

**Title** Genetic engineering in floriculture  
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#### **Abstract**

The global flower industry thrives on novelty. Genetic engineering is providing a valuable means of expanding the floriculture gene pool so promoting the generation of new commercial varieties. Commercialisation of genetically engineered flowers is currently confined to novel coloured carnations. However, further products are expected given the level of activity in the field. In general terms engineered traits are valuable to either the consumer or the producer. At present only consumer traits appear able to provide a return capable of supporting what is still a relatively expensive molecular breeding tool. The biosynthesis of floral pigments, particularly anthocyanins, has been elucidated in great detail in model flowers such as petunia. This knowledge is now being applied to an understanding of a wide range of other flowers and providing a means of targeting colour modification in these species. The engineering of novel traits in a given variety also rests on capabilities in plant transformation that are continuing to expand at a rapid rate. The expression of genes transferred across genera is not always predictable and so requires considerable trial and error to arrive at stable phenotype of commercial interest. Manipulation of metabolic pathways, often requiring introduction of multiple genes can also be problematic. This is a reflection of the complexity of interactions within and between cells at a gene and gene product level. An understanding of gene function is only an essential first step in engineering novel traits. The production of novel flower colour has been the first success story in floriculture genetic engineering. Other traits that have received attention include floral scent, floral and plant morphology, senescence of flowers both on the plant and post-harvest and disease resistance.