

Genes activated during the defensive response of resistant chestnut genotypes against *Dryocosmus kuriphilus*

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Abstract

After the invasion of the Asian gall wasp *Dryocosmus kuriphilus*, several chestnut genotypes (*Castanea sp.*) were described as resistant to this species. Studies of the defensive mechanism involved in this process revealed that the immune response of the resistant genotypes rely mainly in a hypersensitive reaction (HR) to eggs or neonate larvae within the tree buds. HR is an induced resistance response that can be detected in the area immediately adjacent to the egg mass within the tree bud and show up as a necrotic spot preventing gall formation. HR is triggered by specific molecules, called elicitors, responsible for the activation of the defensive response and involves several steps: recognition of insect, development of oxidative burst, activation of defense genes, and cell death. In the present work we identify the defensive genes involved in this process through gene expression analysis. We performed RNAseq which enables the sequencing of mRNA from different phenotypes and experimental conditions for a highly sensitive and accurate evaluation. This technology allows us to identify differences in the defensive response involving immune-related genes between sensitive and resistant plants. The aim of this research is to improve the understanding of the mechanisms underlying the immune response in plants for further practical applications to control this parasite.

Keywords: gall wasp, hypersensitive reaction, elicitors, defensive response