Remy S., Coemans B., Buysse S., Möller-Nielsen N., **Santos E.**, De Weerdt G., Swennen R. and Sági L., 2002. Promoter tagging in banana. 3rd International Symposium on Molecular and Cellular Biology of Bananas. Leuven, Belgium, 9-11 September 2002. 23-24. Abstract.

ABSTRACT

For the isolation of promoters with specific expression patterns a trapping technology has been assembled for banana, which allows in planta characterization of candidate promoters without a priori isolation of the corresponding genes.

Detection and quantitation of luciferase expression was optimized in transgenic banana for capturing images by an ultrasensitive CCD camera. Time course and stability studies of luciferase expression were performed to determine time points for early detection. A promoterless luciferase reporter gene located next to a T-DNA border region has then been introduced to embryogenic cell suspensions of different banana cultivars. Screening for luciferase activation has been performed without induction as well as via various induction treatments during different steps of *in vitro* regeneration. Two to three months after transformation, screening of approximately 24,000 transgenic colonies revealed 16 candidates (0.07%) with constitutive expression. Screening of 12,000 colonies with the SAR (systemic acquired resistance) activator Bion® resulted in

the identification of six (0.05%) inducible candidates. In parallel, out of 774 proliferating

cultures (4-8 months after transformation) four (0.52%) exerted constitutive expression comparable to the CaMV35S promoter whereas among 157 differentiated *in vitro* plants (8-12 months after transformation) activation was observed in eight (5.1%) individuals. Further screening of colonies, proliferating cultures and *in vitro* plants has been performed under temperature, osmotic and aluminium stress conditions as well as after treatment with paraquat.

Up to now, all candidates have been propagated for plant regeneration and molecular analysis. Regions upstream to the promoter tags have been cloned by PCR techniques and sequenced.