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THE DEFENSIN-LIKE GENE FAMILY OF GRAPEVINE

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Grapevine, defensin, antimicrobial peptides

Defensins are a diverse class of small cysteine-rich proteins sharing a common tertiary structure, which have been linked to the innate immunity in several organisms since they might confer broad spectrum resi stance to pathogens in crops.

By scanning the *Vitis vinifera* Pinot noir genome using a combination of HMM and BLAST searches we could identify 81 defensin-like sequences (DEFLs), eventually including allelic variants, pseudogenes or fragments. They share a common exon-intron-exon gene structure similarly to other defensins, and their localization on the Pinot noir genome suggests a large extent of local duplications. We demonstrated the expression of 23 DEFLs or DEFL groups and further analyzed the transcript accumulation of 15 of them in seven different tissues and along berry ripening. The majority of DEFLs were predominantly expressed in reproductive tissues such as flowers and seeds. Interestingly, some DEFLs appeared to be induced in tissues infected by the fungal pathogen *Botrytis cinerea*. The corresponding recombinant proteins were indeed able to inhibit conidia germination *in vitro*.

These results are consistent with some of the identified DEFLs playing a role in the defense against pathogens in grapevine.

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