P15 – Elucidating the genetic determination of ampelographic traits by QTL analysis in a segregating F1 population

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Abstract

Ampelography (Greek: "ampelos" = vine) is the field of botany dealing with the identification and classification of grapevine cultivars. Starting with the birth of Mediterranean viticulture documented by ancient Greeks and Romans, such as Theophrastus (375 – 297 BC), Vergilius (70 BC – AD 19), Columella (4 - 70 AD), or Pliny (23/24 – 79 AD), grapevine varieties have been described based on their morphology. In the last centuries, detailed descriptions summarized in large compilations were published (e.g. Babo 1844, Hedrick 1908, Viala and Vermorel 1901-1910, Galet 1975) representing the foundation stone for modern ampelography as a scientific discipline. Historically this has been done by subjective visual description of morphological traits mainly related to vegetative growth characteristics, but more recently objective ampelometry and molecular DNA fingerprinting were introduced. The main focus in traditional ampelography lays on leaf description, due to the confirmed stability of leaf characteristics within the same variety grown in different environments, their abundance and availability over the long vegetative period and as herbarium material. However, less is known about the genetic determination of morphogenetic factors.

To identify quantitative trait loci (QTLs) and subsequent putative candidate genes influencing ampelographic descritpors, a segregating white wine population (150 F1 plants; 'Calardis Musqué' x 'Villard Blanc') with an established high-density genetic map was investigated in four consecutive years. The analysed traits can mainly be grouped in three classes related to: (1) hair formation (e.g. OIV004 or OIV053), (2) anthocyanin coloration (e.g. OIV010 or OIV070) and (3) leaf shape (e.g. OIV068 or OIV079). For all three groups, several promising QTLs could be detected and will be discussed.

Keywords: grapevine, morphology, OIV, phenotyping, *Vitis vinifera* L.