

Phenotypic heterogeneity in *Pseudomonas syringae*

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The notion of isogenic bacterial populations displaying phenotypic differences is widely accepted today. A particular case of phenotypic heterogeneity is bistability. Bistability occurs when bacterial population splits into two subpopulations showing distinct phenotypes. Phenotypic heterogeneity can allow some individuals to survive sudden environmental changes (risk-spreading) and can also lead to the cooperation (division of labour) between individuals. The relevance of this process has been highlighted in some animal pathogens, nevertheless, little is known about the occurrence or impact of these processes in the adaptation of bacteria to non-animal hosts. *Pseudomonas syringae* is a plant-pathogenic bacterium whose virulence depend of the T3SS expression. We have reported that T3SS expression is bistable in *hrp-induction medium*. This bistability generates two subpopulations, that show differences in virulence. Flagella is also an important virulence determinant for *Pseudomonas syringae* colonization. Here, we show how flagella expression also displays markedly phenotypic heterogeneity during growth within the plant. Although subpopulations displaying flagON_{T3SSON} and flagOFF_{T3SSOFF} can be identified within the plant, we provide evidence of cross regulation between T3SS and flagella expression at the individual cell level and propose phenotypic heterogeneity as an adaptative value for *Pseudomonas* adaptation to the plant host.