

O34. Identification of causal mutations of metabolic QTLs associated to grape and wine flavor

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Secondary metabolites produced in grapevine berries play an essential role in high-quality wines and also contribute to the quality of table grapes. **Some of the most prevalent wine odor constituents are monoterpenoids which biosynthesis via the plastidial methyl-erythritol-phosphate (MEP) pathway has been demonstrated in grapevine.**

Based on a double pseudo-testcross mapping strategy, **we detected a major QTL on LG5 for linalool, nerolid and geraniol content in grapevine berries at ripening time, and also an additional QTL for linalool on LG10.** Further testing indicated that gain-of-function mutations in the structural gene of the MEP pathway *1-deoxy-D-xylulose-5-phosphate synthase (1vDXS1)* colocalized with the mQTL on chromosome 5 - are the major determinants for terpenoid accumulation in Muscat grape varieties and have direct effects on the enzymatic or regulatory properties of the DXS protein. Similarly, **association of genetic variants with the content of several volatile aromatic compounds were tested for candidate genes in the mQTL interval on chromosome 10.** These findings may pave the way for metabolic engineering of terpenoid contents in grapevine.