

THE HISTONE DEACETYLASE HDA19 CONTRIBUTES TO FRUIT RIPENING AND SEED DEVELOPMENT IN TOMATO

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Histone post-translational modifications (HPTMs) are recognized as playing crucial roles in the regulation of plant reproduction. In particular, a RPD3/HDA1-class histone deacetylase *Athda19* mutant was reported to induce several defects in *Arabidopsis* such as reduced fertility, shorter siliques, and aborted seeds. The main goal of our work is to functionally characterize *SlHDA19* in tomato (*Solanum lycopersicum*), an important crop and model species for fruit biology. Artificial miRNA approach was used to down-regulate *SlHDA19* (Soly09g091440) in tomato cv. Ailsa Craig. Remarkably, two independent transgenic lines, *Slhda19-2* and *Slhda19-6*, show an early ripening phenotype associated with an increase in the ethylene production. Moreover, these lines display smaller fruits and an early accumulation of the principal carotenoids. Fruits from both lines evidence a predominance of undeveloped seeds thereby indicating that seed set is also compromised, likewise *Arabidopsis* siliques. Currently, cyto-histological analysis of ovules/seeds at different stages post-anthesis to characterize embryo development in *Slhda19* is ongoing.