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UNRAVELING SEED DEFENSE REGULATION IN DORMANT SEEDS

#SEED PHYSIOLOGY #PHYTOPATHOLOGY

Background

The **SUCSEED** project is one of the 10 projects funded by the Priority Research Program "Cultiver et Protéger Autrement" (PPR-CPA). SUCSEED aims to make the seed a central player in plant health management by focusing on two major plant health problems: (i) seed-borne pathogens and (ii) damping-off. To reinforce the multi-disciplinary nature of this project we propose to recruit a cohort of five PhD students.

Summary

Seed dormancy is a physiological state that blocks germination. It is an adaptive strategy that allows the seeds to remain quiescent until environmental conditions are favorable for germination and dispersal of the species. Dormant seeds can persist in the soil for months or even years without being attacked by pathogens, while non-dormant seeds gradually become susceptible during imbibition and subqequent germination. Our group has shown that in the model legume Medicago truncatula the Sucrose non-fermenting Related Kinase complex (SnRK1) connects the dormant state of seeds to the activation of a defense program against pathogens by induction of the expression of genes encoding PR proteins and enzymes involved in the synthesis of secondary metabolites such as phytoalexins. The objective of the thesis is to identify the genes constituting the defense program set up during the imbibition of dormant tomato seeds and to study the (epi)genetic mechanisms that regulate its activation. To do this, the thesis will exploit the genetic diversity showing a wide variability in the depth of dormancy in this species. Next, we will study how activation of this defense program contributes on the one hand to antimicrobial activity and prevents damping-off, and on the other hand to germination vigor.

Informations

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