ABSTRACT

"Pathogenesis as a probe of plant biology"

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Plants have evolved a powerful and multi-layered immune system to defend against infection by most microbial organisms. However, successful pathogens, such as the bacterial pathogen *Pseudomonas syringae* pv. *tomato* (*Pst*) strain DC3000, have developed specific virulence factors to overcome host immunity and cause diseases. During infection, *Pst* DC3000 produces several virulence factors to engage multiple host cell types and diverse host physical and chemical barriers. The bacterial type III secretion system (T3SS) delivers a battery of virulence "effector proteins" directly into the host cell. The phytotoxin coronatine mimics the plant hormone jasmonate. Study of the molecular action of effector proteins and coronatine highlights the utility of bacterial pathogenesis as a powerful probe of plant immunity, jasmonate signaling, cell biology, and stomatal guard cell signaling.