Foyer, C.H., Quick, W. P.: **A Molecular Approach to Primary Metabolism in Higher Plants**. - Taylor & Francis, 1997. 347 pp. £ 44.95. ISNB 0-7484-0419-8.

Application of molecular genetic techniques has led to a substantial increase in the available information on the regulation of plant primary metabolism, particularly with regard to compartmentation, co-ordination, transport, sensing, signal transduction, and gene transcription.

The book is divided into three main sections. The first section is devoted to primary nitrogen and carbon assimilation, and partitioning. It starts with the excellent chapter on efficiency and control of photosynthetic electron transport (Foyer and Harbinson). In contrast to carbon metabolism, the application of molecular approaches to the improvement of photosynthetic electron transport efficiency seems to be a largely unexplored area. Then the chapter on carbon assimilation and genetic modification of the Calvin cycle follows in a logical sequence. Recent progress in the field of transgenic plants altered in their sucrose metabolism and starch biosynthesis gives researchers molecular tools (*e.g.* suitable transformation systems, regulatory sequences, and genes) allowing the genetic manipulation of metabolic pathways in transgenic plants and thus understanding the regulation. This part of the book includes a few partly overlapping chapters on carbon metabolism, nevertheless, it gives a clear picture what has been achieved, and in some cases points out hypotheses and directions for the future (*e.g.* Preiss).

The second section of the book is focused on compartmentation, transport, and whole plant interaction. The production and export of assimilates involves a cooperation of various cell types and requires several transfer steps across membranes. The chapter on an unique role of plasmodesmata in mediating the selective cell-to-cell trafficking of macromolecules belongs to the most interesting one. The potential of such trafficking to establish a novel level of regulation over both enzymic function and gene expression is discussed here (Wolf and Lucas). The uptake, translocation, assimilation, storage and remobilization components of the overall nitrogen cycle within plants have each been identified as comprising a range of potential targets for genetic engineering (Ourry *et al.*). The role of mycorrhiza formation on carbon and nitrogen metabolism of both partners of symbiosis summarizes current knowledge on this topic and shows that genetic manipulation of fungal or host functions could considerably improve our knowledge about the regulation of symbiosis (Hamp and Winkler).

The last section is devoted to related metabolism. This includes the chapters on the physiological role of alternative pathway in plant metabolism (Lambers), and the present state of understanding of the metabolism of plant lipids and the manipulation of oil synthesis (Hills and Rawsthorne). The last chapter of the book presents the consideration about the opportunities for improving the efficiency of input capture, the potential limitations of such an approach, and the possible impacts on agriculture (Pollock).

Editors have attempted to provide relevant information on the molecular co-ordination at the level of the cell and between different tissues that are separated both spatially and developmentally. The book is comprehensive up-to-date multidisciplinary volume covering carbon-nitrogen relationship in higher plants, which brings together contributions from a group of excellent scientists. Some chapters include simple introductions and conclusions - so they are accessible to the non-specialist as well as specialists. The wide range of contributions in this book are of a high standard, and it will be useful, as the editors aim, as a solid overview of the subject area. The book is enhanced by an extensive list of abbreviations and indexing which enable better orientation throughout the text.

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