CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD March 2014

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Blocking the vector transmission of Cadidatus Liberibacter asiaticus to stop the spread of Huanglongbing in citrus

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
8/26/14	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.)

Project narrative:
We aim to understand the specific interactions between Candidatus Liberibacter asciaticus (CLas) and the insect vector Asian citrus psyllids (ACP) to block the transmission.

Complexome
In order to get a better understanding of the transmission mechanism of citrus Huanglongbing (HLB) by the insect vector, Asian citrus psyllid (ACP), we have been working on unraveling the protein-protein interactions (PPI) between ACP and the HLB associated bacterial agent, Candidatus Liberibacter asiaticus (CLas) by means of proteomics. Complexome is the whole set of the protein-protein interactions in a particular cell or organism. During the transmission process, CLas bacteria traverse inside the insect vector systemically and various PPIs and protein complexes (formed by protein constituents from both CLas and ACP) must be involved; therefore, our aim is to find the proteins involved in the CLas-ACP interactions by studying the differences between the complexome of CLas-free and CLas-infected ACP. So far, we have established the Blue Native Polyacrylamide Gel Electrophoresis (BN-PAGE) system in our lab to study the protein complexes (i.e. complexome) from CLas-free and CLas-infected ACP at their native status, and a further separation of the protein complexes in BN-PAGE by a second dimension of SDS-PAGE helped us obtain more detailed information on all the subunits or constituents of the protein complexes at their denatured status. By comparing the differences between the 2D BN/SDS-PAGE gel images from CLas-free and CLas-infected ACP, we have successfully located several protein spot candidates for protein identification by mass spectrometry. Our next step is to use far-western blotting to show the specific protein-protein interactions between the identified protein(s) and CLas, which will further validate our results from 2D BN/SDS-PAGE work. Our work should contribute to our aim of breaking the connections between the bacterial agent and the insect vector, thus slowing or even stopping the disease spread in the field.

PI First Name Nabil

PI Last Name Killiny

Email nabilkilliny@ufl.edu

Phone 863-956-8833

Organization University of Florida, CREC

Project Number 559

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

Total Funds (current year) $71,717.00

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

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.