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	8/3/10

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

Analyze defense phenotypes of Arabidopsis expressing 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)

This is an update of the annual report submitted in April 2010.

Objective 1: Identify genes positively regulating SA-mediated defense in citrus

We continue to clone additional SA genes from citrus. We are focusing on three well-characterized SA regulators, EDS1, SID2, and WIN3. Recent developments in the cloning part include: 1) We obtained both 5' and 3' end RACE sequences for ctEDS1 and are in the process of cloning the full length ctEDS1 gene; 2) We obtained 3' end RACE sequence for ctWIN3 and 5' end RACE sequence for ctSID2 and we are now trying to use alternative methods to obtain 5' end sequence for ctWIN3 and 3' end sequence for ctSID2.

We had problems before in obtaining transgenic plants expressing ctEDS5/pBINplusARS. We reasoned that the transformation rate with this gene might be low. So we re-did plant transformation, starting with several flats of T0 plants for both Col and the eds5-1 mutant in order to increase the chance of obtaining transformants. Now we have several independent Arabidopsis lines in both Col and eds5-1 background expressing ctEDS5. We will further study these plants for their defense phenotypes in the next generation. We also transiently expressed ctEDS5 in tobacco and found that overexpression of this gene did not cause obvious cell death and other damages to tobacco cells.

Objectives 2: Complement Arabidopsis SA mutants with corresponding citrus homologues

Developments on other transgenic plants include obtaining homozygous T2 seeds for the following transgenic plants by plate selection with antibiotics: 1) Col and npr1 expressing ctNPR1/pBINplusARS; 2) Col and pad4-1 expressing ctPAD4/pBINplusARS; and 3) Col and ndr1 expressing ctNDR1/pBINplusARS. We already planted some of these lines for defense phenotype assays.