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Studies Show Jews' Genetic Similarity

By **NICHOLAS WADE**

Jewish communities in Europe and the Middle East share many genes inherited from the ancestral Jewish population that lived in the Middle East some 3,000 years ago, even though each community also carries genes from other sources — usually the country in which it lives.

That is the conclusion of two new genetic surveys, the first to use genome-wide scanning devices to compare many Jewish communities around the world.

A major surprise from both surveys is the genetic closeness of the two Jewish communities of Europe, the Ashkenazim and the Sephardim. The Ashkenazim thrived in Northern and Eastern Europe until their devastation by the **Hitler** regime, and now live mostly in the United States and Israel. The Sephardim were exiled from Spain in 1492 and from Portugal in 1497 and moved to the **Ottoman Empire**, North Africa and the Netherlands.

The two genome surveys extend earlier studies based just on the Y chromosome, the genetic element carried by all men. They refute the suggestion made last year by the historian Shlomo Sand in his book "**The Invention of the Jewish People**" that Jews have no common origin but are a miscellany of people in Europe and Central Asia who converted to Judaism at various times.

Jewish communities from Europe, the Middle East and the Caucasus all have substantial genetic ancestry that traces back to the Levant; Ethiopian Jews and two Judaic communities in India are genetically much closer to their host populations.

The surveys provide rich data about genetic ancestry that is of great interest to historians. "I'm

constantly impressed by the manner in which the geneticists keep moving ahead with new projects and illuminating what we know of history," said [Lawrence H. Schiffman](#), a professor of Judaic studies at [New York University](#).

One of the surveys was conducted by Gil Atzmon of the [Albert Einstein College of Medicine](#) and Harry Ostrer of New York University and appears in the current [American Journal of Human Genetics](#). The other, led by Doron M. Behar of the [Rambam Health Care Campus](#) in Haifa and Richard Villems of the [University of Tartu](#) in Estonia, is published in Thursday's edition of [Nature](#).

Dr. Atzmon and Dr. Ostrer have developed a way of timing demographic events from the genetic elements shared by different Jewish communities. Their calculations show that Iraqi and Iranian Jews separated from other Jewish communities about 2,500 years ago. This genetic finding presumably reflects a historical event, the destruction of the First Temple at Jerusalem by Nebuchadnezzar in 587 B.C. and the exile of many Jews there to his capital at Babylon.

The shared genetic elements suggest that members of any Jewish community are related to one another as closely as are fourth or fifth cousins in a large population, which is about 10 times higher than the relationship between two people chosen at random off the streets of New York City, Dr. Atzmon said.

Ashkenazic and Sephardic Jews have roughly 30 percent European ancestry, with most of the rest from the Middle East, the two surveys find. The two communities seem very similar to each other genetically, which is unexpected because they have been separated for so long.

One explanation is that they come from the same Jewish source population in Europe. The Atzmon-Ostrer team found that the genomic signature of Ashkenazim and Sephardim was very similar to that of Italian Jews, suggesting that an ancient population in northern Italy of Jews intermarried with Italians could have been the common origin. The Ashkenazim first appear in Northern Europe around A.D. 800, but historians suspect that they arrived there from Italy.

Another explanation, which may be complementary to the first, is that there was far more interchange and intermarriage than expected between the two communities in medieval times.

The genetics confirms a trend noticed by historians: that there was more contact between

Ashkenazim and Sephardim than suspected, with Italy as the linchpin of interchange, said [Aron Rodrigue](#), a [Stanford University](#) historian.

A common surname among Italian Jews is Morpurgo, meaning someone from Marburg in Germany. Also, Dr. Rodrigue said, one of the most common names among the Sephardim who settled in the Ottoman Empire is Eskenazi, indicating that many Ashkenazim had joined the Sephardic community there.

The two genetic surveys indicate “that there may be common origins shared by the two groups, but also that there were extensive contacts and settlements,” Dr. Rodrigue said.

Hebrew could have served as the lingua franca between the Ashkenazic community, speaking Yiddish, and the Ladino-speaking Sephardim. “When Jews met each other, they spoke Hebrew,” Dr. Schiffman said, referring to the medieval period.