

Plant Molecular Biology

Edited by R.B. Goldberg

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This book is based on the proceedings of the AR-CO Solar-UCLA Symposium held in Keystone, Colorado, April, 1983. The submission of papers was optional; surely an effective way to speed up publication! Only about 50% of the presentations were submitted (in camera-ready form). However, only a few of them can be discussed here in some detail.

The papers are grouped in six sections. Section I, 'Prospects of genetic engineering in higher plants', reflects the great progress in gene transfer systems based on *Agrobacterium tumefaciens* and its Ti plasmids (Schilperoort's group, Simpson et al.). Efforts are also described to insert a zein gene into tobacco (Goldsbrough et al.) and to detect, in bacterial and plant cells, proteins coded by a well defined region of a Ti plasmid (Schröder and Schröder). Section II, 'Molecular biology of DNA and RNA viruses', contains, among other subjects, useful reports on barley stripe mosaic virus (Jackson et al.) and on cucumovirus-associated 'parasitic RNAs' (Kaper). The real excitement was caused, however, by the, unfortunately still indirect, evidence for reverse transcription in the replication of CaMV, a dsDNA virus (Guilfoyle et al., Howell et al., Hohn et al.). In Section III, 'Molecular biology of host/parasite relationships', the most unexpected finding was that cDNA dimers of potato spindle tuber viroid are infectious (Cress et al.). Papers in Section IV, 'Genetic manipulation of bacteria to aid plant productivity', deal mainly with a detailed analysis of nodulation and N₂-fixation genes located on megaplasmids of *Rhizobia* (Ausubel's, Helinski's and Kondorosi's groups, Watson et al.). Valentine's group reported the transfer of the *osm* gene from *Klebsiella* to *Rhizobia*, thereby confirming osmotic tolerance to the recipient strain, a property which

may be of significance for the host plant as well. In Section V, 'Organization and expression of nuclear genes', a number of papers are devoted to the problem of gene regulation in connection with plant development (Dure III et al., Quatrano et al., Lee et al., Taylor and Frago). In addition, evidence is presented which shows that some characteristic plant proteins, e.g., leghemoglobin, small subunit of RuBP carboxylase, LHC-chlorophyll *a/b* complex, are coded by 'gene families' rather than individual genes (Jensen et al., Wimpee et al., Timko and Cashmore). An excellent review on the fashionable problem of transposable elements in plants concludes the section (Starlinger et al.). Section VI, 'Organization and expression of mitochondrial genomes', deals with topics ranging from the unique RNAs in maize mitochondria and their correlation with cytoplasmic male sterility (Schuster et al.) to the recently discovered sequence homology between mtDNA and ctDNA (Stern et al.), an observation with clear-cut phylogenetical implications.

In summary, although the topics chosen are somewhat arbitrary, e.g., chloroplasts are fairly neglected, and some papers could have been skipped, e.g., a contribution from China which is difficult to follow, not only because of the lack of facility of the authors with English, and a paper on tobacco tumor virus, which is not at the molecular level, the majority of the contributions are very up to date, and the standard of most papers is high. They give a good insight into the major trends, ideas and methodology of plant molecular biology. The book is highly recommended to all those interested in this multidisciplinary area of plant biochemistry and genetics.

G.L. Farkas

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