A new experimental system to study the virus entry into plant growing points

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Understanding the mechanisms of plant-virus interaction is an essential prerequisite to develop appropriate defence approaches against pathogens. Plant growing points containing the shoot apical meristem have been thought to be protected from virus infection, particularly PVX. We developed a new experimental system, consisting of PVX and recombinant PVX-Cre (P1 recombinase), to study virus entry into growing points. In comparison to PVX infected plants, PVX-Cre infected plants were more severely diseased, stunted and later displayed a "recovery" phenotype. It is known that the recovery-inducing RNA viruses have the unusual ability to infect meristems (RATCLIFF *et al.*, 1999). Based on phenotypic observations of PVX and PVX-Cre infected *N. benthamiana* plants we proposed a more efficient apical colonization by PVX-Cre. To test this hypothesis, Cre-transgenic *N. benthamiana* plants were inoculated with PVX-GFP. Most of the apical shoots investigated exhibited GFP fluorescence. Results reported from studies with other RNA viruses indicated that RNA silencing is implicated in virus meristem exclusion (QU *et al.*, 2005; SCHWACH *et al.*, 2005). To investigate if PVX-Cre is able to suppress RNA silencing, we performed a transient expression assay using *N. benthamiana* plants and a *gfp*-expressing construct. In the absence of PVX-Cre the *gfp* expression was weak most probably due to silencing. Co-expression of PVX-Cre with the *gfp*-containing construct leads to enhanced *gfp* expression. These findings indicate that PVX-Cre might provide a silencing suppressor activity, which allows overcoming the meristem exclusion. Detailed analysis of this phenomenon is in progress.

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