

# **Plant Biotechnology:** the genetic manipulation of plants

Second edition

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*List of abbreviations*

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Principles of Plant Genetics and Breeding. George Acquaah. 4.5 out of 5 stars 12. Paperback. \$76.55. The Molecular Life of Plants. Russell L. Jones. 4.7 out of 5 stars 7. Adrian Slater, Nigel Scott and Mark Fowler have produced just such a textbook, providing a critical appraisal of the genetic manipulation of crop plants for advanced undergraduate study and the postgraduate student market."-- W. Paul Davies, *Annals of Botany*, Vol. 94. No 4, October 2004. UNEDITED UK REVIEW: "Quite simply this is a superb book and a valuable resource for all those with an interest in the genetic modification of plants, either as students of the science or potential consumers of the produce. In short a great book, well worth the money."--*Microbiology Today*, Vol. 31

The genetic manipulation of plants together with the establishment of in vitro plant regeneration systems facilitates efforts to engineer secondary product metabolic pathways. Advances in the cloning of genes involved in relevant pathways, the development of high throughput screening systems for chemical and biological activity, genomics tools and resources, and the recognition of a higher order of regulation of secondary plant metabolism operating at the whole plant level facilitate strategies for the effective manipulation of secondary products in plants. Here, we discuss advances in engineering. To our knowledge, this is the first report of the genetic manipulation of condensed tannin biosynthesis in higher plants. Condensed tannins are polymeric flavonoid molecules that are found in a range of higher plant species. The genetic control of tannin biosynthesis has been elucidated in recent years in the studies of tannin mutants in barley (Jende-Strid, 1991) and *Lotus japonicus* (Regel) Larsen (M.P. Robbins and T.E. Evans, unpublished data). One particular feature of interest is that the initial enzymatic steps of the anthocyanin pathway are also common with condensed tannin biosynthesis.