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## DNA tests help genealogists only so far

[Karen Goldberg Goff \(Contact\)](#)

The path to researching one's family history often used to hit a wall where the paper trail ended. Since the advent of the Internet, though, genealogists have had a virtual world of information available to them without traveling the globe.

More recently, genetic testing has been made available to the masses to more definitively determine where your ancestors came from. A quick swab of a few cheek cells, and one can go back thousands of years, well before there were historical documents.

The process is not without caveats, however. Genetic tests sometimes leave testers more confused than when the process began, particularly in the black community, where records may only go back to the slave trade.

"Testing is only filling in a small segment of the big picture," says Troy Duster, a sociology professor at New York University. "That's part of the problem. Some people feel that maybe knowing a little is better than not knowing anything, but it can provide people with a false sense of connection."

Mr. Duster points out that only some of the ancestors - as few as two of 64 great-great-great-grandparents - can be identified with current DNA testing. Genetic DNA tests are quick to rule out whether someone belongs to a particular group, but they don't take into account the entire genetic makeup, Mr. Duster says. Testing only takes into account biology, and not affiliation with certain groups by way of language, culture or other customs, he says.

Genetic DNA testing technology has been around nearly a decade but has gained popularity in the past 18 months as testing kits became increasingly more inexpensive and available. More than a dozen companies now offer such services. Ancestry.com, part of the largest group of online genealogy resources, began offering DNA services in October 2007 and recently lowered the price of its 33-marker paternal lineage test from \$149 to \$79.

"You don't have to be a hard-core genealogist to get excited about what DNA can tell you," says Brett Folkman, Ancestry.com's vice president of DNA product. "DNA definitely has huge promise as a big breakthrough for genealogy. Stories may or may not be true. DNA can prove or disprove them."

Here's how it works: The most popular test is the paternal lineage, which analyzes DNA in the Y chromosome (passed virtually unchanged from father to son). Since this

test analyzes paternal contributions, only men can take it. It was this type of testing that recently established that Thomas Jefferson probably had children with his slave, Sally Hemings.

Also available is the mitochondrial DNA test, which reveals a mother's line. This type of testing recently proved that remains found in Russia in the early 1990s were members of the Romanov royal family, killed in 1918.

Test participants in Ancestry.com's program, for instance, receive analysis of the ancient group to which their ancestors belonged, a map of the group's migration pattern, online results that can potentially identify genetic cousins, and access to a large database of potential relatives.

Family Tree DNA, a Houston company that has been offering DNA testing since 2000, has built up a database of more than 200,000 participants. Family Tree DNA tests start at \$99. The company works in conjunction with National Geographic, whose Genographic Project has been mapping the migration pattern of humankind since 2005.

Max Blankfeld, vice president for marketing and operations for Family Tree DNA, says its database is not public, but participants sign a release if they want their records included in the database. Most do, because the more people in the database, the greater volume of information will be out there for historians to access.

"In the case of relevant matches, we provide name and e-mail information," Mr. Blankfeld says. "It is the ultimate social network."

Through DNA testing, Family Tree and other genealogy companies build surname projects. Family Tree has a listing of more than 5,200 surnames, which further aids genealogists in finding common ancestors and discovering new branches of their family tree.

Genealogical testing companies do not provide medical information, Mr. Folkman says. This kind of DNA testing will not tell you if you have the gene for a particular disease. However, it can tell you if you belong to a particular ethnic group - and sometimes certain ethnic groups have a propensity for a particular disease. Genealogical DNA also cannot personally identify someone in the same manner it would be used in a criminal investigation.

As the number of people looking for connections has grown, so has the number of critics of DNA testing. The technology does not come without caveats.

Harvard African American Studies professor Henry Louis Gates Jr. helped popularize DNA testing with a 2006 PBS special "African American Lives," but after repeated tests with different companies, Mr. Gates said last year he had been given conflicting results. One company told him his maternal ancestors were Egyptian; another told him they were European.

Edward Ball, author of the book "The Genetic Strand," writes that he had some

ancestral hair samples tested. One company told him they were American Indian. Another company told him he had African genes but not American Indian genes. Still another told him his people came from Northern Europe.

Mr. Duster of NYU calls the business of genetic DNA testing "an unregulated no-man's land." He says he would like to see guidelines and transparency as the business evolves.

"Any company can claim that their laboratories can analyze your DNA to provide accurate information about your ancestry," Mr. Duster says. "But if three different companies provide three different answers [as a report on CBS' "60 Minutes" did in 2007], what is a consumer to do? Which company is correct? There is no way of knowing, since we have no 'gold standard' for excellence or professional self-policing."

The American Society of Human Genetics (ASHG) has similar concerns. The group says that those who undergo ancestry testing often do not realize the tests are probabilistic and can reach incorrect conclusions, causing emotional distress if test results are unexpected or undesired.

The ASHG says consumers frequently purchase these tests to learn about their race or ethnicity, yet there is no clear-cut connection between an individual's DNA and racial affiliation.

ASHG President Aravinda Chakravarti, from Johns Hopkins University School of Medicine, says the group recommends greater efforts on the part of both industry and academia to make the limitations of ancestry-testing estimation more clear. Consumers, meanwhile, have a responsibility to avail themselves of information about ancestry testing and to strive to better understand the implications and limitations of these tests.

The society also called for additional research to understand testing's accuracy and for guidelines to be developed for ethical use of testing and research.