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Transformation of *Vitis vinifera* by *Agrobacterium* based vectors

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A b s t r a c t : Stable transgenic grapevine callus can be generated by infection *in vitro* of grape tissues with *Agrobacterium tumefaciens* based vectors. These include a range of both Biovar I and Biovar III types either in cointegrate or binary forms. The neomycin phosphotransferase (NPTII) gene has been used as a selectable marker to identify those calli with resistance to the antibiotic kanamycin. The presence of this gene in the calli has been demonstrated by Southern blotting and enzymic analysis. These experiments show that Biovar I type *Agrobacterium* vectors are suitable for grapevine transformation and that the nopaline synthase promoter sequence (pNos) is active in grapevine cells. In similar experiments disarmed *A. tumefaciens* vectors were used in a grapevine system in which plant regeneration is achieved through adventitious bud formation. Kanamycin tolerant plants occur at a low frequency and grow slowly under the selection pressure.

An alternative marker gene coding for the enzyme beta-glucuronidase (GUS) is being used to optimize the transformation of grapevine. This gene is not present in most plants, including grapevine, and when it is used as a marker, individual transformed cells can be identified histochemically (JEFFERSON *et al.* 1987)*. We have used this system to identify transformed grapevine cells in regenerating tissue and to compare the pathway of shoot regeneration in transformed grapevine with the model tobacco leaf disc system.

* JEFFERSON, R. A.; KAVANAGH, T. A.; BEVAN, M. W.; 1987: EMBO J. 6, 3901-3907.