CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL PROGRESS REPORT FORM: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

PROJECT QUARTER END February 2023 ● *Quarterly Report* ○ *Final*

Proposal Title

CLas Inhibition with Antisense Oligonucleotides for Management of Citrus Greening Disease

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
03/27/2024	Citrus Research and Development Foundation	ACP Vector

ABSTRACT (Executive Summary-public report-do not disclose proprietary information or intellectual property)

1. Please state project objectives and what work was done this quarter to address them:

Objectives:

1. Screen FANA antisense oligonucleotide targeting CLas for efficacy under field conditions. Our working hypothesis is that CLas-specific FANAs can be delivered using microinjection developed for RNAi-based technologies to reduce CLas in infected citrus trees.

2. Evaluate FANA antisense oligonucleotide targeting CLas to reduce vector transmission. Our working hypothesis is that CLas will be inhibited explicitly in psyllids by using CLas-specific FANAs, resulting in reduced CLas acquisition and transmission by ACP under field conditions.

Methods:

Objective 1. Screen FANA antisense oligonucleotide targeting CLas for efficacy under field conditions. Field trials with laboratory-vetted FANAs were conducted in research groves at the UF Citrus Research and Education Center. Treatments were applied to 10-year-old, CLas-infected 'Hamlin' trees of a standard size and CLas titer.

AUM LifeTech designed and synthesized FANA ASOs complementary to two essential CLas genes: the CLas NAD-dependent DNA Ligase gene (*LigA*) and the CLas DNA B-Helicase gene. As a negative control, a FANA ASO was designed as a scramble sequence with no complementarity with any citrus gene. Antibiotic application (Fireline - Oxytetracycline) and insecticide-only treatments were applied to trees as positive and negative control treatments, respectively. Each treatment was applied to 15 trees in 1-acre plots replicated three times in a randomized complete block design. Treatments were applied to both sides of the tree canopy

PI First Name Kirsten

PI Last Name Pelz-Stelinski

Email pelzstelinski@ufl.edu

Phone (407) 884-2035

Organization University of Florida

Sponsor Project Number 21-021

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

% Completion of Objectives (FDACS requirement) 95.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.