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How Accurate Is Your Family Tree?

By Jennifer Couzin
 ScienceNOW Daily News
 13 November 2008

PHILADELPHIA, PENNSYLVANIA—The American Society of Human Genetics (ASHG) has waded into the world of genetic testing to determine family ancestry, a trend that's growing in popularity. At its annual meeting here, a 10-person ASHG committee today released five recommendations that aim to bring more accuracy, oversight, and collaboration to commercial and academic ancestry testing efforts. But it's unclear what effect the recommendations will have.

With the advent of relatively cheap and quick genetic testing, more and more people are willing to pay hundreds of dollars to glean a glimpse into their heritage. Some want to learn which tribe in Africa their ancestors came from, for example, or what percentage of their DNA can be traced to northern Europe. In addition, experts speculate that police might someday use the tests to narrow down the ethnicity of a subject from crime scene DNA. Ancestry tests performed by companies may examine the Y chromosome (when the submitter is a man) to study paternal heritage, the mitochondrial DNA for maternal heritage, and, in some cases, such as the Mountainview, California-based company 23andme, they look for specific patterns of variation on other chromosomes, too. Roughly 30 companies offer such tests.

But there's building concern among geneticists and others that the tests performed, both by companies and in academic labs, may not be very accurate, largely because they match samples to "reference" populations of a particular ancestor who may or may not perfectly fit the desired profile. So, for example, to determine how much African ancestry someone has, their DNA is matched against a true "African" sample, but not everyone agrees on what this is, and even if they did, that African may have ancestry that's more mixed than can be gleaned from current techniques. "Even in the best databases that exist today, we know we have only a small sampling of human genetic diversity," says Michael Bamshad, who studies genetic variation at the University of Washington, Seattle, and helped craft ASHG's recommendations. People also tend to be interested in tracing their roots back a few centuries, where the number of ancestors rises exponentially and further confounds genetic testing.

ASHG is urging companies to be up-front about the limitations of their tests and suggesting that researchers collaborate with scholars in social sciences who have a different perspective on ancestry. In addition, serious efforts are needed to determine the accuracy of genetic ancestry tests, something that's now a big question mark. "This is not a case where the companies are doing everything wrong and we know exactly what we're doing," said Aravinda Chakravarti, a geneticist at Johns Hopkins University School of Medicine in Baltimore, Maryland, and the president of ASHG, who also assisted in creating the guidelines.

ASHG has not yet communicated with the commercial sector, so it doesn't know how likely it is that companies will adopt the suggestions. The society will release a fuller set of recommendations in the spring.

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Science **318** (5849), 399. [DOI: 10.1126/science.1150098]


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