

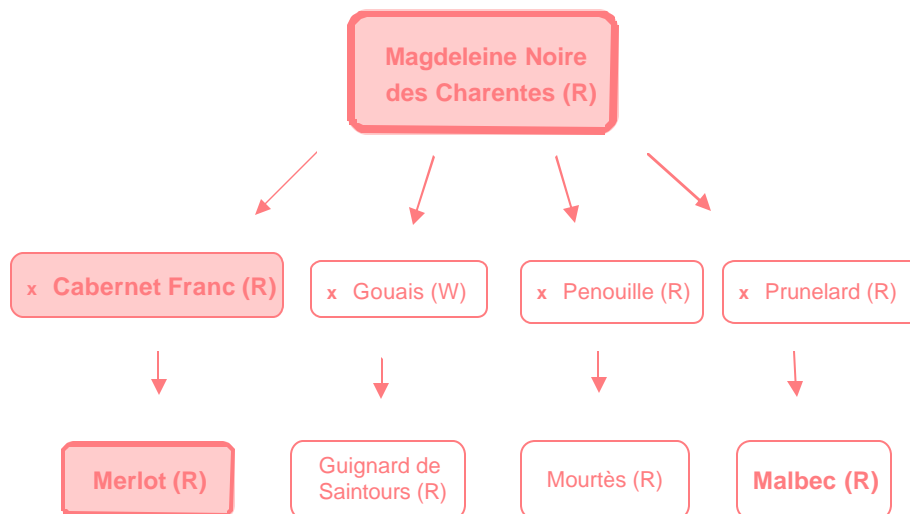


Parentage of Merlot and related winegrape cultivars of southwestern France: discovery of the missing link

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In: Australian Journal of Grape and Wine Research 15:144-155. 2009

- The origin of Merlot seems relatively recent, as its name is only seen in the literature for the first time at the end of the 18th century, just before the French Revolution. Merlot was not an important cultivar until the last decades, when it saw a large expansion not only in Bordeaux, but worldwide. Today, Merlot is, along with Cabernet Sauvignon, one of the two most important red varieties in the world.
- Using the powerful technique of inheritance analysis of DNA markers, the authors set out to find out the parentage of Merlot, as well as that of seven closely-related cultivars.
- To tackle this task, they analyzed 2305 *Vitis vinifera* cultivars – each in turn represented by one or several accessions – maintained in the grape germplasm repository of the Institute National de la Recherche Agronomique (INRA), France. Twenty DNA pieces (representing nuclear single-sequence repeat loci) were selected as markers, based on their quality and widespread distribution across the 19 chromosomes of grapevines. To confirm the results obtained from these 20 markers, 35 additional DNA markers were also analyzed. Cultivar parentage analysis was carried out using software adapted to grapes.



- **Results .**

1) **Merlot:** The authors found the parents of Merlot to be **Cabernet Franc** and a previously unknown cultivar that they named **Magdeleine Noire des Charentes**. The first cuttings of Magdeleine Noire de Charentes were found in Brittany (northwest France), where no vineyard exists today, but where vines are known to have existed between 1460 and 1477. More recently, 4 additional vines were found in various sites in Charentes (central western France). Their local names were *Raisin de la Madeleine*, or *Madeleina*, referring to the precocity of the grapes, which could ripen as early as July 22 (Sainte Madeleine's Day in France). The authors were sensitive to this fact when proposing a name for the new cultivar.

- 2) **Merlot Blanc:** Unlike Pinot Blanc or Grenache Blanc, which are mutations of Pinot Noir and Grenache, the authors found that Merlot Blanc is a distinct genotype, and is the progeny of **Merlot** and **Folle Blanche**, an old cultivar widespread in western France before phylloxera.

- 3) **Offspring of Magdeleine Noire des Charentes:** Magdeleine Noire des Charentes appears to be a parent of three other cultivars: **Guignard de Saintours** (the other parent being Gouais), **Mourtès** (the other parent being Penouille), and **Malbec**, or Cot (the other parent being Prunelard).

- 4) **Other relatives of Cabernet Franc:** The authors found that Cabernet Franc is related to two very old and minor cultivars from the Basque Country (western border between France and Spain): **Morenoa** and **Txakoli**. Finally, Cabernet Franc may also be a parent of Carmenère, which had been confused with Merlot in Chile, but which the current authors confirmed is a different cultivar than Merlot.

In summary, Merlot is a cross between Cabernet Franc and Magdeleine Noire de Charentes, whereas Merlot Blanc is not a mutation of Merlot, but rather a cross between Merlot and Folle Blanche.

Author: Bibiana Guerra, Editors: Kay Bogart, Matthew Fidelibus. This summary series funded by J. Lohr Vineyards & Wines.