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“Native American DNA” Tests: What are the Risks to Tribes?

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Does DNA make an Indian?

In *Red Earth, White Lies* (Scribner, 1995), Vine Deloria Jr. muses about the dramatic rise in people self-identifying as Native American since the political upheavals of the 1960s. Deloria asks: “can whites really become Indians? A good many people seriously want to know.”

Deloria did not refer to “Native American DNA”, but the question he poses is one that many people are hoping DNA can answer. In this age of genetic determinism, when many Americans believe that identity, kinship, and race are determined by one’s genes, more and more people are turning to DNA testing to validate their claims of Native American ancestry. At least fourteen companies now sell Native American DNA tests (\$80-600, depending on the type of test ordered). After rubbing a sterile cotton swab on the inside of the cheek and sending it in a vial to the DNA testing company, the test taker will be told if he or she possesses particular genetic markers that are commonly found in individuals with Native American ancestry. Test takers also receive a frameable document certifying their genetic ancestral affiliation.

Since 30 million Americans have set up websites tracing their family histories and 80% of those surveyed by the genealogy portal RootsWeb.com say that it would be important to use DNA to determine their ancestry, these DNA tests have the potential to influence many people. Unfortunately, this may mean trouble for tribes. Will Native American DNA tests be used to challenge tribal rights and governance authority?

DNA companies profit while tribes may lose out

In the September 22, 2004 *Indian Country Today*, an advertisement by the company Genelex asked readers, “Do you need to confirm that you are of Native American descent?” Genelex claims that its Ancestry DNA Test reveals genetic markers that are “unique to Native Americans”, making it “the only scientifically rigorous method available” for “validating . . . eligibility for government entitlements such as Native American Rights”.

Two features of this ad epitomize the problems with Native American DNA testing and the way it is hyped by DNA testing companies. First, the claim that these tests identify uniquely Native American markers is not completely accurate: some of the genetic markers used in these tests are found only in Native Americans, but many are not. This claim therefore exaggerates what DNA can tell us about ancestry and ethnic identity, and implies a greater correspondence between genetic markers and ethnic groups than really exists. We further explain such problems with the science behind these tests later in this article. Second, although Genelex describes its test as *validating* rather than *determining* eligibility for Native American rights, careful use of verbs does not diminish the central message that DNA testing proves Native American identity in a scientifically objective manner. The implication is that successful DNA test takers should have the right to access Native American “government entitlements” whether or not they belong to federally-recognized tribes. Other DNA testing companies suggest that test results can also be used to qualify for ethnicity-specific scholarships and race-based college admissions.

However, eligibility for Native American rights is ultimately a political and cultural issue that will never be satisfactorily answered by genetics.

Native American tribes need to ask themselves, “since when does a genetic test rather than government get to decide who is Native American and therefore eligible for Native American rights?” For 150 years, Native American rights have been determined by *legal* criteria that support the idea of tribal sovereignty. Are tribes willing to give up authority to the scientists, entrepreneurs, and investors who run DNA testing companies and who seem less familiar with Native American politics and history?

Tribal sovereignty and legal rights are contentious in American politics today. States, industry, and others wage expensive legal battles to challenge tribes’ rights to govern their lands and citizenries or to exist at all. There are also many American citizens who may not realize that tribes are political entities and not simply quaint ethnic groups. Some of these romanticize Native America and search with heavy emotional investment for a Native American ancestor that is sometimes real and sometimes imagined.

Given the current political and cultural environment, many Americans might sooner look to DNA than to tribal and federal law to determine who is Native American and who can access Native American rights.

Because tribal and federal law focus on tribal group relations, cultural continuity, and a tribal land-base, many individuals with Native American biological ancestors are nonetheless ineligible for federally-recognized tribal status or tribal enrollment. When law fails to recognize them as Native American, these individuals may turn to DNA testing. For example, after failing to meet federal recognition standards, a group calling themselves the “Western Mohegan Tribe and Nation” attempted to use DNA analysis to prove their Native American identity in order to get into the gaming business. Although their efforts were unsuccessful, hopes of gaming profits may motivate others to seek recognition in this manner, and tribal sovereignty could be undermined as a result.

Indeed, some early signs suggest that DNA testing could become a legal requirement for proving Native American affiliation even if opposed by tribes. After the 9,000 year old remains known as “Kennewick Man” were unearthed in 1996, DNA analysis was authorized to help determine his “cultural affiliation” despite opposition from the tribes claiming the remains under the Native American Graves Protection and Repatriation Act. DNA testing proved unsuccessful because too little DNA was preserved in the bones for analysis, but a precedent has been set. Legislation has also been proposed in at least one state (Vermont) that would require DNA testing to prove the Native American affiliation of both human remains and individuals seeking state recognition.

Can DNA be useful to federally-recognized tribes?

A few federally-recognized tribes, such as the Mashantucket Pequot of Connecticut, have considered using Native American DNA tests for enrollment purposes. For the Pequot, as for other wealthy casino tribes, the financial stakes of enrollment are high: the Pequot disburse monthly payments to each member totaling thousands of dollars. If DNA could exclude those who cannot legitimately claim Pequot ancestry, the financial benefits for the remaining tribal members would be great.

However, these Native American DNA tests rarely (if ever) identify genetic markers for particular tribes. Because no tribe has been completely isolated from other human groups throughout history, very few genetic markers are present only in the members of one tribe. In all likelihood, genetic markers found in the Pequot also exist in many other tribes. Consequently, adoption of a DNA-based enrollment policy might actually expand the number of individuals qualifying for tribal enrollment because individuals without Pequot ancestry could claim membership based on the shared genetic markers.

This example should serve as a red flag to tribes: enrollment policies based on DNA alone could backfire. Furthermore, because individual identity is shaped by more than genetic ancestry, other enrollment criteria might be better able to meet the needs of land-based tribal nations. Reservation residence or tribal community involvement, for example, can help ensure that tribal members are also culturally connected to the tribe and committed to its future.

Some companies may encourage the notion that genetic ancestry alone makes an Indian, though, because there is a potentially lucrative market in such over-simplification. For example, the DNA testing company DNAToday has teamed up with DCI America (a for-profit tribal management consulting firm) to sell “genetic identification systems” to tribes. Their \$320-per-person photo ID cards sport computer chips and list specific DNA markers. DNAToday advocates tribal-wide DNA testing, and claims that their product is “100% reliable in terms of creating accurate answers” to questions of tribal enrollment. But one must ask, “*which* questions do they answer?”

DNAToday’s test is simply a paternity test that confirms an individual’s biological parentage. While this could help demonstrate an enrollment applicant’s relationship to an ancestor on the tribe’s base roll, that relationship can usually be documented through other less expensive means (such as birth certificates and the enrollment documents of parents and grandparents). When it can’t, many tribes already use paternity tests. Thus, in many cases, DNAToday’s

products are redundant and cost exorbitant. The cost would range from tens of thousands of dollars for small tribes to tens of millions for the largest tribes, and few tribes would gain much new or useful information.

The science of Native American DNA testing

DNA testing for Native American identity and enrollment is clearly problematic on a social, cultural, and political front. But what about the science behind such tests? There are problems there too. The tests can fail to detect Native American ancestry in individuals with Native American ancestors, and incorrectly identify it in others who do not have such ancestors.

First, Native American DNA tests examine only a small proportion of the test taker's DNA. Most tests fall into one of two categories: mitochondrial DNA (mtDNA) tests and Y-chromosome tests. MtDNA tests examine DNA that is inherited only from one's mother (and her mother, and her mother before her...). Y-chromosome tests examine DNA that is passed down from grandfather to father to son (and so on). These tests examine less than 1% of the test taker's DNA, and shed light on only one maternal or paternal ancestor. Thus, even if all of your grandparents were Native American except for your mother's mother, a mtDNA test would still fail to detect Native American ancestry.

Second, DNA tests may certify some individuals as having Native American ancestry when in fact they do not. These tests use the following logic: if a genetic marker is common in Native Americans, and you have the marker, you are probably Native American. The problem is that 'common' is not the same as 'only found in' Native Americans. Given the high level of genetic variation within all human populations, relatively few markers are restricted to a single group in this way. In fact, not all "Native American" markers used in the DNA tests are actually found only in Native Americans. Some of the markers are *most common* in Native American populations, so any individual with those markers *most likely* has Native American ancestry. But because such markers can still be found in non-Native American populations, just at lower frequencies, Native American DNA tests may falsely identify some individuals as having Native American ancestry.

Such "false positives" may be responsible for the more perplexing results of these tests. Several come from DNAPrint's AncestrybyDNA test, which examines 175 markers found throughout the genome to estimate the test taker's "ancestral proportions" (% Native American, % European, % East Asian, and % African). Based on their test results, DNAPrint claims that most Mediterranean Europeans, Middle Easterners, Jews, and South Asian Indians have Native American ancestry. If, however, some of the markers they consider diagnostic of Native American ancestry are really not, then such results are not accurate and the reliability of this test is cast into doubt.

Thus, Native American DNA tests do not provide foolproof answers to questions of Native American ancestry. In many cases, their results are accurate and informative. But in others, they fail to detect such ancestry in individuals with Native American ancestors, and they incorrectly identify it in others. The appropriate use of such imperfect tests must be considered carefully.

Conclusion: Can DNA tell us anything about Native American identity?

Ultimately, the answer to this question depends on how we define “Native American”. Up until now, the definition has incorporated ideas of tribal citizenship and sovereignty, acculturation as a Native American, and biological ancestry.

But now that genetics carries such cultural power, we face several pressing questions: Will Native American identities and rights that have been reckoned through a combination of kinship ideas, law, and policy now be reckoned increasingly through DNA? Will DNA tests be required in law and policy? Will prevailing cultural notions of kin, race, and genetic ancestry undermine tribal notions of kin that emphasize a close cultural connection to the tribe? How will the focus on DNA affect ongoing U.S. negotiations with tribal nations? Tribes need to consider these possibilities carefully.