Bing Yang
Iowa State University

“Genome editing for host resistance to bacterial blight of rice”

Abstract: Bacterial blight of rice, caused by the bacterial pathogen Xanthomonas oryzae pv. oryzae (Xoo), is well-known as a model for studying host/microbe interaction. TALEs (transcription activator-like effectors), once translocated into the host cells from the pathogen, activate host genes to condition disease susceptibility and also trigger host resistance responses dependent on the nature of target genes in plants. TALEs and their host target genes have become the focus of the molecular battle between Xoo and rice, leading to incredibly diverse virulence mechanisms in the pathogen and counteracting defense mechanisms in rice. TALE target genes also represent potential targets for bioengineering disease resistance by using precise genome editing technologies (e.g., TALENs and CRISPR). My presentation will highlight our work on understanding TALE biology, identifying host target genes, and elucidating their interaction relevant to rice blight and other crop diseases. In my presentation, I will also describe the prospects for engineering genetic resistance by developing and applying precise genome editing of TALE-associated target genes in rice.

Host: Yanhai Yin