

## DNA TRANSFER AND GENE EXPRESSION IN LOBLOLLY PINE

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We wish to report on a system for the transfer and expression of foreign genes in pines. The purpose of these experiments is to explore the use of the crown gall bacterium, Agrobacterium tumefaciens for the eventual goal of genetic engineering in important forest species. Previous work has described pines as resistant to infection by crown gall, however, we have found a strain of A. tumefaciens that will produce galls on loblolly pine. The frequency of gall formation is 3 percent. One of these galls has been removed and cultured on pine tissue culture medium. Cells from the resulting callus were extracted with ethanol and tested for the presence of opines by high voltage paper electrophoresis. The strain of crown gall that infects pine is known to synthesize agropine and mannopine in galls that have been induced in sunflower. Opines, particularly agropine, are found in abundance in callus derived from the pine gall, but are not detected in extracts of uninfected plants or uninfected loblolly pine callus. The presence of specific opines in infected pine cells provides strong evidence for the transfer and expression of foreign genes in pines. This system appears suitable for genetic engineering of commercially important conifers including loblolly pine.

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