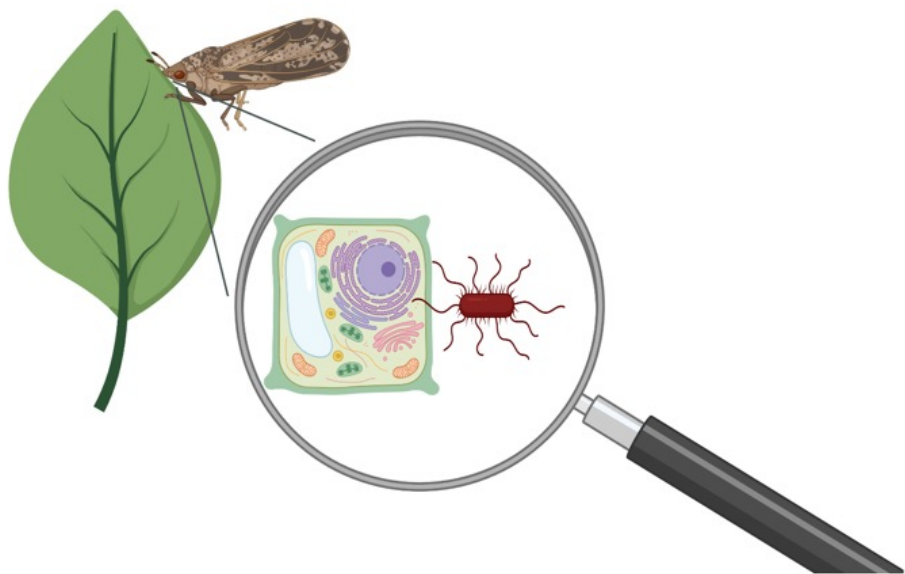


Getting to the Point: What Happens When Citrus Cell Meets CLas Bacteria?

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Researchers have struggled to understand how the interaction of CLas with citrus host cells leads to the disease we know as HLB. Molecular techniques were used to study changes in expression of thousands of genes within citrus plants, to identify key differences between healthy and diseased plants, or sensitive and tolerant plants. But this is a difficult challenge. CLas cannot be cultured in vitro, so we cannot simply add bacteria to cell cultures to study the primary interaction, as can be done with other plant pathogens. The only

ways to conduct an experiment to understand this interaction are either by grafting infected budwood to the test tree or allowing CLas-infected Asian citrus psyllids (ACP) to feed. Infection and disease development take time, however, and what previous gene expression studies revealed were not the primary events at first point of interaction, but the cascade of subsequent events that are more consequences rather than the cause of the disease response. To get closer to the starting point, we used just-sprouting 'Valencia' buds in vitro

and exposed them to feeding by CLas-infected or noninfected ACP and compared with buds without ACP and examined gene expression difference within one day. We could separate the plant's response to ACP feeding from its response to CLas and learned more about the tricks CLas first uses to thrive within the plants while causing a calamitous disease. We are repeating the experiment with tolerant citrus and looking earlier in time, to identify gene targets and inform strategies to develop HLB resistant trees.

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