

# Y Chromosome - A Tool for Paternity Testing

Conventional paternity testing utilizes diploid genetic markers and takes advantage of the fact that each individual is a mosaic of their mother and father, resulting from a blending of the DNA it receives from each. This approach is extremely accurate when the father is available for testing.

In the absence of the alleged father, family reconstruction is historically conducted through siblingship, avuncular or grand paternity, which can at times yield inconclusive results. In certain scenarios, Y chromosome testing can be an extremely powerful technique for paternity and other relationship testing.

## Y Chromosome

The Y chromosome is male specific and passes through generations unchanged from father to son. In circumstances where an alleged father is unavailable for testing or deceased, a male child can be tested against any number of his male relatives including, but not limited to, other known male children, brothers and half brothers with the same father, uncles, grandfather, and grandfather's brothers.

## Limitations

Since the Y chromosome is only found in males, this type of testing is not useful for female off-spring. Similarly this test is not iron clad for paternity in circumstances where there are two related alleged fathers.

## Thomas Jefferson DNA Study

This technique was recently used to determine if Thomas Jefferson fathered Eston Hemings. The study compared nineteen (19) genetic markers on the Y chromosome from five Jefferson descendants and one male line descendent of Eston Hemings, Sally Hemings' last son, born in 1808. Analysis of the Jefferson and Hemings lines revealed an identical genetic match of a distinct genetic profile that is conserved within the Jefferson family.

The Thomas Jefferson Foundation, who owns and operates Monticello, commissioned a research committee to evaluate the DNA study. The committee concluded there was a high probability that Thomas Jefferson fathered Eston Hemings, and that he most likely was the father of all six of Sally Hemings' children appearing in Jefferson's estate records.

*Setting the Standard for Quality DNA Identification*



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