

Study of the stress-related signalling of endoplasmic reticulum in grapevine immunity associated to LysM receptor kinases (VvLYKs)

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Enhancing our understanding of plant immunity is a critical task to develop more sustainable plant health protection methods. An interesting strategy is to study how plants, and in particular grapevine, perceives and responds to different microorganisms. Microorganisms are notably recognized by LysM Receptor-like Kinase (LYKs) and previous works have identified 16 LYKs encoded by the grapevine genome (VvLYKs) (Roudaire et al. 2023). Among them, VvLYK1-1, VvLYK1-2 and VvLYK5-1 are involved in chitin perception and thus play a role in the plant immunity. Interestingly, immune responses are also involved during symbiotic interaction but the receptors involved in this process are still unknown. In addition, it has been demonstrated that the Unfolded Protein Response (UPR), which is activated when unfolded proteins accumulate in the endoplasmic reticulum, is also involved during the plant immune response. It's therefore important to improve our knowledge about the role of the different grapevine LYK receptors involved in the balance between immunity and symbiosis and in addition to determine the role of stress-related signalling of endoplasmic reticulum and the consequent activation of the UPR in these two different pathways. In this context, we aim to characterize new VvLYKs involved in the perception of Myc-factors which allow the down-regulation of the plant immunity during the establishment of mycorrhizal symbiosis. In addition, we also intend to characterize the UPR signalling pathways in grapevine which is still unknown and finally how different biotic factors are involved in the stress-related signalling of endoplasmic reticulum.