

Master 2 internship: Study of the peach tree molecular responses to green aphid infestation.

Internship carried out as part of the research project: Multi-omic Integrative analysis of a monogenic resistance of the green aphid peach *Myzus persicae* and exploration of the phenolic biopesticide action mode involved in this resistance.



The project aims to comprehensively understand the peach tree sensitivity and resistance responses to the green aphid (*Myzus persicae*) through an integrated description in terms of transcriptome and metabolome modulations. All of the transcriptomic and metabolomic data acquired over the past one year opens up many research lines, in particular on the signaling pathways involved in the peach tree's sensitivity or resistance response and on the role in the resistance of an aphicide peach phenolic molecule : 3,5-dicaffeoylquinic acid (3,5-diCQ) currently developed as a biopesticide by INRAE.

The internship work is fully integrated into the current research: it is to elucidate the signaling pathways involving the hormones which participate in the defense responses triggering, massively activated in the resistant genotype. These responses being very varied over time, the phytohormone concentration evolution during the infestation will be studied by the infestation kinetics establishment.

Internship work

- UPLC-ESI-TQ analysis of phytohormones

Validation of a quantitative profiling method of the main phytohormones in the peach tree apices, then determination of their content during the infestation kinetics of the susceptible and resistant variety. The information collected will be linked to the transcriptomic data already available.

- Targeting of brassinosteroids, new class of phytohormones

Development of a method for analyzing brassinosteroids and in particular brassinolide in GC-MS, compounds being involved both in plant growth and in the coordination and the integration of the peach tree's defense responses to aphids.



UPLC-ESI-QTOF



GC-TOF

Candidate profile

- Master in plant physiology or biochemistry, cell biology
- Liking for laboratory work and advanced analytical techniques
- Interest in plant metabolism and / or plant - insect interactions

Supervisors: Raphaël Lugan (UMR Qualisud, Avignon); David Roux (UMR Qualisud, Avignon); Jean-Luc Poëssel (INRA GAFL), Pauline Le Boulch (PhD student UMR Qualisud).

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Period: February / July 2021.

Location: metabolomic platform “Metaboscope”, Jean-Henri Fabre Campus, Avignon University, 301 rue Baruch de spinoza, 84140 Montfavet.

Gratification: € 577.50 per month.