Proposition d'un sujet de stage au M2 ADAM (2022) -

(1 page max photo comprise)

Titre	**Analysis of the expression profile of the RRS1-R immunoreceptor in response to the plant pathogen *Ralstonia solanacearum* in *Arabidopsis thaliana* roots.**
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Equipe(s)	**Plant resistance pathways dynamics and adaptation to climate change (REACH), Laboratoire des Interactions Plantes-Microorganismes (LIPME)** Ce sujet est proposé seulement pour l'itinéraire R ☐ , l'itinéraire PRO ☐ ou les 2 ☑ ?
Résumé	Roots represent an important opportunistic entryway for several soil pathogens. Amongst those, the phytopathogenic vascular bacterium *Ralstonia solanacearum* is one of the most destructive plants pathogenic bacterium worldwide. By working on the patho-system composed of *R. solanacearum* and the model plant *Arabidopsis thaliana, g*reat progress has been made in understanding the molecular mechanisms underlying plant response and immunity to bacterial infection. In particular, the team has identified and characterized the immunoreceptor complex RPS4 / RRS1-R involved in the recognition of different effectors including PopP2 from *R. solanacearum* that confers resistance to the bacterium (Deslandes et al., 2002; Birker et al., 2009; Williams et al., 2014, Le Roux and et al., 2015). Although being very interesting and fundamental, numbers of data have been accumulated through experiments carried out at the foliar level and understanding of the immune responses in roots is still missing. The main question driving this project is to understand how the plant immune response associated with the pair of immunoreceptors RPS4-RRS1-R is established at the root level in the early stages of the interaction with *R .solanacearum*. To finely localize RRS1 and analyze the dynamics of its expression profile under normal conditions and in response to bacterial infection, we will use an in vitro patho-system developed in the team that enables us to have direct access to the root in transgenic plants expressing the promoter region of RRS1-R fused to the 3xmVenus gene. Bacteria marked with GFP or mCherry will then be inoculated to follow, with a spatio-temporal resolution, the root progression of the bacterial infection and combine it with the RRS1-R immunoreceptor expression. Preliminary results should open up a thesis project aiming to study the immune responses in *A.thaliana* roots to *R. solanacearum* and how elevated temperature in the frame of the global climate change can impact plant defense. Methods: DNA-RNA extractions, Rt-qPCR, cloning, plant transformation, Molecular biology, microbiology, cellular biology, fluorescent markers pathogen infection assay, confocal microscopy, **References** **1)**Deslandes et al., 2002 *PNAS U S A* 99:2404-9 **2)**Birker et al., 2009 *Plant J* 60: 602-13 **3)**Williams et al., 2014 *Science* 344: 299-303 **4)**Le Roux et al., 2015 *Cell* 21: 1074-1088.
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