

MOLECULAR MANIPULATION OF REPRODUCTION IN YELLOW-POPLAR

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Abstract. This project seeks to develop techniques for controlling the development of reproductive tissues in southeastern forest tree species, both for the production of trees that flower precociously, as well as for the production of sterile tree lines. A pair of homeotic genes that control floral development in *Arabidopsis*, *LEAFY* (*LFY*) and *APETALA 1* (*API*), were placed under the control of a constitutive promoter and used to transform embryogenic yellow-poplar (*Liriodendron tulipifera*) cells. Transgenic yellow-poplar trees expressing the *LFY* gene are currently in the greenhouse; however, transgenics expressing *API* were not recovered. Work is also proceeding to transform yellow-poplar with the same genes under the control of an inducible promoter. Gene fusions of the cytotoxic *DTA* gene with the *LFY* and *API* promoters are under construction, and will be tested for their ability to eliminate flowering in yellow-poplar lines that flower precociously.

Keywords: *Liriodendron tulipifera*, *Arabidopsis*, precocious flowering, sterility, somatic embryogenesis