SCIENCE

Defining Jews, Defining a Nation: Can Genetics Save Israel?

By Jeff Wheelwright

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How studies of Jewish DNA could help answer a question that's at the heart of some of Israel's biggest problems: Who counts as a Jew?

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Herzliya, a broad-beached ocean-side resort 19 miles north of Tel Aviv, is booming with construction—big Jewish going up on the bluffs and expensive new bungalows on the bougainvillea-laden streets. Herzliya was named for Theodor Herzl, the 19th-century Zionist visionary whose dream to see the Jewish people resettled in their homeland triumphantly came to pass.

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From across the Atlantic, Israel looks to be a liberal and fully modern Western state, albeit one with a terrific hair under its saddle, the Palestinian problem. Until you come here, you don't sense the second conflict, just as severe for Israelis, over the religious character of the nation. The essential question is, Who is a Jew? The issue is driven by the religious right, which has never been stronger in Israel. All new citizens must prove they are Jewish in order to get married, for example. So the question of who qualifies and who doesn't could define not just the country's identity but its demographic future. Is a person Jewish because of blood or because of culture? Must Jewish identity follow the biological pathway of descent, like those tongue-twisting names in the Hebrew Bible connected by *begat*, or can Jewishness be acquired mostly by expressing the faith?

"I don't need a rabbi to tell me who's Jewish!"

The implications of the debate matter for more than just Jewish Israelis. Allowing for biological outlooks of Jewish ancestry begs a question about the biological origins of the Palestinians in their midst. On the family tree of humanity the two peoples are surprisingly close, or so says science.

Last June, some two dozen Israeli and American geneticists met at the Dan Accadia Hotel in Herzliya. Although the purpose of the two-day conference was to discuss the latest findings about the DNA of the world's peoples, the focus soon narrowed to the genetics of Jews. Jewish DNA, with its tracks of ancient migrations and rare genetic diseases, such as Tay-Sachs, was the material the scientists now have. The 20-minute presentations were hurried and dense. As the scientists took the podium, each made quips about their critics's DNA. "Somebody should do a genomic study about why Jews are so much," said one, to a nod to the fond the Israeli but laridly laid on. "So Jews," another, "there's probably a map coders in your DNA that tells a cell to stop making a protein] in the human gene for stuff. That's why we can eat gefilte fish."

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On the afternoon of the second day, the participants edged away from science to ask if genetics might help resolve the identity issues pointing Israel. One of the conference organizers, the Israeli Karl Skorecki, said that the meeting had been eroding the subject for two days. "I believe Jewishness is metaphysical, cultural, correlated to DNA."

"But some others," he went on, "such as politicians, journalists, genealogists, and professors of French theater, have jumped ahead of us scientists. Why have we been so reticent over the years?"

By "French theater," Skorecki was taking a swipe at his compatriot Shlomo Sand, a professor of contemporary history. Sand was not in attendance, but his work was a presence at the conference nonetheless. His was the author of *The Invention of the Jewish People*, a 2009 best-seller in Israel *France and point of controversy* in the U.S. On the one hand, Sand agreed with most scientists that Jewishness was a cultural, not a biological, construct. On the other, he attacked the "myth" of DNA blood connection to the Biblical founders, and he disputed recent genetic findings that no Jews' origins in the Middle East. Earlier, when the American scientist Harry Ostrer had declared, as he did again at the conference, that markers on the DNA reveal "a biological basis for Jewishness," Shlomo Sand had retorted, "It is a bitter irony to see the descendants of Holocaust survivors set out to find a biological Jewish identity: Hitler would certainly have been very pleased!"

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That afternoon at the hotel, Skorecki and Ostrer led a panel discussion on "The Genetics of Being Jewish." Unlike the prior sessions, all in English, the discussion was conducted in two languages, with English permitted for those who didn't speak Hebrew and headphones provided for those in the audience who wanted a running English translation. Four non-geneticists from Israel—a Member of the Knesset, an Orthodox rabbi, a Nobel chemist, and a prominent journalist—came up and joined the scientists. The panelists waived their arms and boomed their opinions in Hebrew, their explosive pharyngeal consonants causing the scientists to shrink back a little in their chairs. These politically minded men had little to say about the genetics of Jewishness. Rather, they mined the muscular old days when a Jew could be known simply by his or her desire to come to Zion and serve the state. "I don't need a rabbi to tell me who's Jewish," said the journalist Dan Margalit, thumping his chest.

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Under the Law of Return, any Jew *in the world may make aliyah* and claim citizenship in Israel. The law extends the right to spouses and offspring of Jews who may not be Jewish themselves. However, if an immigrant wishes to marry, he or she may face obstacles. There is no civil marriage in Israel; the institution is controlled by a religious authority, the Rabbinate. According to *halacha, ancient Jewish law, either the applicant's mother must be demonstrably Jewish (the blood connection) or the the applicant must have converted to Judaism* in a verifiably Orthodox ceremony (the cultural test). If unable to satisfy the authorities, immigrants must get married outside the country, and the state will accept the union. Secular Israelis who meet the strictures go abroad by choice, mostly Cyprus-often providing their version of the Las Vegas wedding.

Levy-Lahad reminded her colleagues that attempts to define Jews scientifically have a bad history.

Then the panel and the audience went asked to comment on a case study, a real one. An Eastern European woman who was a 12-year resident of Israel had documents affirming that her paternal grandfather was Jewish, but no proof of Jewishness on her mother's side sure her own testimony. To bolster her claim for a marriage license, the woman went to a commercial gene-testing service and had her DNA analyzed, specifically her mitochondrial DNA. This part of the human genome is inherited only through the mother's line. She turned out to carry a genetic marker associated with Ashkenazi Jews, 1.5 million of whom carry it. Scientists had made the marker to what they believe to be a founding lineage of the Jewish people in the Middle East. Should the religious authority take the biological evidence into account? Should the rabbi in charge give the woman a pass on the requirement for conversion?

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The room crackled with people wishing to speak. The American geneticist Mary-Claire King, known for her research on heritable breast cancer, said that she hesitated to admit the mitochondrial marker as legal proof of ancestry. For one thing, she observed, not everyone carrying that marker was Jewish. It can be found in some Palestinians, for example. Also, King wondered, should a Jewish applicant be rejected if she didn't carry a telltale marker? Besides, any DNA test produces false positives and negatives. What if the results were mistaken? "Genetics does not put boundaries around people," King concluded.

Next came a five-minute disquisition on genetic and halacha from Yuval Cherlow, the Orthodox rabbi on the panel. Cherlow said he was biased against genetics. He believed it might be a "consultant" to halacha. Although Jewish law and tradition were hardly consistent, still, he said, "*Halacha* is 3,000 years old and genetics is what—10 years old? It is a little baby." Apart from newness, it was the decisiveness, the binary yes or no of

DNA analysis, that seemed to be the most threatening quality of genetic. A certain amount of cloudiness and argumentation is built into the rhetoric poles of Israel, the kind of thing that does not welcome a binary human test.

When Cherlow finished, another rabbi in the audience stood up and responded, "When God created DNA, he intended it to be used in some way!" This man, who counseled Russian immigrants, said that genetics should be applied when a *Bat dev* [religious court] couldn't reach a verdict on a person's Jewishness.

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Doron Lancet, an Israeli expert on Jewish genetic disorders, took the microphone. In a controlled and acidulous tone, Lancet said, he hated to *the only country in the world* that cares when a Jewish. Other countries say, If you declare yourself Jewish, you've gone into trouble sufficiently for us to believe you. Only in Israel are we required to prove we are Jewish." Lancet continued, "And they insert an universal mechanism such as mitochondrial DNA to show that we are worthy of coming here. Irving here, serving in the army, dying for the country." He stopped to collect himself. "If the rabbinical institutions ceased to exist, insofar as telling us who is Jewish and who is not, people would be allowed to show their emotions—I'm emotional—because being Jewish is much more than the genes—and so if people were allowed to use their emotions, I'm personal again, having lost his synagogue, bearing altogether, "everyone would be happy." There was applause.

Up on stage, Ostrer and Skorecki, the co-organizers, seemed surprised by the vehement reactions. "Karl and I were promoting genetic testing as a solution to problems related to Jewish identity," Ostrer said afterward, "and only the [liberal] rabbis were buying in. The geneticists were not."

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Ofnal Bich, who studies genetic diseases in the Bedouin population, struggled to make himself clear to the gathering. "I wasn't going to talk but something moved inside," he said. "As a geneticist I say it is wrong DNA test is logical, but my emotions say I'm startled. I find this very disturbing. Being Jewish goes far beyond our genes. I want to hear from Jews Monday. I want to hear from Arnu, please."

Monday, 87, of the University of Washington, was the elder statesman and unofficial conscience of the meeting. He has contributed to many areas of genetics, especially to pharmacogenics, whereby the variation in people's DNA affects their responses to drugs. As a boy, Motulsky had escaped to the U.S. from Nazi Germany. In his keynote speech the day before, he'd told of hearing German soldiers singing to his village at night. "If the Jews' blood comes off the knife, it is very good, very good." The 20th century's interest in Jewish DNA or "the Jewish gene" was malignant, Motulsky said. But though Jewish researchers had avoided the topic in the aftermath of the war, the "spirit of science" had impelled the inquiry to go forward, and lately it had succeeded.

Asked for his opinion of the case at hand, about the relevance of the woman's DNA markers, the dapper Motulsky leaning on his cane, said, "I have great trouble with all this. On the one hand, why not genetics? It only gets us into trouble. On the other hand, I think religious authorities have much too much power in Israel. That these things can be decided by rabbis? I'm a good Jew but I'm a non-believer. I suspect the Orthodox. Other Jews should respect me."

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He thought for a second. "Where there's enmity in the world, as between Arabs and Jews, it's not genetics that's caused it. Genetically, they are somewhat similar. It's for other reasons that they can't get along. And that's good for genetics."

As it happens, the case had a real outcome, which Skorecki dimly reported to the conference. Evidently the woman's DNA argued the balance in her favor. In 2010 a local rabbi granted her a marriage license as a bona fide Jew.

ABOUT THE AUTHOR

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