Phenotypic heterogeneity during plant colonization

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Isogenic bacterial populations can display phenotypic differences. Cell-to-cell phenotypic differences can be a consequence of noisy gene expression, or a programmed event under genetic or epigenetic control. Bistability occurs when populations splits into subpopulations showing distinct phenotypes. This heterogeneity can allow individuals to survive environmental changes or can lead to cooperation between individuals. This is highly relevant for some animal pathogens, but little is known about it for plant colonizing bacteria.

We have reported that T3SS expression in Pseudomonas syringae is bistable in *hrp-induction medium* and displays phenotypic heterogeneity during plant colonization. This bistability generates two subpopulations that show differences in virulence. Flagella is also an important virulence determinant for *Pseudomonas syringae* colonization that displays a degree of counter-regulation with the T3SS. Salmonella enterica serovar typhimurium SPI-1 T3SS is also expressed bistably and counter-regulates with flagella. SPI-1 bistable expression is a important asset during mouse infection as it leads to cooperative virulence. But although S. enterica colonize plants as alternative hosts and requires SPI-1 to do so efficiently, little is know about the expression of this system during plant colonization

We present our newest findings regarding phenotypic heterogeneity of virulence relevant traits of P. syringae and S. enterica during plant colonization.