CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD December 2016

(●) *Quarterly Report* ( ) *Final*

Proposal Title

A multi-omics approach toward the culturing of Liberibacter asiaticus

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
02/20/2017	Citrus Research and Development Foundation	CLas culture, genomics, molecular biology, and Koch's

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

In this quarter, we continue to focus on the metabolomics of culturing CLas and have identified many mass spectrometry ions that either disappear or appear with growth over time. Those that disappear with growth over time may be limiting the growth of L. creascens in culture, and, by extension, may be limiting in the growth of CLas. Those compounds that accumulate with time in these cultures may be toxic for the growth of L. crescens, and, by extension, may be toxic to CLas as well. One those compounds are identified we can re-design the media accordingly. We also continue to modify media for CLas according to the metabolomics or citrus phloem. In this quarter, we obtain data from Dr. Killiny on the metabolome of the insect hemolymph. We now have media based on the hemolymph and citrus phloem. We are also using a better primer set to assess the growth of these cultures. We aso started a new nutrition experiment in December 2016 that is based on our discovery that citric acid is a preferred carbon substract for Liberibacter in culture. Our hypothesis is that if we can limit the amount of citric acid in phloem, we should be able to limit the survivablity of CLas in citrus phloem. Our first experiment on this is designed to determine whether we can alter the ionic balance in phloem to prevent citric acid loading into the phloem. We are testing this by varying the source of nitrogen provided to citrus saplings in the greenhouse. In addition to the traditional ingredients of a citrus nutrient solution, four sets of 20 plants are receiving wither no N, sodium nitrate, ammonium nitrate, or potassium nitrate. We will continue this experiment through a period of flushing since new growth may be required. We expect to harvest this experiment in February or March of 2017. We will extract phloem from these plants and mearsure citruc acid with the help of Nabil Killiny. We expect citric acid levels to be the highest in the postassium nitrate teated plants and lowest in the sodum nitrate treated plants.

PI First Name Eric

PI Last Name Triplett

Email ewt@ufl.edu

Phone 352-262-5898

Organization University of Florida

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Total Funds (current year) 169,014

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

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.