Discovery of a viral pathogen in the Asian citrus psyllid

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Technical Abstract: We used a Metagenomics approach and discovered an insect-infecting virus in adult Asian citrus psyllids in Florida. Though wide spread in nature, this is the first report of a Fijivirus in North America. The Asian citrus psyllid, Diaphorina citri Kuwayama (Hemiptera: Psyllidae) is a small insect that feeds on the sap of citrus trees and is the primary vector of the plant pathogenic bacterium, Candidatus Liberibacter asiaticum, which causes Huanglongbing, HLB, also known as Citrus Greening. The bacterium, which was recently discovered in Florida, causes severe economic losses to citrus reducing fruit yields and producing fruit with a bad taste. To identify new biological control agents in psyllid populations we examined the genetic sequences from an expression cDNA library made from adult psyllids collected from citrus trees. Mining of the dataset identified a new insect virus which was similar to the insect-infecting Reovirus group. Comparison of the virus gene sequences indicated that the virus is in the Family: Reoviridae, Genus: Fijivirus described from planthoppers a closely related insect group found in tropical regions. We are conducting further tests to determine if this new virus will help to reduce psyllid populations and thus reduce the spread of citrus greening.