

Moore, R. (ed.): Vegetative Compatibility Responses in Plants. Waco, Texas: Baylor University Press 1983. 163 pp., several figs. and tabs. Soft bound £ 19.50.

Cell-to-cell interactions involving recognition and compatibility/incompatibility are widespread in plant tissues: pollen-stigma interaction, cellular recognition and hypersensitive response involved in pathogen-host plant interaction, parasitic vascular plants and their hosts, mycorrhizal association, graft development. Although seemingly unrelated, according to the editor in one of his earlier papers (1981), "all have one fundamental feature in common: unrelated cells come in contact with one another with the repeatable result that they will either be compatible (i.e., accept, tolerate, be susceptible to) or incompatible (i.e., reject, be intolerant of, be resistant to)".

The book represents the proceedings of a symposium held at the Pennsylvania State University in 1982, and supported by the Developmental and Structural Section of the Botanical Society of America, and the Developmental Biology Panel of the U.S. National Science Foundation.

There exist excellent reviews of each topic separately, but the particular value of the present book lies in its bringing together in a coherent fashion of concise reviews diverse but fundamentally related topics into one small and handy volume.

There are nine chapters. The first is by Kuijt, on tissue compatibility and the haustoria of parasitic angiosperms. A normal haustorium is considered "an extraordinarily successful vegetative graft"; parasitic angiosperms in most cases turn out to display no high degree of host specificity. Next, Riopel discusses physiological aspects of early host-parasite relationships in angiosperm root parasites. Haustorium initiation which often requires host-root exudation should be distinguished from subsequent attachment which appears to be indiscriminate. The structural interaction of plants and their parasites is an important aspect of general compatibility/incompatibility phenomena; this subject is treated by Smart and Aist. Physiological responses of plant cells to infection by pathogens are discussed by Bell, with emphasis on 'necrogenic resistance' or 'hypersensitive reaction'. Phytoalexins and phenolic polymers found as necrogenic resistance responses may also be involved in graft incompatibility.

Structural and physiological aspects of graft formation are treated by McCully and Moore, respectively. There appear to

be few, if any, events really unique to grafting, and there is no evidence for early recognition between partners, nor for symplastic continuity via plasmodesmata (the latter situation also applies to parasitic angiosperms, chapter 1).

The chapter on compatibility responses in the establishment of mycorrhizae, by Hacskaylo, emphasizes mutual effects of metabolites more than actual compatibility; its final section considers the potential of genetic modification of mycorrhizal fungi.

The chapter on epidermal cells by Walker, with many notes in an appendix, is very interesting and stimulating, and relates to all the other topics of the book. The concluding chapter by Bacic and Clarke on the cell surface in plant recognition phenomena, within a limited space gives a clear account of biochemical and other aspects of cell wall and plasmalemma involved in cell-cell recognition.

In view of the scope of this journal and its readership, it is to be deplored that no contribution on pollen-stigma interaction has been included.

There are only few, and mostly minor printing errors. One to be mentioned occurs on p. 95; in the definition of 'localized incompatibility', the word 'not' should be deleted: 'localized incompatibility' is overcome by the insertion of a mutually compatible interstock, as contrasted with 'translocated incompatibility' which is *not*.

All chapters have a reference list, ranging from 30 to 142 titles, with both significant older as well as more recent literature. In several contributions the list has been updated to include articles from the very year of publication, 1983. The average years of publication of the references in chapters 4 and 9 are even as recent as 1981 and 1980, respectively.

Due to the kind of paper used, micrograph illustrations are surely not of the highest quality, but in most cases reference is made to the original sources, in chapter 9 indirectly via the Acknowledgements.

All in all, this book is a rich source of information, and makes good and stimulating reading. It can be warmly recommended to anyone interested in this fascinating field of inter/intraspecific cell recognition and compatibility.

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