CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD December 2015

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Disrupt LuxR solo quorum sensing that mediates plant virulence and insect transmission of Candidatus Liberibacter asiaticus to control the disease

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
04-11-2016	Citrus Research and Development Foundation	Infection Consequences

REPORT UPDATE (500 words-It is not necessary in this public report to disclose your institution's proprietary information or intellectual property.)

Our project is based on the biology of quorum sensing of Candidatus Liberibacter asiaticus. The system here the two components system LuxR-AHL.
The Genome of Candidatus Liberibacter asiaticus (CLas) revealed the presence of luxR that encodes LuxR protein, one of the two components typical of bacterial "quorum sensing" or cell-to-cell communication systems. Interestingly, the genome lacks the second components; luxI that produce Acyl-Homoserine Lactones (AHLs) suggesting that CLas has a solo LuxR system. In the current project, we will test the effect of AHL-producing citrus plants on the pathogencity of CLas.
We have selected different Lux-I genes from different bacteria expressing different AHLs.

In order to isolate the genes, we will obtain bacteria from the American type culture collection including Agrobacterium tumefaciens, Aeromonas hydrophilia, Agrobacterium vitis, Burkholderia cepacia, Chromobacterium violaceum, Panteoa stewartii, Pectobacterium carotovorum, Pseudomonas aeruginosa, Pseudomonas aeruginosa, Pseudomonas fluorescens, Rhizobium leguminosarum bv. Viciae, Rhizobium leguminosarum bv. Viciae, Rhizobium leguminosarum bv. Viciae, Rhodobacter sphaeroides, Serratia liquifaciens, Sinorhizobium meliloti, Vibrio anguillarum,
Once we receive the bacteria we will culture them prior to insolate the genes by PCR.
We will insert genes in CTV-based vector prior to the infiltration inside citrus trees.

Our aim is to interfere with CLas signaling by expressing AHL which will enhance the bacterial aggregation and attachment and results in localization of the bacterium in certain branches.

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Project Number 15-17

Project Duration (years) 2 *Year of Project* 1

Total Funds (current year) $87640

Form PR-12 Quarterly Reports **SUBMIT REPORT**

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.