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The power and promise of *Citrus tristeza virus* based vector in controlling *Citrus huanglongbing*

Nabil Killiny

University of Florida, USA

Virus-based vectors as regular laboratory tools to express foreign genes in plants are often developed for short-term laboratory experiments in plants. They are also used to knockdown the expression of plant endogenous genes. It is challenging to develop vectors that continuously express foreign genes for long-term. However, the newly developed vectors open up opportunities to create plants that show disease resistance or attract insect predators permanently. *Citrus* currently is threatened with Huanglongbing (HLB), a major disease that caused by Gram-negative bacterium *Candidatus Liberibacter asiaticus* and transmitted by the Asian citrus psyllid, *Diaphorina citri*. A developed *Citrus tristeza virus* (CTV)-based vector that shows stability is considered viable for use in the field to control HLB. Many potential uses for this vector have been addressed. We used this vector to disturb quorum-sensing resulting in interrupting the bacterial growth within the plant and the transmission by the insect. Interestingly, we can also use CTV-based vector to mitigate the insect through RNA interference (RNAi). CTV-vector could be engineered with truncated genes of *D. citri* to induce gene silencing causing mortality or malformation. Additionally, using CTV-vector to knockdown citrus endogenous genes such as phytoene desaturase (PDS) or delta amino levulinic acid dehydratase (δ -ALAd), allowed us to bioengineer psyllid attractant plants that could be used as trapping borders in *Citrus* groves. CTV-based vector would be a powerful tool for fast-track screening of sequences for RNAi, antibacterial peptides and understanding the pathogenicity of *Ca. Liberibacter asiaticus* to provide sustainable solutions for the control of HLB.

Biography

Nabil Killiny is Assistant Professor in the Department of Entomology and Nematology & Citrus Research and Education Center (CREC), Institute of Food and Agriculture Sciences, University of Florida. The French Society of Phytopathology, awarded with student fellow travel Award, 2004 Synergistic Activities: Ad Hoc Manuscript Review: Plant Pathology, Phytopathology, Journal of Bacteriology, PLoS One, Journal of Insect Physiology, Molecular Plant-Microbe Interactions, Current Microbiology, Electron Microscope Techniques, Biomedicine and Biotechnology, European Journal of Plant Pathology.

Nabilkilliny@ufl.edu

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