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*	HLB Pathology	9/3/10

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

Antimicrobial peptides found that work against citrus greening

TITLE and CONTACT INFORMATION

Proposal Title Identify and deliver antibacterial peptides and/or proteins for the control of citrus greening (Huanglongbing or HLB)

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Phone 863-956-4311	*Project Duration (years)* 3 *Year of Project* 1
Organization UF, IFAS, CREC	*Total Direct Funds (current year)* 309194

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

This is a project to find an interim control measure to allow the citrus industry to survive until resistant or tolerant trees are available. We are approaching this problem in three ways. First, we are attempting to find products that will control the greening bacterium in citrus trees. We have chosen initially to focus on antibacterial peptides because they represent one of the few choices available for this time frame. We also are testing some possible anti-psyllid genes. Second, we are developing virus vectors based on CTV to effectively express the antibacterial genes in trees in the field as an interim measure until transgenic trees are available. With effective antibacterial or antipsyllid genes, this will allow protection of young trees for perhaps the first ten years with only pre-HLB control measures. Third, we are examining the possibility of using the CTV vector to express antibacterial peptides to treat trees in the field that are already infected with HLB. With effective anti-Las genes, the vector should be able to prevent further multiplication and spread of the bacterium in infected trees and allow them to recover.

We have completed several large screenings of antibacterial peptides against Las in sweet orange trees. About 50 different antibacterial constructs have been tested in trees. We have found two peptides that appear to effectively protect sweet orange trees from HLB. However, we and other labs continue screening for better genes that more effectively control HLB and can be approved for use in a food crop.

We also are improving the CTV-based vector to be able to produce multiple genes at the same time. This could allow expression of genes against HLB and canker or multiple of genes against HLB.

Another major goal is to do a field test of the CTV vector with antibacterial peptides, which is an initial step in obtaining EPA and FDA approval for use in the field. After some delays, we have received permission for USDA APHIS and are now establishing the field test.