SOUTHERN INSECT MANAGEMENT RESEARCH UNIT

USDA-ARS

Mid South Area

Mission

- *The mission of the Southern Insect Management Research Unit (SIMRU) is to generate new knowledge of arthropod pest biology, ecology and management and integrate this knowledge into contemporary farming systems that will promote economical and environmentally stable pest management practices for the southern U.S.*
- *The vision of SIMRU is to be a recognized center of innovation for negating agricultural pest problem through deployed scientific knowledge of pest biology, ecology and management options.*

CRIS PROJECT

Insecticide Resistance Management and New Control Strategies for Pests of Corn, Cotton, Sorghum, Soybean, and Sweetpotato

PROJECT INVESTIGATORS

- Clint Allen
- Randall Luttrell **(Project Leader)**
- OP Perera
- Gordon Snodgrass
- Yu Cheng Zhu

CRIS PROJECT

Control of Tarnished Plant Bugs by Biocontrol and Other Methods

PROJECT INVESTIGATORS

- Randall Luttrell
- Maribel Portilla
- **Gordon Snodgrass (Project Leader)**

CRIS PROJECT

Effect of Resistance on Insect Pest Management in Transgenic Cotton

PROJECT INVESTIGATORS

- Clint Allen
- Randall Luttrell
- **OP Perera (Project Leader)**
- Maribel Portilla

JANUARY 1ST

NEW PUBLICATION CONGRATULATION Dr. OP Perera

Cloning and expression profiling of odorant-binding proteins in the tarnished plant bug, *Lygus lineolaris*

J. J. Hull1*, O. P. Perera1† and G. L. Snodgrass1†

Insect Molecular Biology (2014) 23(1), 78–97

Abstract: In insects, the perception and discrimination of odorants requires the involvement of odorant- binding proteins (OBPs). To gain a better molecular understanding of olfaction in the agronomic pest *Lygus lineolaris (the tarnished plant bug), we used a* transcriptomics-based approach to identify potential OBPs. In total, 33 putative OBP transcripts, including the previously reported *Lygus antennal protein* (LAP), were identified based on the characteristic OBP Cys signature and/or sequence similarity with annotated orthologous sequences. The *L. lineolaris* OBP (LylinOBP) repertoire consists of 20 'classic' OBPs, defined by the spacing of six conserved Cys residues, and 12 'Plus-C' OBPs, defined by the spacing of eight conserved Cys and one conserved *Pro* residue. Alternative splicing of OBP genes appears to contribute significantly to the multiplicity of LylinOBP sequences. Microarray-based analysis of chemosensory tissues (antennae, legs and proboscis) revealed enrichment of 21 LylinOBP transcripts in antennae, 12 in legs, and 15 in proboscis, suggesting potential roles in olfaction and gustation respectively. PCR-based determination of transcript abundance for a subset of the LylinOBP genes across multiple adult tissues yielded results consistent with the hybridization data.

Keywords: *Lygus lineolaris, odorant-binding proteins,* olfaction, real-time PCR, Plus-C OBP, classic

OUTREACH

Kenya Dixon and Chris Johnson judged Science Fair at Coleman Middle School on January 24, 2014.

JANUARY BIRTHDAYS CELEBRATION

- Tabatha