

## **The role of *Agrobacterium rhizogenes* K84 plasmid in the biocontrol process of crown gall disease**

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Crown gall, caused by the soil borne bacterium *Agrobacterium spp.*, is a common disease of a wide variety of dicotyledonous plants, stone fruit, such as peaches, grape vines, almond, cherry, rubus species, various other nut-bearing trees and ornamental plants. Pathogenic agrobacteria cause crown gall of hairy root symptoms in susceptible host plants.

Biological control of pathogenic strains of *Agrobacterium* has been achieved using the non - pathogenic strain *A. rhizogenes* K84 and more recently, a genetically engineered derivative of K84 designated K1026. *A. rhizogenes* strain K84 contains three plasmids pAgK84, pAtK84b and pAgK434. Both strains K84 and K1026 produce an antibiotic, Agrocin 84. A number of mechanisms are thought to be involved in the control of pathogenic strains of *Agrobacterium*. One of these mechanisms may be the effect of another antibiotic, agrocin 434, which is produced by *A. rhizogenes* strains K84, K1026, K434 and K1143. The results of this study indicate that: genes involved in the synthesis of agrocin 434 and immunity/ resistance to Agrocin 434 are also carried pAgK434. This situation with pAgK434 resembles pAgK84, which carries both agrocin 84 immunity and synthesis genes.

The ability of the derivative strains to inhibit gall formation on almond roots was compared to that of the wild type K84 parent. The presence of plasmid pAgK84, pAgK434 or pAtK84b enhanced the biological control efficacy of K84 derivative, and the highest level of control was observed with strains harboring two or more plasmids. Treatment with plasmid free derivative did not result in a significant level of control of an *A. rhizogenes* pathogenic strain K27 based on numbers or dry weight of galls formed on injured almond roots.