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Title of Thesis:

Investigating of virus / meristem interaction by using Cre-virus vectors

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### ABSTRACT

Developing convenient defense approaches against invading plant pathogens is a gaining more interest in recent years to palliate their impact on many important crops. To develop such approaches, investigation and understanding of the underlying mechanisms of plant-virus interaction is indispensable to achieve such a goal. Potato virus X, PVX, like most plant viruses has been thought to be excluded from plant growing points containing the shoot apical meristem. In the current work, a new experimental system consisting of PVX and recombinant PVX-Cre (P1 recombinase) has been developed, to study the effect of Cre recombinase on virus entry into growing points. PVX-Cre infected plants were more severely diseased, heavily stunted as compared to PVX infected *N. benthamiana* plants and then showed a “recovery” phenotype. Florescence microscopic investigations could show PVX in meristematic tissue of host plant in presence of Cre. Although, it has not any RNA silencing suppression activity, RT-qPCR investigation showed that Cre protein might has an effect on the endogenous polymerase *RDR1* activity. The here reported results give more insights for understanding the mechanism of plant infection process.