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Marija Cosic, Françoise Laurans, Camille Grand-Perret, Véronique Laine-Prade, Marie-Claude Lesage Descauses, Gilles Pilate, Annabelle Dejardin

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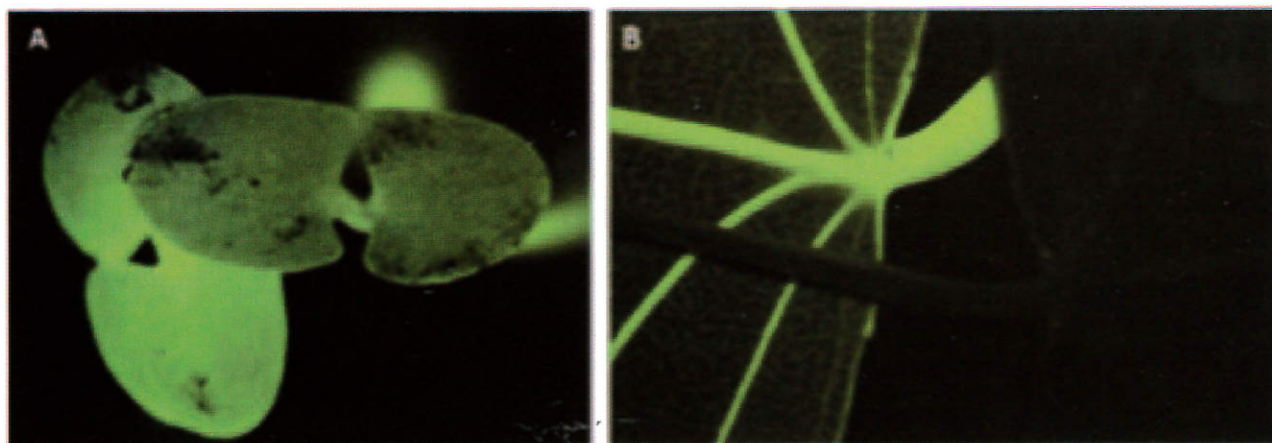
## [Speaker 3.2]

### DEVELOPMENT OF AN INNOVATIVE *IN PLANTA* TRANSFORMATION METHOD IN POPLAR

Ćosić M (1), Laurans F (1), Grand-Perret C (1), Lainé-Prade V (1), Lesage-Descauses M-C (1), Pilate G (1), Déjardin A (1)

1: AGPF, INRA, 45075 Orléans, France, [annabelle.dejardin@inra.fr](mailto:annabelle.dejardin@inra.fr)

*In planta* transformation methods are easier to handle than *in vitro* methods and are potentially applicable to a broad spectrum of genotypes in a given species. When possible, the floral dip is the royal route to obtain rapidly non-chimeric transgenic plants, as the ovules are the direct targets for transformation. First developed in *Arabidopsis* (Bechtold et al, 1993), the floral dip technique remained however mainly restricted to this species, despite worldwide interests. In this work, we developed a transformation method on poplar, based on *Arabidopsis* floral dip, but adapted to poplar floral biology, as poplar is a perennial and dioecious species. We showed that it was possible to produce stable and non-chimeric transgenic poplars by injecting agrobacteria solution into closed female floral buds in early winter. At that stage of development, the ovaries were shown to be still open, giving access to the ovules for the agrobacteria. The protocol was efficient on three different genotypes of *P. nigra*, which were not prone to classical *in vitro* transformation protocols. The efficiency of transformation was up to 0.8%, which is in the same range as in *Arabidopsis*. The stability of the transformation was confirmed by Southern blot analyses and stability of GFP fluorescence over plant development (Fig.1). This *in planta* approach paves the way for genetic engineering and/or genome editing of a broad spectrum of poplar genotypes, including elite commercial cultivars.



**Figure 1: GFP fluorescence of transgenic seedlings (A) and leaves of 4-month-old plants (B). On B panel, the leaf of a non-transformed poplar appears in black.**

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