



Medical Technology

## Genealogy Gets Genetic

Andy Greenberg, 05.31.07, 6:00 PM ET

Business is in Gina Paige's genes. Hundreds of years ago, her female ancestors in the Yoruba tribe of Nigeria traded and sold goods while their husbands worked in the fields. And now, thousands of years later, Paige knows about her connection to that heritage thanks to her own business, a project called **African Ancestry** that she co-founded in 2003.

By analyzing a sample obtained by a cheek swab, African Ancestry can tell its clients the region and ethnic makeup of ancestors who lived hundreds or even thousands of years ago. Paige says the company has already tested more than 10,000 customers, including big names like Spike Lee, Oprah Winfrey and Whoopi Goldberg. But not all of her clients have star incomes; the procedure costs just \$349, \$600 for tests of both paternal and maternal lineage.

That low price is helping Paige's business expand by around 25% a year, she says, along with a new interest in genealogy triggered by the Internet and the growing realization that some questions of heritage can be answered only by DNA analysis. "Genealogy is the most-searched subject on the Web other than pornography," she says. "The use of genetics in genealogy is the next logical step."

### In Pictures: Celebrity DNA

African Ancestry, which can test either a paternal or maternal ancestral line, sidesteps the process of looking at coupled male and female gene sequences. That means scientists can instead focus on small mutations called single nucleotide polymorphisms that occur over the course of centuries and are passed faithfully from generation to generation. But African Ancestry's real innovation is its comprehensive database that charts those mutations and matches them with samples gathered from communities all over Africa. That's how the company's scientists can tell Lee that his ancestors hail from Cameroon, or Winfrey that her lineage traces back to Liberian origins.

But even without that massive data pool, simpler innovations are making the business of DNA analysis increasingly profitable. Alastair Greenshields, the president of DNA Heritage, says the ability to collect DNA with a cheek swab rather than a blood sample has increased interest in his company's \$129 test; his customer base is nearly doubling every year.

Greenshields says customers also appreciate a genealogy test that doesn't reveal too much about an individual's medical profile. Some DNA tests have also focused on the small portion of DNA that offers clients answers about their risk of cancer or other diseases. But his company performs maternal and paternal tests on the 95% of the genetic code that makes no predictions about a person's health or appearance, leaving customers blissfully ignorant of their genetic prognosis while providing valuable information about their heritage.

Not enough information, however, to satisfy Lou Charlton, founder of another genetic analysis company called DNAPrint Genomics. Charlton's company can analyze not only DNA from maternal or paternal lineages, which aren't mixed in offspring, but also the rest of a person's DNA, which is combined randomly from the mother and father every generation.

Charlton compares the process to trying to re-order the peas and carrots in a bowl of vegetable soup that's been tossed onto the kitchen floor. "It's not easy," she says. "Each generation, when the man and the woman mate, the bowl gets dumped on the floor again."

The complexity of that process means that DNAPrint Genomics' fees run as high as \$430 per test. And Charlton estimates that a new test pinpointing the exact makeup of a subject's DNA origins in specific regions of Europe will cost more than \$600.

But the company's tests offer a more detailed genealogical profile than any other, tracing not just a subject's maternal line or paternal line but the entire fractured mix of his or her lineage. Charlton's own test, for instance, revealed that although she is mostly Italian, she also shares 10% of her genes with American Indians. That's a mystery she can only explain by guessing that the Central Asian tribes who eventually settled in North America also spread south and west, mixing with her Italian ancestors.

As for Gina Paige, she's also performed her company's DNA analysis on herself. Following the genetic trail through hundreds of generations of mothers and again through hundreds of generations of fathers, she found that both lines lead back to Nigeria. Though African Ancestry's test, unlike that of DNAPrint Genomics, doesn't tell its subjects more than the origin of their maternal and paternal sides, that answer was enough for Paige.

"It gave me more than just information about my genealogy," she says. "It gave me a sense of my place."