

2nd International Congress on Bacteriology & Infectious Diseases

November 17-19, 2014 DoubleTree by Hilton Hotel Chicago-North Shore, USA

Multiple layers of intercellular signaling pathways in the rice pathogenic bacterium *Burkholderia* glumae

Jong Hyun Ham

Louisiana State University Agricultural Center, USA

The Gram-negative pathogenic bacterium, *Burkholderia glumae* is the major causal agent of bacterial panicle blight of rice. Virulence factors of this pathogen, such as toxoflavin (a phytotoxin), lipase and flagella, are dependent on the quorumsensing (QS) system composed of the LuxI and LuxR homologs, TofI and TofR, for their expression. Recent study with the virulence strain isolated from Louisiana, *B. glumae* 336gr-1, revealed that toxoflavin production of this strain was independent of tofI and/or tofR when the bacteria was grown on a solid medium condition. Furthermore, Δ tofI and Δ tofR derivatives of *B. glumae* 336gr-1 retained their pathogenic abilities in rice panicles. Regarding that the production of virulence factors requires intricate intercellular communication, these observations suggest the presence of unknown cell-to-cell signaling pathways in addition tothe known tofI/tofRQS system. RNA sequencing and transcriptome analysis with *B. glumae* 336gr-1 and its QS mutant derivatives revealed that many genes involved in signal perception, transduction and transport were up-regulated specifically in the cells grown on a solid medium. Taken together, it is likely that alternative cell-to-cell signaling pathways are activated in bacterial cells grown in a sessile phase for bacterial pathogenesis.

JHam@agcenter.lsu.edu