## CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD
September
2016
Quarterly Report $\square$
Final

Proposal Title
Identification of Bacillus thuringiensis endotoxin active against adult Asian citrus pysllid.

| Today's Date | Sponsoring Organization (drop-down) | Category (drop down) |  |
| :--- | :--- | :--- | :--- |
|  | 11/15/16 | Citrus Research and Development Foundation |  |

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

The objective of this project is first to identify a Bacillus thuringiensis (Bt) crystal toxin with basal toxicity against Asian citrus psyllid (ACP). The toxicity of the selected toxin will then be enhanced by addition of a peptide that binds to the gut of $A C P$. This peptide addition to the toxin is expected to enhance both binding and toxicity against ACP.

We identified two Bt toxins that have toxicity to ACP in bioassays. The most toxic of these ACP-active toxins has been modified with gut binding peptide 18. The sequence encoding ACP gut binding peptide 18 was introduced into the toxin at four different sites. The specific sites for insertion of the sequence was delineated based on PyMol modeling to increase the likelihood that the peptide would be exposed on the surface of the toxin. As some of the modified toxins did not express well in E. coli, additional approaches for toxin expression are being screened.

PI First Name Bryony
PI Last Name Bonning
Email bbonning@iastate.edu
Phone 515-294-1989

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