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# ANALYSIS OF VVEPFL9-1 AND VVEPFL9-2 EXPRESSION IN GRAPEVINE LEAVES AND CORRELATION WITH STOMATAL DENSITY

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Global warming, increased frequency of heat waves events and severe drought scenarios constitute a great threat to modern viticulture. These conditions could strongly affect grapevine physiology with a dramatic impact on grape yield and quality. One of the strategies that plants can activate in response to environmental stresses relies on the stomatal regulation of transpiration. Stomata are microscopic pores which allow the entry of carbon dioxide in the leaf for photosynthesis and the loss of water vapor into the atmosphere. A low stomatal density (SD) could induce a water-saving behavior, giving the plant an advantage in conditions of water scarcity. Conversely, an elevated number of stomata per unit of leaf area could enhance heat stress tolerance following elevated leaf evaporative cooling. A class of cysteine-rich peptides is known to be responsible for regulating stomatal development during leaf formation in plants: the epidermal patterning factor (EPF) family. It has been demonstrated that EPFLike-9, also known as STOMAGEN, promotes stomatal development in many species by indirectly activating some transcription factors promoting stomatal fate. In grapevine there are two EPFL9 factors, EPFL9-1 and EPFL9-2 sharing 82% identity at protein level in the mature functional C-terminal domain. The aim of our study is to analyze the expression pattern of the two *VvEPFL9* isoforms in the leaf apex and on leaves of different ages and sizes along the branch axis of different genotypes. Besides, on the same leaf samples, stomatal density is also analyzed. Understanding how these

paralogs are modulated in the leaves and if there are correlations with stomatal density would be of great importance to enhance our knowledge about stomatal regulation, also in view of applying new genomic techniques to improve grapevine resilience to climate changes.