

# Native American Maternal Genealogies

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In 1990, Theodore Schurr at Emory University, Georgia, discovered that Native Americans had four different maternal DNA lineages. These lineages are now known by the names A, B, C and D. He found that these lineages also occurred in selected Asian populations. The maternal DNA lineages of Native Americans can be distinguished by detecting rare changes in the order of the 16,569 odd DNA letters that make up the mitochondrial genome.

In the last decade the mitochondrial DNA lineages of over 5,500 Native Americans from about 150 tribes have been determined. These tribes are scattered over North, Central and South America. Several thousand natives of Peru have been DNA tested and these unpublished results are held at BYU (personal communication with Scott Woodward). This research has confirmed that the A, B, C and D maternal lineages are the major female lineages; found in about 96% of Native Americans. About 4% of Native American maternal lineages do not belong to any of the four major lineages. Originally, these were all assumed to have been lineages introduced after the arrival of Columbus, however, many have been found to belong to another group, and are known as the X lineage. The X lineage occurs at its highest frequency (about 25%) in several tribes in northeastern North America. Approximately 2.5% of Native Americans have mtDNA belonging to the X lineage family.

The four major DNA lineages of Native Americans occur at significant levels in Asian populations, but are not found in Europe or African populations. The X lineage occurs only at low levels in Central Asia but it is found in western Eurasian populations at a frequency of about 5%. It is common in the Middle East where its frequency reaches >20%, raising the possibility that it was brought to the Americas by a population migrating from the Middle East. Naturally this lineage is particularly interesting to people familiar with the Book of Mormon story. Further work on the X lineage family revealed that Native American X lineages are most closely related to X lineages found in the Altaian people of Central Asia (Southern Siberia), near Lake Baikal. The Siberian Altai X lineages occupy a position intermediate between the European and American lineages. None of the Native American lineages directly descends from European X lineages.

About one in every 200 Native Americans has a maternal DNA lineage that is not found in Asian populations. Instead these lineages are common in Europe or Africa. The DNA scientists doing the research believe that these lineages were brought into native populations after Columbus, given the massive immigration from Europe and Africa during the last 500 years. Several lines of evidence support this view.

- These lineages are more common in tribes that interacted more heavily with European and African groups since Columbus.
- They are generally not found in tribes that have had little contact with Europeans.
- If scientists interview Native Americans to ascertain pure ancestry, they do not detect these lineages.

None of these lineages have been detected in DNA isolated from ancient remains.

## Summary Table

Region	Maternal Lineage (Number of individuals)					
	A	B	C	D	other	total
Alaska	237	4	13	251	24	529
Greenland	82	0	0	0	0	82
Canada	443	42	82	29	58	654
United States	461	430	253	107	78	1329

Central America	290	117	68	17	4	496
South America	332	820	582	583	60	2377
TOTAL	1845	1413	998	987	224	5467
Percentage	34	26	18	18	4	

Data in this table was collected by S. Southerton from approximately 46 scientific research papers published during the last decade up to November 2002. To my knowledge, this is the most comprehensive summary of the maternal DNA lineages of Native Americans. About 99.5% of Native American maternal DNAs originated in Asia and are not related to Israelite maternal lineages. In a recent talk (FAIRS, 2001) Scott Woodward from BYU admitted that about 90% of Native Americans have an Asian origin. In my view this is a misrepresentation of the current data.

## Polynesian Genealogies

As with Native Americans, the molecular genealogies of Polynesians descend westward into Asia. About 95% of Polynesians have a B type maternal DNA lineage. The Polynesian B lineage is related to the B lineages found among Native Americans and Asians. A direct Asian origin of Polynesian B lineages is most strongly supported by the occurrence of two additional changes in the DNA sequence of Polynesian B mtDNAs. These changes are found in some South East Asian B lineages but not among Native Americans. There is a steady increase in the frequency of the Poly B maternal lineage as one moves from Asia to the extremities of Polynesia. In some places like New Zealand, Easter Island and Samoa, almost 100% of native individuals have a Polynesian B lineage.

About 5% of Polynesian female lineages do not belong to the B lineage family. Most of these Polynesian lineages have been found among people from Vanuatu and Papua New Guinea and about 1% originated in European populations. These observations suggest, just as Pacific archaeologists have suspected, that the Polynesians island hopped as they sailed out into the Pacific, interbreeding with Melanesian and other South East Asian peoples on route.

Polynesian Y chromosomes are also of Asian origin. About 80% of the men sailing out into Polynesia had Y chromosomes that originated in Melanesia. The other 20% had Y lineages that are common in Southeast Asia including the Philippines, Java and Taiwan.

Currently there is scant genetic evidence for migration of people from the Americas to Polynesia. The Native American 1G male lineage, which is found in about 60% of New World males, has not been observed in the Pacific among Polynesians or Melanesians.

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**References in blue are the most significant ones.** Please note that most of these are scientific papers. The paper by Schurr (2000) gives a good summary and is easy to follow. The journals can be found in most medical libraries attached to a university.

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