

Thursday, September 25, 3:00-3:30 p.m.

Unraveling quantitative disease resistance with the tomato - Ralstonia solanacearum pathosystem

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Plant disease resistance can be viewed as a spectrum, with complete, qualitative resistance governed by single genes on one end, and, partial, quantitative resistance conditioned by multiple genes on the other. Enormous progress has been made in understanding qualitative resistance. In contrast, quantitative disease resistance (QDR) remains a black box, despite the fact that it is a common form of host resistance. We use the tomato - *Ralstonia solanacearum* pathosystem as a model for understanding QDR. *R. solanacearum* is the causal agent of bacterial wilt (BW), and a major production constraint in Solanaceous crops. Using this pathosystem, we are addressing both genetic and environmental factors that contribute to QDR. Our genetic work is focused on identifying quantitative trait loci (QTL) that underlie BW resistance. This has historically been challenging, in part due to the difficulty in accurately phenotyping wilting, the most prominent disease symptom. We have identified phenotypes that can be accurately measured and correlate strongly with disease, and are using these in QTL analyses for BW resistance. To understand how environmental factors influence QDR, we are focused on how the soil environment impacts resistance to *R. solanacearum*, a soil-borne pathogen. Recent progress in these areas will be discussed.