Florida Citrus Advanced Technology Program

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

Instructions Complete the fields based on your project specs. When finished, save the form to your local disk using a unique name. Then, go to **http://research.fcprac.com**, and log in with your user name and password using Researcher Login in the lower left. Find this project title and click on **Submit a Report**. Update your profile information if needed, then upload this report as directed.

2009-2010 REPORT	CATEGORY (drop-down)	TODAY'S DATE (m/d/yr)
● *Quarterly Report* ○ *Annual Report* ○ *Final*	Management	12/26/09

WHAT IS THE "HEADLINE" FOR THIS REPORT (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Transformed Arabidopsis with four citrus SA regulators

TITLE and CONTACT INFORMATION

Proposal Title Manipulating SA-mediated defense signaling to stimulate broad-spectrum resistance to HLB and other diseases in citrus

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Organization University of Maryland Baltimore County	*Total Direct Funds (current year)* 160897.00

REPORT UPDATE (650 words; provide details about your headline)

In this third quarter, we have primarily focused on the first two objectives of our proposal as planned in our timeline.

Objective 1: Identify genes positively regulating SA-mediated defense in citrus
So far, we cloned four citrus SA homologues, ctNPR1, ctEDS5, ctNDR1 and ctPAD4 via the RT-PCR approach. We are currently working on cloning the fifth gene, ctEDS1.

We have also finished collecting citrus tissues infected with Ca. L. asiaticus in a time course. Samples will be used to study the expression profile of salicylic acid (SA) homologues and SA analysis.

Objectives 2: Complement Arabidopsis SA mutants with corresponding citrus homologues
We cloned all four citrus homologues, ctNPR1, ctEDS5, ctNDR1 and ctPAD4 into the binary vector pBINplusARS and already transformed Arabidopsis with each construct. We obtained T0 seeds for all these constructs and selected some T0 seeds for T1 transgenic plants. Our transgenic lines and expected outcomes are summarized below:

1. CtNPR1/pBINplusARS to Col or the npr1-1 mutant: we have obtained T1 seeds and will test defense phenotypes in the next generation (T2). If the ctNPR1 gene is functional in Col, we expect that the transgene confers enhanced disease resistance in Col background and complement the npr1-1 mutant.
2. CtNDR1/pBINplusARS to Col or the ndr1-1 mutant: we have obtained T0 seeds and will select T1 seeds on Kanamycin containing plates and test T2 transgenic plants for defense responses in both Col and ndr1-1 background.
3. CtEDS5/pBINplusARS to Col or the eds5-1 mutant: progress is similar to the ctNDR1 construct.
4. CtPAD4/pBINplusARS to Col or the pad4-1 mutant: progress is similar to the ctNDR1 construct.

Objectives 3: Assess the roles of SA regulators in controlling disease resistance in Citrus
A ctNPR1/pBINplus/ARS construct has been in the pipeline of transforming citrus.