

TRANSCRIPTIONAL CHANGES UNDERGOING IN A *VITIS VINIFERA* TRANSGENIC LINE OVEREXPRESSING *VvERF045*.

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The role of ethylene in grape ripening still represents a controversial topic for the scientific community, although the genes likely involved in synthesis, perception and signaling of ethylene have been already described also in this species. This pathway is activated just before véraison (Chervin et al., 2004) and determines a cascade of transcriptional changes linked to ripening. The final step in the transduction of the signal is the activation of transcription factors called ethylene responsive factors (ERFs). In this study, we present the functional characterization of *VvERF045*, a berry specific ethylene transcription factor expressed from véraison to ripening. With this aim, we sequenced the leaf transcriptome of a transgenic '*Brachetto*' line *VvERF045* grown *in vitro*. The *RNA-seq* experiment showed 573 differentially expressed genes (DEGs) belonging to 16 enriched biological gene ontologies (GO terms) in comparison to the wild type plants. The presence of a huge number of DEGs involved in protein phosphorylation indicates the role of this transcription factor in protein regulation. Other DEGs belonging to transport, development and response to biotic/abiotic stress categories suggest that this ERF coordinate a complex net of interactions. Furthermore, a probable interplay between JA biosynthesis and ethylene signaling seems to take place by the abundance of JA biosynthetic genes. Finally, we have evidences that *VvERF045* could play a role in the regulation of wax biosynthesis and thus in plant protection.

Chervin C., El-Kereamy A., Roustan J.-P., Latché A., Lamon J., Bouzayen M. (2004). *Ethylene seems required for the berry development and ripening in grape, a non-climacteric fruit*. *Plant science* **167**: 1301-1305.