## Zuckerberg-Chan? Moonves-Chen? Jewish-Chinese intermarriage has ancient precedents

In recent years, advances in genetics have enabled scientists to pinpoint our origins and relationships to specific geographic regions and ethnic groups with a fairly high degree of accuracy.

Geneticists nowadays examine mitochondrial DNA, which passes from mother to child, Y chromosomal DNA, which passes from father to son, and autosomal DNA, which derives from a multitude of ancestral lines and typically picks up portions of the genetics of all sixteen of an individual's greatgreat-grandparents. By following the trails blazed by all three types of DNA, including patterns of mutations in the uniparental types, one can reconstruct a compelling narrative of migrations related to an individual or an ethnic group.

Jews of all kinds, but especially Eastern European Ashkenazi Jews, have been eager to take DNA tests to learn more about their deep ancestors and relatives, since the paper trail of vital records from the Russian and Austrian empires runs cold for most families before the early-to-mid 19th century and most surnames were adopted relatively recently.

Ashkenazim with ancestors from Eastern and Central Europe make up large portions of the testing pools of the top three American direct-to-consumer DNA testing companies – Family Tree DNA, 23andMe, and Ancestry DNA – and have been recruited for numerous genetic studies over the past two decades.

Much of this research has established that the vast majority of Ashkenazic lineages trace back to Europe and the Middle East 2,000 years ago, with a large portion coming from ancient Israel and its environs. But this research has also turned up traces of unexpected roots.

Many Ashkenazic people living in the West are interested in aspects of Chinese culture like the abacus, tai chi, and Chinese and Chinese-American food. There has also been an increase in recent years in so-called "intermarriage" between Ashkenazim and ethnic Chinese, exemplified by Facebook's co-founder Mark Zuckerberg's marriage to Priscilla Chan and CBS Corporation's CEO Leslie Moonves' marriage to Julie Chen.

Nevertheless, China is understandably perceived by most Ashkenazim in the West as an exotic "other". Except it's not entirely foreign after all.

Six scientists from the Chinese Academy of Sciences teamed up with the British geneticist Martin Richards and the Dutch historian Jits van Straten to research the worldwide distribution of the mitochondrial haplogroup called M33c. The team obtained new genetic samples to supplement samples that had already been collected by others to build the most comprehensive analysis of M33c lineages to date.

The results of their work were <u>published</u> in February in their article "A Genetic Contribution from the Far East into Ashkenazi Jews via the Ancient Silk Road" in *Scientific Reports*, an online journal from

the Nature Publishing Group.

The lead author Jiao-Yang Tian and his colleagues confirmed that M33c originates in East Asia. They showed it's mostly found among ethnic groups living in China. Members of the Han, Zhuang, Yao, Miao, Kam-Tai, and Tibetan peoples were found to possess M33c.

Most, but not all, of those who belong to this lineage live in southern regions of China. A few people from Thailand and Vietnam also have it, but it reaches its highest genetic diversity inside China, so that is believed to be where it began after it split off many thousands of years ago from the varieties of M33 that are found in India.

The authors also found a branch of M33c they call M33c2 that's shared in their data pool between a Han Chinese person from the Sichuan province and fourteen Ashkenazim with maternal roots in towns that are now located in Belarus, Russia, western Ukraine, Poland, Romania, and Hungary. They estimate M33c2 entered the Ashkenazi population in medieval times no later than the year 1400.

A Jewish merchant who traversed the trade routes connecting the East and the West is plausibly the man who formed the relationship with the Chinese woman to produce one or more half-Ashkenazi half-Chinese children, including at least one daughter who was raised Jewish, married a Jew, and passed M33c2 along to successive generations.

And he wasn't alone, for there are two other mitochondrial DNA haplogroups from East Asia — called A and N9a3 — that are likewise found in Eastern European Ashkenazi maternal lineages. However, the genetic evidence suggests those women lived in more northern territories, perhaps even in eastern Siberia.

Only about 1.1 percent of all Ashkenazic direct maternal lineages stem from these three Asian women, but many more Ashkenazim have indirect maternal lineages descended from them, for example from having a paternal grandmother who was N9a3.

Autosomal studies corroborate the fact that Chinese and Siberian people form part of the ancestral heritage of Ashkenazim from Eastern Europe and that they are much less a part of the heritage of Ashkenazim from further west and not part of the formative heritages of Sephardic Jews, Bukharian Jews, Afghanistani Jews, or any other Jewish group aside from the Jews who stayed for centuries within China including the city of Kaifeng. Sephardim from Turkey bearing traces of this ancestry probably got it from having partial Ashkenazi ancestry rather than from partial Turkish ancestry.

Laboratory research conducted by Doron Behar and his colleagues showed that Eastern European Ashkenazi tend to show around 2.2 percent of East Asian ancestry autosomally. This ancestry was also detected in the genomes of many Eastern European Ashkenazim who joined National Geographic's Geno 2.0 project, often in the proportion of 2 percent or 3 percent. It was more faintly detected by many, but not all, of those who tested through 23andMe, which uses a different analytical technique and explores some different portions of a person's single nucleotide polymorphisms (SNPs).

Notables whose recent ancestors is all East-Central and Eastern European Jewish and carry traces of

East Asian ancestry detected by 23andMe include the writer Neil Gaiman, the playwright Tony Kushner, and the attorney Alan Dershowitz. 23andMe reported that only 0.1 percent of their SNPs as tested by the company's techniques come from East Asia.

Finally, data compiled by Kenneth Kidd, a professor of genetics at the Yale School of Public Health, show that about 1.7 percent of Ashkenazim carry the East Asian-specific 1540C allele in the Ectodysplasin A Receptor (EDAR). This allele is responsible for increased scalp hair thickness.

Found in large frequencies among modern East Asians like the Japanese and the Qiang of Sichuan province, and in smaller frequencies among peoples of Central Asia and Eastern Europe who have only partial East Asian ancestry like Hazara, Hungarians, Finns, and Russians, it is never found among Sephardic Jews, Yemenite Jews, Samaritans, Israeli Bedouins, or Palestinian Arabs who all carry 1540T instead. This is how we know 1540C didn't come into the Ashkenazi population from the ancient Israelites.

Jews in China whose ancestors had arrived from western lands, including Persia, sometimes married local Chinese women and over time the community became more and more Chinese ethnically and culturally whereas the opposite happened for the descendants of the Chinese woman whose family took root in Eastern Europe. So it was that the Kaifeng Jews and Ashkenazi Jews both ended up being heirs to the ancient civilizations of China and Israel.

Sara Schechter-Schoeman, a proud descendant of a Jewish woman from the Russian Empire whose direct maternal lineage has been confirmed by a relative's DNA sample to be M33c by Family Tree DNA, is delighted by the evidence for her connection to China and possibly to the Silk Road and plans to celebrate each Chinese New Year with her Taiwanese daughter-in-law.

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