# CITRUS ADVANCED TECHNOLOGY PROGRAM

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

▶ INSTRUCTIONS

(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

## Candidatus Liberisbacter is transmitted sexually by ACP

Proposal Title

Is Candidatus Liberibacter asiaticus, the pathogen responsible for Huanglongbing in Florida, sexually transmitted between adult psyllids?

| Today's Date | Sponsoring Organization (drop-down) | Category (drop down) |
|---|---|---|
| 7/8/11 | Citrus Research and Development Foundation | Infection Consequences |

**REPORT UPDATE** (500 words; summarize your accomplishments )

Candidatus Liberibacter asiaticus (Las) is a fastidious phloem-inhabiting gram-negative bacterium transmitted by Asian citrus psyllid (ACP). Transmission mechanisms of Las have been intensely investigated recently, yet key information gaps still exist. In this research, we investigated whether Las is transmitted between infected and uninfected psyllid adults during courtship. Forced mating between Las-infected males and uninfected females showed that Las is sexually transmitted from Las-infected male psyllids to uninfected females in low proportions but not from infected females to uninfected males or among psyllids of the same sex. Las was detected in the ovaries and eggs of infected females. A latent period of 7 days or more was required to detect the bacterium in the recipient females.

Given the evidence for sexual transmission of Las during courtship, we investigated whether the bacterium was present in the reproductive organs of ACP. Long rod shaped as well as spherical structures resembling Las were observed in female ovaries using a transmission electron microscope but were not observed in the ovaries of uninfected ACP females. The size of rod shaped structures varied from 0.39-0.67 µm long and 0.19 to 0.39 µm wide. The spherical structures measured from 0.61 to 0.80 µm in diameter. This investigation proved that Las is sexually transmitted by ACP during courtship and established evidence that the bacteria colonize reproductive organs. Moreover, these findings provide an alternative explanation for Las spread among psyllids even in absence of infected host trees.

*PI First Name* Lukasz

*PI Last Name* Stelinski

*Email* stelinski@ufl.edu

*Phone* 863-956-8851

*Organization* University of Florida

*Contract Number* 332

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

*Total Funds (current year)* $50,080.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.