

# BioISI Research Seminar

**Transcriptome and metabolome reprogramming in grape berries upon infection with *Botrytis cinerea*- insights into hormonal metabolism and defense**



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**BioISI / FCUL**

**When: May 30, Wednesday - 10h30 - 11h30**

**Where: Building C8, Room 8.2.39**

*Vitis vinifera* berries are sensitive towards infection by the necrotrophic pathogen *Botrytis cinerea*, leading to important economic losses worldwide.

In an attempt to identify the molecular and metabolic mechanisms associated with the infection of grapes, peppercorn-sized fruits were infected in the field. Green and veraison berries were collected following infection for microarray analysis complemented with metabolic profiling of primary and other soluble metabolites. The results provided evidence of a reprogramming of carbohydrate and lipid metabolisms towards increased synthesis of secondary metabolites involved in plant defense, such as trans-resveratrol and gallic acid. This response was activated in infected green berries with the putative involvement of jasmonic acid, ethylene, polyamines, and auxins. On the other hand, salicylic acid signalling was activated in healthy ripening berries along with the expression of proteins of the NBS-LRR superfamily and protein kinases.

In order to clarify the involvement of hormonal metabolism in defense against *B. cinerea*, the hormones of susceptible (Trincadeira) and resistant (Syrah) varieties were recently compared upon infection and integrated with targeted qPCR analysis of genes involved in synthesis and signaling of hormones. The results highlight the importance of basal levels of hormones in resistance. Salicylic acid, which had only been previously suggested to be involved in response against necrotrophic fungi, also appears to play an important role during *Botrytis cinerea* infection. Disclosing the role played by hormones in grape ripening and grape defense against major fungal pathogens will enable improvement in fruit traits and productivity.