# PROJET CENTRAL LABEX TULIP

## BACTERIAL EFFECTORS AND PLANT CELL REPROGRAMMING

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**Objectifs scientifiques**

During the process of infection of a plant by Gram-negative bacteria, pathogens translocate virulence proteins (type III effectors) directly into the plant cell. These effectors are widely diverse in number and nature at the inter- and intra-specific levels and are genetic determinants of host range and race-specific resistance. Their global importance is illustrated by the loss of virulence of mutants unable to translocate effectors.

Thus, bacterial effectors and their plant targets constitute a molecular interface which is essential for the outcome of the interaction between phytopathogenic bacteria and their host plants. The 3 teams participating to this project aim at identifying direct and indirect targets of bacterial effectors from *Ralstonia solanacearum* and *Xanthomonas campestris* in Arabidopsis and their respective hosts (tomato/Medicago and cabbage).

A combination of genetic (forward, reverse, genome-wide association), biochemical and molecular approaches are used to identify and describe effector-target interactions. Functional characterization of these targets will unravel molecular mechanisms underlying virulence strategies developed by pathogens to modulate plant metabolic pathways and innate immunity: transcriptional reprogramming by host or bacterial transcription factors, post-translational modifications (e.g. acetylation, ubiquitination, SUMOylation, adenylylation, phosphorylation), *in vivo* dynamics of protein-protein interactions at the subcellular level...

The results of this project should define key host targets in breeding programs for the engineering of durable resistance in crop plants.

**Insertion dans les MTR de TULIP**

The understanding of the molecular dialog between bacteria and their host plants will significantly improve our knowledge of "organism-organism interactions" (MTR2) in a pathogenic context.

**Nombre d'ETP impliqués**

Teams DRYM (DRYM: 2,5 ETP ; 2 Non-perm), MAEL (1,5 ETP; 1 technician, 1 Non-perm) and SG (3 ETP ; 2 Non-perm).