Public Abstract
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Graduation Term:SP 2017
Department:Plant, Insect and Microbial Sciences
Degree:PhD
Title:The Bacterial Type III-Secreted Protein AvrRps4 is a Bipartite Effector

Like humans, plants have an immune system to protect themselves against invading pathogens. Unlike humans, however, the plant immune system is inborn and genetically predetermined by resistance genes. Pathogenic bacteria secrete proteins (effectors) into plant cells which manipulate the host cell, often to the benefit of the pathogen. The proteins encoded by resistance genes in resistant plants can specifically detect these effectors and ramp up a potent immune response, often resulting in cell death. By studying these effector proteins and how hosts can recognize them we hope to generate novel, durable methods to protect economically important plants from devastating pathogens. With a rapidly growing population in the face of global climate change it is more important than ever to protect the plants which we all use for food, fiber, and fuel. The effector AvrRps4 is recognized by the protein pair RPS4/RRS1. After delivery into plant cells AvrRps4 is processed into two parts (AvrRps4N and AvrRps4C). AvrRps4C was shown to trigger a cell death response in turnip and has been the most well-studied domain of AvrRps4. My research shows that AvrRps4N is also a functional effector domain. In some plants, in the absence of AvrRps4C, it enhances bacterial virulence. In resistant plants it enhances immunity in the presence of AvrRps4C. Finally, I show that AvrRps4N alone can trigger cell death on some plants, further confirming its role as a bona fide effector domain.