

## **ROX1, A TOBACCO GENE INVOLVED IN PROCAMBIAL CELL PROLIFERATION AND XYLEM DIFFERENTIATION DURING STAMEN DEVELOPMENT**

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In angiosperms the late phase of stamen development consists of three main processes - filament elongation, pollen maturation and anther dehiscence - and is coordinated with the development of the pistil. We previously demonstrated a role for the hormone auxin on stamen and pistil development (1), by means of the localized expression of *rolB*, an *Agrobacterium* oncogene that mimics the effects of this hormone (2). *pDMC1:rolB* tobacco plants, containing the promoter of the Arabidopsis gene *DMC1* (3), fused to the *rolB* coding region, plants display shorter filaments as compared to controls, a severe delay in anther dehiscence and alterations in male and female meiosis. These developmental alterations could be phenocopied by application of exogenous auxin.

We isolated a tobacco gene, *ROX1*, acting downstream of *rolB*, overexpressed in *pDMC1:rolB* anthers, at all developmental stages. Plants with reduced levels of *ROX1* mRNA, due to the expression of a *ROX1*-antisense construct, have flowers with stamens and pistils longer than normal, due to an increased number of cells. Longer stamens of antisense plants show a delayed xylem differentiation while the shorter stamens of *pDMC1:rolB* plants show a precocious differentiation of xylem cells and a reduced number of cells. In agreement with these data expression of *ROX1* in stamens is mostly localized in procambial cells. The results of this study indicate a role for *ROX1* in procambial cell proliferation and xylem differentiation during stamen development (4). The sequence of *ROX1* shares conserved elements with a number of plant genes, among which three genes of Arabidopsis. We are currently analysing the expression pattern of these genes during stamen development in Arabidopsis and characterising monogenic mutants.

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