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Cannabis Genetic Engineering

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Abstract: Meristem-based transformation systems have been established at the Wisconsin Crop Innovation Center (WCIC) for soybean (*Glycine max* L.), cow pea (*Vigna unguiculata* L.), dry bean (*Phaseolus vulgaris* L.), alfalfa (*Medicago sativa* L.), and Chickpea (*Cicer arietinum* L.) among others. DNA delivery in these systems is primarily via *Agrobacterium tumefaciens*, however a biolistics approach has also been demonstrated. Germline transformation with transmission of transgenes to T1 progeny have been confirmed empirically via RFP and GUS staining of T1 progeny and further validated via PCR assays. We have modified these methods to successfully transform *Cannabis sativa*, an otherwise recalcitrant species. Numerous T0 Events have been produced along with their T1 progeny. We believe this to be the first example of stable, germline transformation of *C. sativa*.