Improvement targets for berry quality:
the flavonoid example

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Wine quality is tightly linked to grape berry initial composition in primary (sugar, organic acids) and secondary metabolites (aromas, phenolic compounds). Among the secondary metabolites, flavonoids are of great importance. In grape, the main flavonoids, anthocyanins and tannins, are involved respectively in the colour of the wine and are responsible for astringency and wine color stability. The control of grape flavonoid composition is thus essential for the production of high quality wines. At the molecular level, some points remain to elucidate such as the factors regulating their biosynthesis, the condensation of the monomers in tannin synthesis and their galloylation, biosynthesis of the different anthocyanins and storage of these compounds inside the vacuole. Different approaches of metabolomics, transcriptomics, plant transformation and genetics have been coupled in order to decipher the missing steps in the flavonoid pathway. Several new putative actors of the pathways have been identified. It will hence help to develop new breeding schemes, for the creation of new clones or cultivars better adapted to future environments or to help to maintain berry quality in breeding programs leading to pest resistant varieties.