

## **THE TRANSCRIPTION OF *AGAMOUS-LIKE 11* IS ESSENTIAL FOR SEED MORPHOGENESIS IN GRAPEVINE**

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Seedlessness is an appreciated feature for table grapes. Previous studies allowed us to identify a candidate gene, *VvAGL11*, involved in the control of seed development. The aim of this study was to evaluate *VvAGL11* in a seeded and seedless cultivar, Chardonnay and Sultanina, in order to understand its role during seed morphogenesis. By allele-specific sequencing, the allelic variations of *VvAGL11* were characterized, which exhibited two transcript isoforms in 'Chardonnay', however in 'Sultanina' one isoform showed unique mutations. Evaluation of transcriptional profiles of *VvAGL11*, from flowers to mature fruits, showed a large accumulation of transcripts in seeds of 2-6 weeks compared to flower and pulp tissues in the Chardonnay cultivar. In 'Sultanina' the expression of *VvAGL11* was extremely low in all stages and tissues. By anatomo-morphological analysis it was identified a loss of identity of the medium integument layer in the Sultanina seed trace since this layer neither elongated nor doubled in size as it should. The spatial-temporal expression pattern of *VvAGL11* was determined by *in situ* hybridization. *VvAGL11* transcript levels were increased in 'Chardonnay' seeds with 2-4 weeks of development, specifically in the medium integument of the seed. In 'Sultanina', gene transcripts were undetectable during all stages of development. These results allow us to propose that the absence of *VvAGL11* expression is responsible for the erroneous development of seeds. The non-differentiation of the medium integument seed layer is causing the cease of the elongation and duplication of the seed coat leading to the formation of a seed trace.

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