



First Name: Juan Luis Last Name: Jurat-Fuentes

Title: Professor

Institution: University of Tennessee

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Education:

PhD: Entomology (2002) University of Georgia, USA MS: Genetics (1997) University of Valencia (Spain) BS: Biology (1995) University of Valencia (Spain)

General Areas of Expertise:

Mode of action of insecticidal proteins from bacteria, resistance mechanisms to insecticidal proteins from bacteria and transgenic crops, insecticidal gene silencing, identification of insect enzymes for industrial applications

Short Bio:

Dr. Jurat-Fuentes is originally from Valencia (Spain) where he obtained his MS in Genetics from the University of Valencia, and came to UTIA from the University of Georgia, where he obtained his PhD in Entomology. He is currently an Associate Professor in the area of Insect Physiology and Molecular Pathology in the Department of Entomology and Plant Pathology. Research interests are focused on the insect digestive system as a target for novel bioinsecticides and as a prospecting resource for new enzymes of industrial interest, specifically enzymes to digest plant biomass during ethanol biofuel production. His expertise is on the mode of action and resistance mechanisms against insecticidal proteins from the bacterium Bacillus thuringiensis (Bt). These Bt proteins are considered the most important bioinsecticide worldwide and are also produced by transgenic crops. In this field, Dr. Jurat-Fuentes has contributed to the identification of functional receptors for Bt toxins produced in Bt crops, and to identify mechanisms of resistance to these Bt toxins in laboratory and field-selected insect pests. He has also contributed to our understanding of how the insect gut responds to intoxication with Bt proteins. The goal of Dr. Jurat-Fuentes' research is to develop more efficacious and sustainable insecticidal technologies.

Five Representative Publications:

Banerjee R, Hasler J, Meagher R, Nagoshi R, Hietala L, Huang F, Narva K, and Jurat-Fuentes JL. (2017) Mechanism and DNA-based detection of field-evolved resistance to transgenic Bt corn in fall armyworm (Spodoptera frugiperda). Sci Rep 7:10877.
Guo, Z., Kang, S., Chen, D., Wu, Q., Wang, S., Xie, W., Zhu, X., Baxter, S. W., Zhou, X., Jurat-Fuentes, J. L., and Y. Zhang (2015) "MAPK signaling pathway alters expression of midgut ALP and ABCC genes and causes resistance to Bacillus thuringiensis Cry1Ac toxin in diamondback moth" PLOS Genetics e1005124.
Jurat-Fuentes, J. L., Karumbalaih, L., Jakka, S. R. K., Ning, C., Liu, C., Wu, K., Jackson, J., Gould, F., Blanco, C., Portilla, M., Perera, O. P., and M. J. Adang (2011) "Reduced levels of membrane-bound alkaline phosphatase are common to lepidopteran strains resistant to Cry toxins from Bacillus thuringiensis" PLOS One 6(3): e17606.
Chen, J., Hua, G., Jurat-Fuentes, J.L., Abdullah, M.A., and M. J. Adang (2007) "Synergism of Bacillus thuringiensis toxins by a fragment of a toxin-binding cadherin" Proc. Natl. Acad. Sci. USA 104(35): 13901-13906.
Oppert, C., Klingeman, W.E., Willis, J.D., Oppert, B., and J. L. Jurat-Fuentes (2010) "Prospecting for cellulolytic activity in insect digestive fluids" Comp. Biochem. Physiol. Part B 155: 145-154.

FEWSTERN Symposium 2017 Presentation Title and Abstract:

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