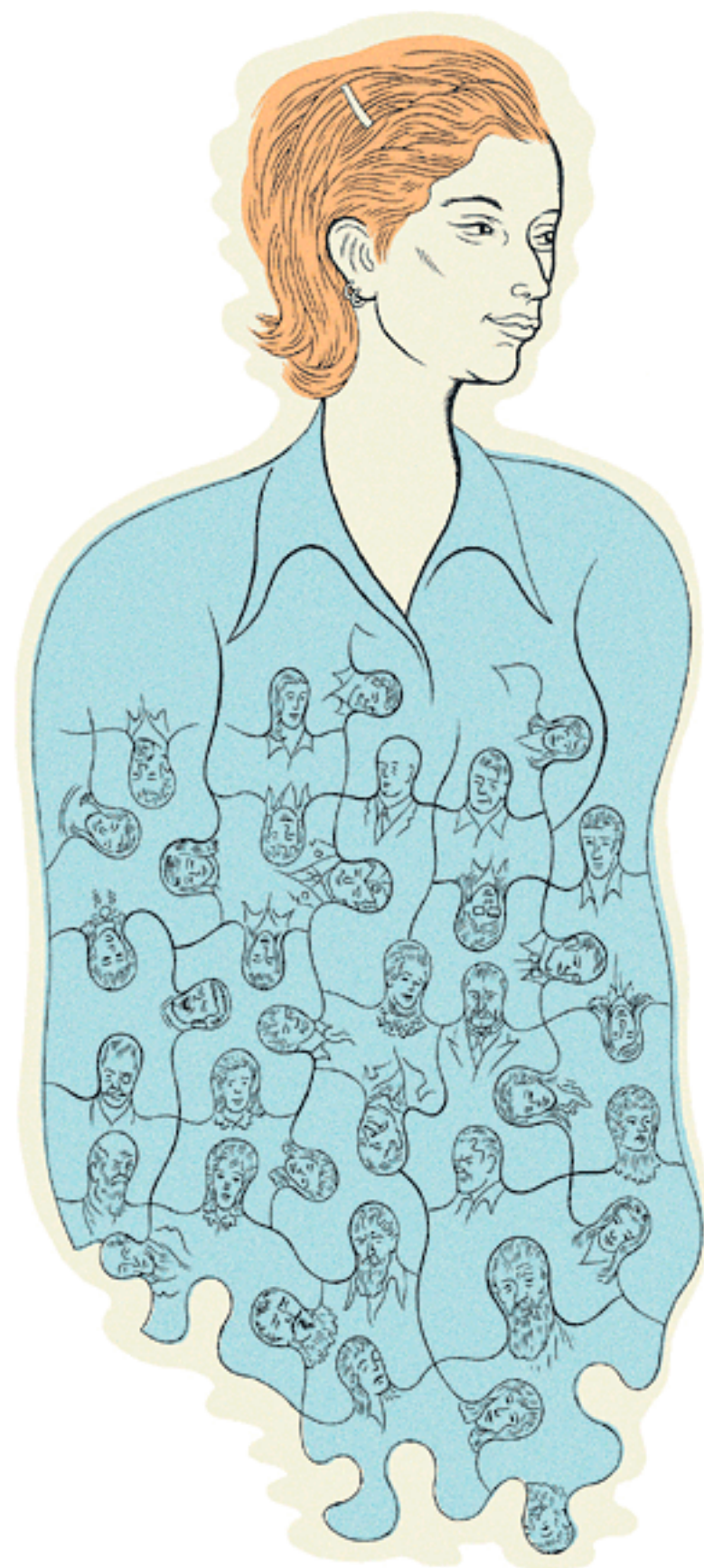


# Love You, K2a2a, Whoever You Are

By AMY HARMON  
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THERE are a lot of things I may never know about K2a2a, one of four founding mothers of a large chunk of today's Ashkenazi Jewish population and the one from whom - I learned last week - I am directly descended.



I may never know whether she lived 1,000 years ago or 3,000. I may never know if she was born in the Judea, as the scientists who identified her through mitochondrial DNA say they suspect. I will certainly never know her name.

I do know that I carry her distinctive genetic signature. My mother carried it, my mother's mother carried it, my daughter now carries it, too.

And the thrill of that knowledge - for the price of the \$100 cheek swab test of my own DNA - may be all I can handle.

The popular embrace of DNA genealogy speaks to the rising power of genetics to shape our sense of self. By conjuring a biologically based history, the tests forge a visceral connection to our ancestors that seems to allow us to transcend our own lives.

But will our genetic identity undermine our cultural identity? The tests can add depth to what we have long believed, but they can also challenge our conception of who we are. The trauma some experience when their tests conflict with what they have always believed to be true has prompted some researchers to call for counseling to accompany the results.

Just how informative the tests are is also a matter of considerable debate.

Because the Y chromosome, which determines maleness, is passed unchanged from father to son, scientists can use it to determine whether two men share a common ancestor. When rare mutations do occur, they are unique to a single man and his male descendants, and scientists can often pinpoint when and where this founding father lived.

Mitochondrial DNA, which is passed on largely intact from mothers to their children, can be used similarly to trace maternal ancestry.

But each test can trace only one lineage back to a single ancestor. K2a2a was my mother's mother's mother's ... mother, for instance, and my father has taken the test so we can learn about his father's father's father's ... father.

But these kinds of tests can't teach me anything about any of the thousands of other ancestors of mine who were living 1,000 or 2,000 years ago.

A different kind of test, which promises to parse the percentage of a customer's genome that came from different geographical regions, can be misled by the reproductive shuffling of each generation.

Some anthropologists worry that what they call the "geneticization of identity" could lead to a dangerous view of race and ethnicity as biologically based. But many who have taken the tests say that the details of their DNA can underscore that we are all genetic cousins.

Why the genetic claiming of an ancient grandmother holds such emotional sway I am not quite sure. I mean, I've never even been to Ellis Island. And I have spent too many Christmases ordering in Chinese for it to come as a surprise that I am more likely to share mitochondrial DNA with Ashkenazi Jews than other groups.

But to judge by the growing throngs of other newly minted DNA genealogists, I'm not the only one to find appeal in the idea that the key to our past is lodged in our own genes.

On the "DNA-Genealogy" e-mail group last week, the buzz about the Jewish founding mothers was quickly supplanted by the news that scientists had traced a widely distributed genetic signature among people of Irish descent to a legendary Irish king.

"I've never felt more Irish," e-mailed Larry Slavens, a computer programmer in Des Moines whose family had immigrated from Ireland in 1740 but hadn't known of ties to Niall of the Nine Hostages, a high king of the fifth century, until last week. "I tell ya, my next tattoo is going to incorporate the Red Hand of Ulster in honor of my O'Neill kin."

Others were less impressed by the connection. "My understanding was that he was one of the nine hostages, not that he took nine hostages," wrote a disdainful John O'Connor, whose DNA links him to a different genealogical pretender to the ancient Irish throne.

Once used almost exclusively by research scientists, the tests used to cost thousands of dollars apiece. Now, thanks largely to the Human Genome Project, they are relatively cheap, and a cottage industry of commercial test companies has sprung up to take advantage of it.

By some estimates, 200,000 Americans have explored their ancestry through such ventures, which include a collaboration between the National Geographic Society, I.B.M. and Family Tree DNA of Houston whose goal is to build a database of 100,000 DNA samples from ethnic groups around the world to detail the history of human migrations. The project charges the public \$99.95 to send in their DNA and find out where they fit on the resulting map.

Genetic genealogy may simply be the most recent way of fulfilling an age-old need to tell stories about our origins, anthropologists say. But because Americans put so much faith in science, our DNA results can seem more meaningful than the more standard family lore, or even years of painstaking archival research.

"DNA don't lie," said Ed Martin, 61, a retired telecommunications engineer in Orange Park, Fla., whose test put his paternal ancestors in Central Asia.

Mr. Martin had already traced his paternal line through the 1500's to a town in Germany using family records. The DNA test results, however, have persuaded him that he is descended from

the Huns, who invaded an area of Germany where he still has living relatives - an area, he wrote in an e-mail message, "known as the HUNSruck."

"I spend time now visualizing what their lives may have been like, moving and attacking and conquering," he said with obvious relish. "All these groups were trying to kill the other one off. They were just brutal."

The adoption of new ancestral identities does not come so easy to everyone.

Given her previous research, Lisa B. Lee, a black systems administrator in Oakland, Calif., was sure she would find a link to Africa when she submitted her father's DNA for testing. Family lore had it that his people were from Madagascar. But after tests at three companies, the results stubbornly reported that he shared genetic ancestry with Native Americans, Chinese and Sardinians. No Africa.

"What does this mean; who am I then?" said Ms. Lee, who was active in the Black Power movement of the 1960's. "For me to have a whole half of my identity to come back and say, 'Sorry, no African here.' It doesn't even matter what the other half says. It just negates it all."

"Am I Sardinian?" she said. "Am I Chinese? Well that doesn't mean anything to me. It doesn't fit, it doesn't feel right."

DNA skeptics worry that there is a threatening side to the rise of DNA genealogy. Historically, associating human difference with genetic characteristics has had disastrous social consequences. These tests, marketed as tools to connect to a familial past, DNA skeptics say, often rely on the ability to differentiate people by the parts of our genetic makeup that correlate with racial identity.

DNAPrint Genomics in Sarasota, Fla., for instance, produces reports stating that an individual is, say, 15 percent Native American, 50 percent Western European, 10 percent African, 5 percent South Asian and 20 percent Middle Eastern.

Sandra Soo-Jin Lee, senior research scholar at the Stanford Center for Biomedical Ethics, said that history teaches the dangers of trying to define racial groups with science. "If we're going to relinquish control of our identities to science, we need to realize that we're embarking on that trajectory," she said.

When I called Dr. Karl Skorecki, one of the scientists in Israel who had tracked down K2a2a, to ask him what more he could tell me about her, he acknowledged that he finds the potential social implications of his work troubling.

"I like to confine it to what it tells us about history, and to insights about disease patterns," said Dr. Skorecki, a professor of medicine at Technion and Rambam Medical Center in Haifa. "That's different than identity. Identity is metaphysical, not physical."

So why had K2a2a's line thrived, I had wanted to know, while others had died out?

"It is rather remarkable, after having gone through plague and wars left and right, still having left a number of descendants," Dr. Skorecki said, tantalizingly. "But I think it's random."

Still, at Family Tree DNA's Web site, I paid \$75 to get another test, a higher-resolution scan of my mitochondrial DNA.