

## CARACTERIZAÇÃO DA FUNÇÃO DO GENE *FLC-LIKE* DURANTE A TRANSIÇÃO DA ENDO- PARA ECODORMENCIA NA MACIEIRA

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### Abstract:

The MADS-box *MdFLC-like* gene was previously described within the major QTL for time of bud break in apple chromosome Chr09, and its expression gradually increases towards dormancy release. The molecular mechanisms in which *MdFLC-like* modulates the transition from endo- to ecodormancy and from ecodormancy to bud break are unknown. Here, the *MdFLC-like* gene was characterised to better understand its role during dormancy progression. The increase in *MdFLC-like* expression coincides with a decrease in *MdDAMI* transcript levels during ecodormancy establishment. In agreement, a transactivation assay using *Arabidopsis* protoplasts revealed that *MdFLC-like* represses the *GUS* reporter gene controlled by the *MdDAMI* promoter. Moreover, apple calli overexpressing *MdFLC-like-3xFLAG* showed decreased *MdDAMI* expression and delayed growth, suggesting that *MdFLC-like* may also repress growth-related genes. A deeper characterization of the mRNA levels of *MdFLC-like* during bud break demonstrated that ambient temperature performs as an environmental trigger modulating its expression, which rapidly switched when temperatures changed between cold and warm. Notably, *MdFLC-like* and *MdFT2* expression dynamically oscillated in a contrasting pattern of expression under these conditions. Our results suggest that *MdFLC-like* is a repressor of *MdDAMI* and *MdFT2* during the transition from endo- to ecodormancy and from ecodormancy to bud break, respectively, in apple trees.

**Key-words:** *Malus x domestica*; dormancy; *FLOWERING LOCUS C*; *DAMI*; *FT2*

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