

# Plant Genomics

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## Cross kingdom RNAi in plant pathogen interactions

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Small RNAs (sRNAs) are a class of short non coding regulatory RNAs that are present in almost all the eukaryotes and mediate gene silencing in a sequence specific manner. Studies from my lab and others have shown that plant endogenous sRNAs play a critical role in host immune responses against pathogen attacks. We have also demonstrated that some sRNAs from eukaryotic pathogens, such as *Botrytis cinerea*, the fungal pathogen that causes grey mold disease on more than 200 plant species could be translocated into host plant cells. These sRNAs act as effector molecules to suppress host immunity genes for successful infection. This finding represented the first example of naturally occurring Cross kingdom RNAi during the host pathogen interactions. Similar phenomenon was recently reported in mammalian system, where a gastrointestinal nematode *Heligmosomoides polygyrus*, also delivers sRNAs to mammalian cells and target host genes involved in innate immunity. Thus, Cross kingdom RNAi was used as an aggressive virulence mechanism by both plant and animal pathogens and pests. Furthermore, we have found that transgenic plants that expressing sRNAs that targeting fungus *Botrytis* Dicer like genes could effectively block the generation of sRNA effectors and suppress disease symptom. These results suggest that sRNA trafficking is bidirectional; sRNAs could be also transferred from the host plants to the interacting pathogens.

### Biography

Hailing Jin is currently working as a Professor and Director to Genetics, Genomics and Bioinformatics Graduate Program and Vice Chair to Plant Pathology & Microbiology Department and has obtained PhD degree in 1996 from Shanghai Institute of Plant Physiology and Ecology and her areas of expertise on Small RNA-mediated Gene Regulation; Plant Immunity. She has received many awards like 2010-15 NIH R01 Award, 2007-12 NSF Career Award, 2008-09 UCR-LANL Collaborative Award, 2006-09 UC Discovery Award, 2006-10 Awards from California Citrus Research Board, 2007-08 Interdisciplinary Research Award, Institute for Integrative Genome Biology, 2004, 2006 UC Regents' Faculty Development Award.

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