (cytochromes *b*, flavins, quinones) and functions (reduction of Fe-chelate or O_2^-, proton transport, hormone action, *etc.*) (B. Rubinstein and D.G. Luster). P.A. Rea and R.J. Pool deal with vacuolar H^+-translocating pyrophosphatase. The review on organelle movements (R.E. Williamson) includes cytoplasmic streaming, movements of endoplasmic reticulum, Golgi vesicles, chloroplasts and nuclei, *etc.* In the review by J.S. Holt *et al.* herbicide resistance, its mechanisms (*e.g.* resistance to inhibitors of photosystems 1 and 2) and significance for praxis are given. The review on plant tissue optics (T.C. Vogelmann) includes experimental approaches, origins and effects of reflected radiation, lens effects, trapping of radiant energy, light gradients, and control of radiation penetration by anatomy and pigmentation. Strategies of phloem loading, its pathways, modes, mechanisms and efficiency are reviewed by A.J.E. Van Bel. Further on, ethylene biosynthesis, the respective enzymes, and control in transgenic plants and by a feedback mechanism are overviewed (H. Kende). One of the recently most discussed environment topics, *i.e.* the effects of increasing CO_2 concentration in atmosphere, is discussed by G. Bowes; geological perspectives, photosynthesis, respiration and growth responses and adaptations in C_3, C_4 and CAM terrestrial and aquatic plant species, interactions of the CO_2 factor with other environmental factors, and specific responses of photosynthetic enzymes, photosystem activities, ethylene production, *etc.* are included.

The reviews on occurrence, metabolism and physiological roles of phosphoinositides (G.G. Coté and R.C. Crain), and on quaternary ammonium and tertiary sulfonium compounds like glycinebetaine, choline, β-dimethylsulfoniopropionate, *etc.* (D. Rhodes and A.D. Hanson) follow. R.D. Vierstra reviews the literature on protein degradation in plant cytoplasm, nucleus and organelles.

Three next reviews are on photosynthetic topics. R.J. Spreitzer deals with genetics of ribulose-1,5-bisphosphate carboxylase/oxygenase and mutations of its large and small subunits. R.H. Brown deals with interspecific hybrids between C_3 and C_4 plants and their physiology and productivity. W. Vermaas reviews the literature on photosystem 2 structure and functions: directed mutagenesis, assembly and stability, water splitting function, primary donor and primary charge separation, Q_A and Q_B functions and herbicide effects are included.

Next topics are gas exchange of legume nodules and nitrogenase activity (S. Hunt and D.B. Layzell), proton-coupled sugar and amino acid transporters (D.R. Bush), and hormonal control of ion channel gating, including stomatal closure (M.B. Blat and G. Thiel). Growth affecting substances are jasmonates: their biochemistry, physiology and molecular biology are dealt with by G. Sembdner and B. Parthier. Chitin-binding proteins (lectins, chitinases, specific proteins and peptides), their structure and biological activities are explained by N.V. Raikhel *et al.* The last review is on all aspects of phytochromes (M. Furuya).

As usually, perfect author and subject indexes are supplemented. I have only two comments to the work of editors: (*1*) American authors (16 of the 25 reviews were prepared by American authors)

often neglect other than American literature. This is evident also in some papers of this volume. Why not tell them that also other continents, scientists and journals exist than the American ones? (*2*) Abbreviations should never be used in titles of articles, even if they are taken for standard ones by a part of scientific community (like Rubisco).

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