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**XIV. International
Symposium on Grapevine
Breeding and Genetics**

■ ■ ■ ■ **ZAGREB CROATIA**

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Book of Abstracts



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**XIVTH INTERNATIONAL
SYMPOSIUM ON GRAPEVINE
BREEDING AND GENETICS**

INFORMATIONS

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SHORT COMMUNICATION

Grapevine *DMR6-1 DMR6-2* double mutants display constitutive systemic acquired resistance and altered gibberellin metabolism

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ABSTRACT

Achieving disease resistance in grapevine (*Vitis vinifera*) without compromising plant growth is a significant challenge for viticulture. A strategy to reduce susceptibility to Downy Mildew (DM) is through dual inactivation of the salicylic acid (SA) hydroxylases *VviDMR6-1* and *VviDMR6-2* by gene editing, which leads to elevated endogenous SA levels and enhanced immunity. Unlike other SA-overaccumulating mutants, these double mutants exhibit no observable growth defects during the juvenile stage and in greenhouse conditions. Through gene-network and expression analyses, we identified a constitutive activation of genes involved in Systemic Acquired Resistance (SAR) in the double *DMR6-1 DMR6-2* mutant but not in the single *DMR6-1* mutant, suggesting functional synergy between these two genes in grapevine. Our analyses revealed also the interaction between SA and gibberellin metabolism. By unraveling this hormonal crosstalk, this research provides strategies to mitigate potential growth penalties when developing transgene-free grapevine varieties with reduced susceptibility to pathogens.