

DNA tests offer clues to suspect's race

Advances can tell police what, not whom, to look for, but ethicists worry about racial profiling

By Richard Willing
USA TODAY

Police seeking the killer of an unidentified girl who was found decapitated in Kansas City, Mo., four years ago kept a secret from the public.

The child, dubbed "Precious Doe" by local residents, appeared to be black. But new DNA tests that can determine a person's heritage indicated she was of mixed ancestry — about 40% white. That meant she almost certainly had a white grandparent.

This year, a tip led police to an Oklahoma woman who had not reported her young daughter's disappearance. When the woman was found to have both a black and a white parent, police moved in. Further DNA tests determined that the woman, Michelle Johnson, was the girl's mother. Johnson and her husband, Harrell Johnson, the victim's stepfather, have been charged in the slaying.

Precious Doe was identified as 3-year-old Erica Michelle Marie Green of Muskogee, Okla. During a trip to Kansas City, prosecutors allege, her stepfather kicked her to death because she wouldn't go to bed on time.

In the past 12 years, police across the USA have identified thousands of suspects by testing DNA profiles in blood, sweat, semen or skin tissue left at crime scenes, and then comparing them to the profiles of known offenders on file in government databases. But as the Kansas City case showed, advances in DNA testing are al-

lowing investigators to learn more about suspects whose profiles are not in the databases. Tests that can identify a suspect's ancestry are being used not to identify the suspect by name, but rather to give police an idea of what he or she looks like.

DNA ancestry testing "made a huge difference" in the Precious Doe case by helping investigators sort through reports about possible suspects, says Dave Bernard, a Kansas City police detective. "It allowed us to prioritize our tips, to give special attention to tips about mixed-race children, for instance. It was invaluable."

How the test works

DNA is a cellular acid that carries a person's unique genetic code. The company that invented the ancestry test, DNAPrint Genomics of Sarasota, Fla., says that by examining tiny genetic markers on the DNA molecule that tend to be similar in people of certain population groups, it can tell whether a suspect's heritage is European, Sub-Saharan African, Southeast Asian, Native American or a mix of those.

The test works, the company says, because population groups developed different DNA characteristics after splitting off from common African ancestors more than 60,000 years ago.

In 2003, police in Louisiana used ancestry testing to help find the suspect in seven rape/murders. Since then, police in Missouri, Virginia, Colorado, California and the United Kingdom also have used such tests to develop leads in more than 80 other homicide, rape and missing-persons cases, according to DNAPrint Genomics and USA TODAY research.

Using the same genetic principles, DNAPrint Genomics is developing tests aimed at determining a suspect's eye color from a DNA sample. In the United Kingdom, meanwhile, the government's Forensic Science Service has begun examining DNA samples for indications of hair color.

DNAPrint Genomics also sells the test to people who want to trace their roots. The test, which costs \$219, has been especially popular among those seeking to determine whether they are descended from Native Americans, lab director Matt Thomas says. DNAPrint Genomics charges police departments \$1,000 for each ancestry test, because testing crime scene evidence for DNA can be particularly difficult.

Bernard and many other police detectives hail the ancestry tests as a breakthrough in crime-fighting. But medical ethicists, defense lawyers and even some police officials are troubled by the push to use DNA tests to identify suspects by what amounts to their race.

Some, such as Terry Melton, president of Mitotyping Technologies of State College, Pa., say the reliability of ancestry testing remains unproved.

William Shields, a biology professor and genetics specialist at State University of New York's College of Environmental Science and Forestry in Syracuse, says that even if the tests are correct, a person's ancestry often is a poor predictor of what he will look like. Human beings, Shields adds, are too scientifically similar to one another to be distinguished by a "layman's term" such as race.

Some defense lawyers say they fear that using ancestry testing to determine suspects' heritage could lead to genetic racial profiling, or promote the idea that certain races are more inclined than others to commit crimes.

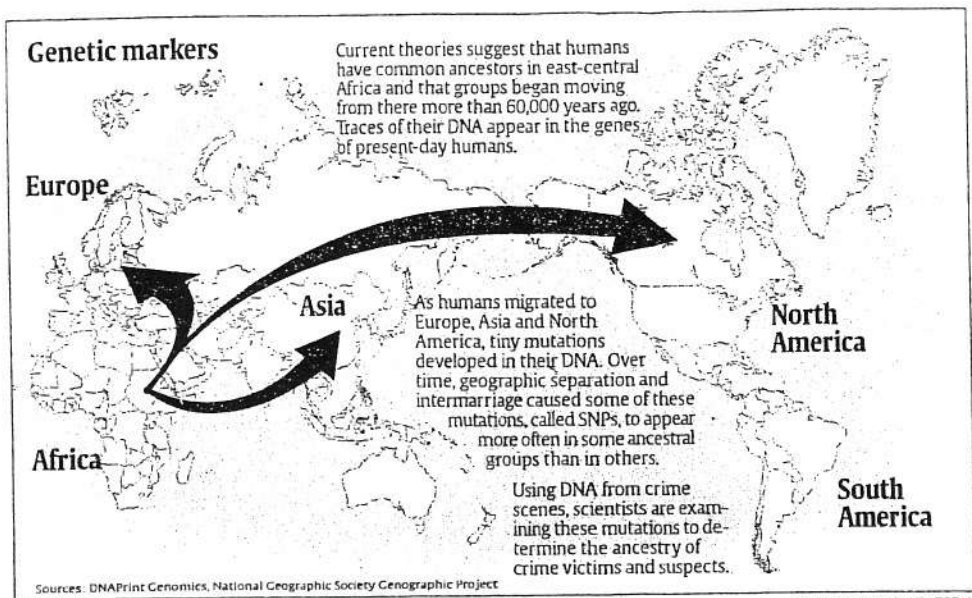
"How far are we from having (ancestry tests) used to justify taking DNA from any black man on a street corner, because we think a Sub-Saharan African committed the crime?" asks Ingrid Gill, a Chicago lawyer who has lectured on ancestry testing at the American Academy of Forensic Sciences.

George Rhoden, a detective with London's Metropolitan Police and president of the force's Black Police Association, also is a skeptic. He says that in a society in which marriages between people of different ethnic backgrounds are increasingly common, racial designations often are "very broad" and "don't do us coppers much good."

Rhoden points out that suspects with similar genetic ancestry can look significantly different from one another. A person whose profile is 75% Sub-Saharan African, for example, may have skin color that is nearly identical to someone whose profile is 35% Sub-Saharan African.

"As a detective, I don't care where (a suspect's) grandfather came from," Rhoden says. "I want to know what he looks like."

Mark Shriver, an anthropological geneticist at Penn State University and a consultant to DNAPrint Genomics, acknowledges that "there's a huge sensitivity about race in our society. We are making a strong attempt to be sensitive to the issue."



But "that doesn't take away the reality that people often describe each other in terms of race. We're saying: Let DNA be the witness."

Beyond standard DNA tests

Conventional DNA analysis compares 13 relatively large areas on the molecule where the DNA sequence is known to vary greatly among individuals. If two DNA samples match at all 13 positions, statistics maintained by the FBI say it's highly likely they came from the same person.

Ancestry tests, by contrast, examine 176 mutations in which the DNA varies at only one position. Some of the mutations, called single nucleotide polymorphisms (or SNPs), have been found to occur only in certain ancestral groups. Others tend to cluster in one group more than others because of centuries of geographic separation and inter-marriage. Together, Thomas says, SNPs are "highly informative of ancestry."

In 2003, DNAPrint Genomics began to license its test to police agencies. The scientists realized, Thomas says, that knowing a suspect's race or ancestral background "may not be great for, 'Who do we arrest?'" but could help police determine, "Who do we question?"

The company's test was first used in a criminal investigation in the Baton Rouge area, where a series of at least seven rape/murders had authorities stumped. Witnesses had reported seeing a white man in a white truck near the scene of two of the killings. Police had taken DNA samples from more

than 1,200 white men in the area and had not found a match to samples from the crimes.

Then the DNAPrint Genomics ancestry test found that the unknown attacker was mostly of Sub-Saharan African ancestry with a smattering of Native American.

That led authorities to focus on Derrick Todd Lee, a black man with convictions for burglary and stalking. Additional testing matched Lee's DNA to samples taken from victims. He has been convicted in two of the slayings.

In 2004, police in Charlottesville, Va., used ancestry testing to confirm the race of a suspect in six unsolved rapes that began in 1997. Police had been criticized for seeking DNA samples from local black men based on victims' descriptions of the assailant. The testing indicated that he indeed was of Sub-Saharan African descent.

Ancestry testing also has been used on a female skeleton that was found in the snow near Mammoth Lake, Calif., in May 2003. The slain woman initially was misidentified as southeast Asian, based on witnesses' descriptions of a woman seen in the area. DNAPrint Genomics found she actually was a Native American, a finding confirmed by analyses of her diet and bone composition and further DNA tests.

The ancestry test "turned around the whole investigation," says Paul Dostie, the police detective investigating the case. "We're still looking for the killer, but we know a lot more now."

New technology 'scares me'

For all the promise of ancestry testing, there are increasing concerns about how police will use such information.

Defense lawyer Bruce Unangst, who defended Lee in his second murder trial, says the new technology "scares me. It's supposed to be new and foolproof, but that's traditionally what they say about all new" crime-fighting innovations. "By the time we find out there are serious questions ... a whole bunch of innocent people have had their DNA searched."

Last year, London police sought DNA samples from officers of Afro-Caribbean backgrounds to compare them with evidence from nine unsolved rapes. The suspect's accent and the neighborhood in which he operated suggested to police that he was a black man with Caribbean roots.

Working with DNAPrint Genomics, London police hoped to develop a database of DNA characteristics that are particular to Afro-Caribbeans to confirm their suspicions and to help them find suspects in other cases.

Rhoden, as head of the Black Police Association, urged members not to cooperate. "In our view, this promoted racial stereotyping while adding little to the investigation."

Melton, the private lab president from State College, Pa., says inferring a suspect's appearance by examining only 176 ancestry markers is "more than (labs) ought to be doing."

Because scientists have identified thousands of SNPs, Melton says, many more should be tested.

DNAPrint Genomics reviewed

about 25,000 DNA markers before choosing the 176 that were "most informative of ancestry," Thomas says. The company now has a test that can tell whether a European's DNA came from a northern or southern European, he says.

For detectives who use its service, the company provides photographs of people whose ancestral profile matches that of the detectives' suspect.

"What does a Northern European, Native American and South-east Asian mixture look like? That's a fair question," Thomas says. "We're told the photographs are extremely helpful."

The company's research is continuing. After Afro-Caribbean police in London refused to donate DNA samples, DNAPrint Genomics collected about 150 samples from police on Caribbean islands.

More samples are needed, Thomas says, but the DNA profiles collected so far suggest there are markers that distinguish Afro-Caribbean blacks from others in the Sub-Saharan group.

London police, Thomas says, were "on the right track" in their rape investigation.

Rhoden draws a different lesson from the episode. He notes that few of the Caribbean officers who gave DNA samples were willing to have their photographs added to the company's files.

"Even for these guys, who wished to be helpful, that was going too far," Rhoden says. "We should take notice of how nervous it makes such people before we endorse any kind of mass DNA taking from ordinary people."