

Scientists get to the root of ancient case of sour grapes

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(PhysOrg.com) -- Scientists in Cambridge have discovered that a lowly grape variety grown by peasants - but despised by noblemen - during the Middle Ages was the mother of many of today's greatest grape varieties, including the Chardonnay used in Champagne.

Several venerable grape varieties - including Chardonnay and Gamay noir - stem from crosses between Pinot noir and Gouais blanc. Until now, which variety was the father and which the mother has been a mystery.

Using the same kind of [genetic marker](#) that forensic scientists use for human DNA fingerprinting, the team from the University of Cambridge

examined DNA from the chloroplasts of 12 widely grown grape varieties.

Chloroplasts are structures in plant cells where [photosynthesis](#) takes place. Like most plants, the DNA in chloroplasts of grape vines is inherited from the mother.

The scientists looked at microsatellites - regions of DNA that are highly variable and are therefore useful for tracking family trees - and found that Gouais blanc was the maternal parent of Aligoté, Auxerrois, Bachet, Chardonnay, Franc noir, Gamay noir, Melon, Romorantin and Sacy. Pinot noir was the maternal parent for Aubin vert, Knipperlé and Roublot.

Scientists and wine producers are interested in grapes' maternal line because the mother provides more of the offspring's DNA than the father, and so is more important in genetic terms. In other economically significant plants the chloroplast genes can contribute to important characteristics such as tolerance to cold and fungal attack.

According to Professor Christopher Howe of the University of Cambridge, one of the study's authors: "It is ironic that the despised grape Gouais blanc was not just a parent for several of the world's best-known and most important varieties, such as Chardonnay and Gamay noir, it was the maternal parent, providing additional [DNA](#) and potentially determining important characteristics of the offspring."

"This is a striking conclusion, as Gouais is generally considered a highly inferior variety, and its cultivation was banned for many years in parts of Europe."

Both Pinot noir and Gouais blanc were widely grown in north-eastern France during the Middle Ages. But while Pinot was grown in vineyards

owned by the church and aristocracy, peasants grew Gouais.

Between the late Sixteenth and the Eighteenth Centuries, several attempts were made to ban Gouais blanc. In 1732, an act of the Parlement of Besancon tried to eliminate the grape, describing it as "rustic", "inferior" but also "high-yielding". The Parlement of Metz took similar steps the same year.

Although their attempts to ban the grape failed, Gouais largely disappeared at the end of the Nineteenth Century and now survives only in a few vineyards and reference collections around the world.

Co-author of the study John Haeger of Stanford University said: "Gouais was held in low esteem in the late medieval and early modern periods. Typically, varieties of this sort were grown on flat land by peasants. Good vineyards, on the other hand, growing better and lower yielding varieties were owned and farmed under the supervision of the church or nobility."

"Many of the 'bans' were designed either to favour aristocrats and monastic orders over peasants, or force more arable land into the production of cereals and legumes to eliminate food shortages."

The results are published this month in *Biology Letters*.

Provided by University of Cambridge

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