

# *Wolbachia* Could Help Whip HLB



By Rick Dantzler, CRDF chief operating officer

As a non-scientist, I make it a habit to regularly go over in my mind basic scientific truths to make sure the projects the Citrus Research and Development Foundation (CRDF) funds have valid hypotheses. For example, I recently reviewed the basic tenets of the “disease triangle.” This is an easy-to-understand explanation of how plant disease occurs that was put forth by George McNew, a plant pathologist, more than 60 years ago.

McNew posited that for disease to exist, there must be an intersection between a susceptible host (citrus plant), a virulent pathogen (*Liberibacter*) and a favorable environment (like Florida). Modify or control the host, pathogen or environment and the cycle of the disease is broken. It is this way with all diseases, not just HLB.

What caused me to reflect upon this truth was a conversation I recently had with Wayne Simmons, an outstanding member of CRDF’s Research Management Committee. Simmons gives a huge amount of time to studying proposals we receive; he does his homework and always comes to meetings prepared. I was picking his brain about where we were with our research and what he thought we needed to do.

“I keep going back to the psyllid,” Simmons said. “If we could get control of that bug, we’d get control of the disease.”

On nearly the same day, I received a link to a story from grower Ed Dickinson. He has an infectious curiosity about science and serves the citrus industry however he can. The story was on how a bacterium in mosquitoes in Central America was being altered to eliminate malaria. The article cited work with another bacterium found in mosquitoes, *Wolbachia*, and how it was being altered to knock out dengue and other mosquito-borne infections.

I forwarded the article to Jim Graham, University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) emeritus professor, who is knowledgeable about all things citrus and advises CRDF. I asked him what he thought about the article and whether the principle could be used in the fight against HLB.

“Kirsten (Pelz-Stelinski) is working with *Wolbachia*. If anybody would know, she would,” said Graham.

So, I contacted Pelz-Stelinski, a distinguished UF/IFAS scientist. Graham was correct; she is in fact working with *Wolbachia* in the fight to whip HLB.

“*Wolbachia* live in the psyllid,” she said. “Using synthetic molecules that mimic DNA and inhibit bacterial gene expression, we’re attempting to create a product that can be applied to trees that affects *Wolbachia*, which in turn might knock down transmission of *Liberibacter* and prevent it from harming the tree.”

To this non-scientist, it sounds like science fiction, but the concept has been used often to stop pathogens that affect humans, so why wouldn’t it work against pathogens that affect plants? And if it does, we just might end up with a product that, as Simmons would say, gives us “control of that bug.”

