SNYDER, GORDON W., JOHN C. INGERSOLL, and LOWELL D. OWENS, USDA/ARS, PMBL, 10300 Baltimore Ave., Beltsville, MD 20705. - *Agrobacterium*-mediated and biolistic enhanced transformation of sugarbeet.

Molecular improvement of the sugarbeet is dependent on an efficient, reproducible method of direct gene transfer, therefore, our objective was to develop a simple method of genetic transformation. Seeds of Rel-1 were germinated in the dark at 27 °C for 3 weeks on medium containing 1.0 mg/l 6-benzylaminopurine (BA) and 0.5 mg/l 2,3,5-triiodobenzoic acid. The seedlings were then transferred to 4 °C for cold treatment and storage. After 2 months, the shoots were isolated, the leaves trimmed close to the stem, then incubated for 10 days in the dark at 27 °C on a high-auxin containing medium. Following the incubation, the shoots were cut through the longitudal axis, placed cut-side-up on medium containing osmotica, 0.3 mg/l BA, and 0.1 mg/l naphthaleneacetic acid. The tissue was bombarded with gold particles coated with a plasmid containing one of four pathogen-response genes. Half of the explants were then incubated in an *Agrobacterium* culture for 20 min. After a two-day cocultivation on the same medium supplemented with 100 μM acetosyringone, the explants were washed, placed on medium containing either 1.0 or 2.0 mg/l BA, 100 mg/l kanamycin and 300 mg/l cefotaxime and incubated in the light at 25 °C. After 4 weeks green organogenic calli appeared on the explant tissue. Only the tissue inoculated with *Agrobacterium* showed regeneration, and from 10 explants 0-5 calli were produced. Generally, regeneration was better on the medium supplemented with 2.0 mg/l BA, with the controls producing only nonorganogenic green calli.