

Book reviews

Varner, Joseph E. (ed.): Self-Assembling Architecture. Forty-sixth Symposium of the Society for Developmental Biology. New York: Alan R. Liss 1988. 276 pp., 89 figs., 13 tabs. Hard bound \$ 65.00.

This is the proceedings of the 46th Annual Symposium of the Society for Developmental Biology, held in St. Paul, Minnesota, June 21–24, 1987. It consists of sixteen chapters dealing with the role of self-assembly in the creation of extracellular and intracellular structures in both plant and animal species. In a short review of elastin biosynthesis the elastin secretory pathway is presented as a paradigm for how matrix accumulation can be affected at many levels during processing. The morphological structures of the cell wall of *Chlamydomonas*, *Fucus* and *Saccharomyces* species are examined and compared, in which the major focuses are on hydroxyproline-rich glycoprotein self-assembly, the control of alginate sequence during biosynthesis and incorporation into the wall, and the synthesis and secretion of wall components by the protoplasts that associate into a layer around the respective protoplast. The assembly of basement membrane macromolecules of human placenta cells and murine epithelial cells is summarized as different models, such as the layer model, the matrisome model, and the assembly polymorphism model. The occurrence of extensin in the graminaceus monocots and its chemical composition and structural role are revealed. The self-assembly of collagen molecular fibrils, clathrin and actin filaments, the endocytic pathway, and the protein and lipid interactions in the photosynthetic membrane are also reported in this book. This book can be recommended as worthwhile reading for molecular or developmental biologists and biochemists.

Li Yi Qin, Beijing

Zelitch, Israel (ed.): Perspectives in Biochemical and Genetic Regulation of Photosynthesis. Plant Biology, Vol. 10. New York: Wiley-Liss 1990. xvii + 419 pp., tabs. and figs. Hard bound \$ 72.00.

This volume contains the talks given by invited speakers, at a symposium held in April 1989, the focal point being the regulation of photosynthesis. The authors are authorities in their respective disciplines and present both concise reviews and recent research data in the fields of plant physiology, enzymology, biochemistry and cell metabolism, molecular biology and genetics, biophysics and plant breeding. Much of the data illustrate the rapid progress that has been made in understanding the regulation of photosynthetic processes in plastids at the transcriptional, translational and enzymatical levels, including the various evolved "strategies" that protect the photosynthetic apparatus under various adverse conditions. Other papers discuss the mutual regulation of the metabolism of plastids and cytoplasm, with much new data on the importance of sucrose synthesis. Relatively less progress could be reported on the regulation of photosynthesis at the whole plant level with respect to the interactions of source and sink areas on photosynthesis. This reviewer found the various contributions well summarized in a statement by K. Hanson:

"A great deal of the plant's investment in enzymes and tissue must be ascribed to the cost of regulation. Because of this complexity, it is by no means certain which genetic changes in photosynthetic metabolism would lead to improved crop yields."

Considering the undeniably great achievements of crop plant breeding it may be a surprise to read in the final paper by R. Austin "... few if any (studies) have shown that increases in productivity can be attributed to genetic improvements in photosynthetic characteristics." This volume may, therefore, be both sobering and stimulating. Those plant geneticists with an interest in photosynthesis in both a theoretical and applied context and who want to keep in mind, both in their research and in their teaching, how genes operate at the molecular, cellular and organismal level are advised to read this volume to be informed on the astonishingly delicate fine-tuning of photosynthesis.

J.F.G.M. Wintermann, Nijmegen

Holliday, R.; Monk, M.; Pugh, J.E.: DNA Methylation & Gene Regulation. London: Royal Society 1990. 162 pp., 1 tabs. Cloth bound £ 40.00.

This book comprises fourteen papers presented at the Royal Society Discussion Meeting on DNA methylation and gene regulation held in February 1989. The stated goal of the meeting was to assess recent advances and significance of DNA methylation in controlling the activity of genes during development.

The papers cover a variety of topics ranging from the cloning and sequencing of some critical genes (i.e., methyl transferase), to the regulation of chromosome activity underlying genomic imprinting. Some of the specific topics discussed include the use of DNA methylases in *in vitro* methylation, the methylation of maize transposable elements and its correlation with gene activity, DNA methylation patterns, and the role of DNA methylation in protein-DNA interactions. Several articles describe CpG islands in genes that exhibit tissue-specific expression and demethylation of genes in animal cells. Some articles discuss the probability that DNA methylation and late replication may aid cell memory, and the developmental consequences of imprinting of parental chromosomes by DNA methylation.

Overall, the book is an excellent summary of what is currently known and thought relative to the role(s) DNA methylation plays in gene regulation and expression. The book provides a sound base for the continuation of the debate and for anyone initiating studies in this intriguing area. The authors and the editors have done a superb job in presenting the available data and information in a concise and coherent manner for both the expert and the novice.

John G. Scandalios, Raleigh

Weinberg, Robert A.: Oncogene and the Molecular Origins of Cancer. Cold Spring Harbor: Cold Spring Harbor Laboratory Press 1989. 367 pp., 34 figs., 17 tabs. Soft bound.

The field of oncogene research has exploded over the past decade, and the present volume provides an introduction to this rich and rapidly growing field. The authors, specialists and leaders in the field, have written their chapters with the intention of explaining basic concepts. After a historical overview of oncogenes, growth factors and oncogenes, their receptors, signal transducing mechanisms, different oncogenes and multistep carcinogenesis, tumor-suppressor genes and the implication of oncogenes for clinical oncology are described. Graduate students in biology, medical students and researchers in the biomedical and molecular biological fields, and clinicians will find this book most valuable.

F.H. Herrmann, Greifswald