



MBBT Silver Jubilee Distinguished Lecture Series 2021-22

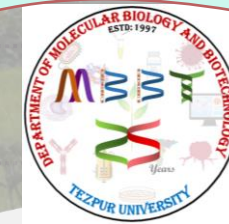


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Time: 11 am to 12:15 PM
Date: January 24, 2022

How do plants ward off pathogens?

We are studying how plants mount immune responses and how microbial pathogens modulate host innate immunity. As a model system, we use the interaction between rice and the bacterial pathogen, *Xanthomonas oryzae* pv. *oryzae* (Xoo) which causes a serious rice disease. As part of its virulence repertoire, Xoo secretes a battery of cell wall degrading enzymes (CWDEs) that target different components of the rice cell wall. However, the CWDEs are double edged swords as the damage that they cause serves as a mark of infection and results in induction of Pathogen Triggered Immune (PTI) responses. Xoo suppresses PTI using protein effectors that it secretes into rice cells. These effectors in turn trigger a second layer of the plant immune system called Effector Triggered Immunity (ETI). Interestingly, the Xoo bacterium secretes other effectors to suppress ETI. To further counter Xoo, rice has evolved additional resistance genes. These resistance genes work against some but not all Xoo isolates. By studying the population structure of Xoo, we have identified rice resistance genes that are effective against Indian strains of this bacterium. Three of these resistance genes have been pyramided into a commercially important rice cultivar which is now resistant to Xoo and is in commercial cultivation in farmers' fields in our country.



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