

Y Chromosome Haplogroups and Ancient Origins

Y Chromosome Haplogroups

Through DNA analysis of select male populations in the world, scientists have devised a genetic classification system for the over three billion males in the world. Each male individual in the world can be placed into one of eighteen genetic classifications or Y haplogroups, based on their DNA composition. Each Y haplogroup is defined by rare DNA mutations on the Y chromosome called SNPs, or single nucleotide polymorphisms. Any two men sharing a particular SNP in their DNA inherited it from a common male ancestor who lived many thousands of years ago.

Haplogroup A

Haplogroup A, first appearing 55,000 years ago, is the oldest of all Y haplogroups and is considered a direct genetic link to early man. It is found almost exclusively in Africa with a wide distribution, but low to moderate frequency. Haplogroup A has been found in the San Bushman, Hadza, Kung, Khwe, Malians, Sudanese and Ethiopians.

Haplogroup B

Another one of the older Y haplogroups, haplogroup B is found almost exclusively in Africa, although it has been detected rarely in Pakistani people. It occurs at low frequency throughout most of Africa, with its highest frequency occurring in Pygmy populations.

Haplogroup C

Haplogroup C first appeared approximately 50,000 years ago. Since the mutations that define this haplogroup have not been observed in African populations, it is believed that this haplogroup arose somewhere in Asia. This haplogroup defines a great coastal migration of man, tracing an arc along the Southern Arabian Peninsula through India, Southeast Asia and Australia. Later decedents of this group migrated to North Eastern Asia and finally reached North America approximately 6,000 to 8,000 years ago.

Haplogroup C is widely distributed throughout mainland Asia, the South Pacific and occurs at low frequencies within Native American populations. This haplogroup is also found in New Guinea, Australia, Northern Asia and India. Haplogroup C2 is distributed throughout Polynesia, Melanesia, New Guinea, and Indonesia. Haplogroup C3 is thought to have originated in Southeast or Central Asia and then migrated into Northern Asia, and ultimately the Americas.

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Haplogroup D

Haplogroup D first appeared approximately 50,000 years ago and likely accompanied the people of haplogroup C on their great coastal migration through the Southern Arabian Peninsula, India, Southeast Asia and ultimately Australia. In modern times, this haplogroup appears along the ancient migration route in the Andaman Islands and Southeast Asia, although not in India. This haplogroup occurs at a high frequency among Tibetan and Yao populations. Evidence suggests a shared ancestry, originating from ancient tribes of North West China. Haplogroup D1 evolved from the D lineage and is found in Southeast Asia and Tibet. It is also found at low frequencies in Mongolian populations, but completely absent from Japan. Haplogroup D2 is most likely derived from the D lineage in Japan. It is completely restricted to Japan, and is a very diverse lineage within the aboriginal Japanese and in the Japanese population around Okinawa.

Haplogroup E

Haplogroup E consists of three main branches. Two of the three branches, E1 and E2, are found almost exclusively in Africa, while the third, E3, has also been observed in Europe and in Western Asia where it has been found at frequencies of 25% or less. It is currently believed that the E3a haplogroup migrated south from North Africa with the Bantu agricultural expansion within the last 3,000 years. As a result of its predominance in West Africa, most African-Americans belong to this haplogroup. The E3b haplogroup, on the other hand, is believed to have evolved in the Middle East and migrated into the Mediterranean during the Pleistocene Neolithic expansion. It is currently found in the Mediterranean, Southern Europe, and in Northern and Eastern Africa.

Haplogroup F

Haplogroup F is defined by at least three mutations and is the root of haplogroups G through R. It is believed that haplogroup F evolved outside of Africa during early migrations of modern humans approximately 30,000 to 40,000 years ago.

Haplogroup G

Haplogroup G is a rare lineage thought to have originated approximately 10,000 to 20,000 years ago along the eastern edge of the Middle East in India or Pakistan. This haplogroup is dispersed throughout Central Asia, Europe, and the Middle East. The G2 branch of this lineage is found most often in Europe and the Middle East.

Haplogroup H

Haplogroup H is almost completely restricted to India, Sri Lanka, and Pakistan. It is estimated that the H haplogroup occurs at a frequency up to 50% in most Roma (Gypsy) groups.

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Haplogroup I

Haplogroup I is believed to have descended from the Gravettian culture which arrived in Europe from the Middle East 20,000 to 25,000 years ago, prior to the last ice age. On average, haplogroup I accounts for 18% of the total paternal lines in Europe and reaches frequencies of 40 to 50% in the Nordic populations of Scandinavia and in Southern Europe near the Dinaric Alps. Haplogroup I, often referred to as the Viking haplogroup, is also found in parts of Ireland, Scotland, and England, where it is thought to have descended from Viking invaders. Haplogroup I has three primary subhaplogroups, I1a, I1b and I1c, and account for 95% of the haplogroup I gene pool. Haplogroup I1a is found mostly in Northern Europe with its highest frequencies in Scandinavian populations where it accounts for 88% to 100% of Norwegian, Swedish and Saami lines. Haplogroup I1b is the most frequent clade in Eastern Europe and the Balkans, reaching its highest frequency in Croatia (31%) and Bosnia (40%). Haplogroup I1c is widely distributed throughout Europe, with higher frequencies in the Northwest and lower frequencies elsewhere.

Haplogroup J

Haplogroup J contains two primary branches, J1 and J2, and is most commonly found in the Middle East, North Africa and Ethiopia. Genetic statistics indicate that this haplogroup originated in the Middle East and was carried outward into Europe, Central Asia, India and Pakistan by Middle Eastern traders about 7,000 to 9,000 years ago. It is believed that this group descended from men of the F haplogroup that arrived 45,000 to 50,000 years ago. J1 is seen with the highest frequency in the Middle East, North Africa and Ethiopia. It is also reported that 10% of the J haplogroups found in Europe are J1. J2 appears to have originated in the northern part of the Fertile Crescent and expanded west towards Europe and east towards India, Pakistan and Nepal. Almost all European J's belong to J2.

Haplogroup K

Haplogroup K first appeared approximately 40,000 years ago in Iran or South Central Asia and spawned the so called Eurasian Clan. The majority of the populations living in the Northern hemisphere are decedents of this haplogroup which is characterized as a super haplogroup, incorporating haplogroups L through R.

Haplogroup L

Haplogroup L is seen in the greatest frequency in Southwest Asia, with some frequencies as high as 25%

Haplogroup M

Haplogroup M occurs with high frequency in peoples of the Irian Jaya Highlands, Papua New Guinea Highlands and New Britain. It also occurs among Western Samoa populations, however with less frequency.

Haplogroup N

Haplogroup N is distributed throughout Northern Eurasia from Europe to the Pacific and is shared by Caucasoids and Mongoloids. It is closely related to haplogroup O, which is found in Mongoloids. It is the most common haplogroup found in Uralic speakers (Finns and Hungarians). This haplogroup most likely originated in Northern China or Mongolia and then spread into Siberia where it became a very common line in Western Siberia. In one Siberian study, haplogroup N occurred at a frequency of 43%.

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Haplogroup O

Haplogroup O is found frequently in East Asia and is the most frequent haplogroup among the Han Chinese. The O1 haplogroup is found at very high frequencies in the aboriginal Taiwanese. The O2 haplogroup has two primary lines, O2a and O2b. The O2a line is found in the Southeast Asian populations of Malaysia, Vietnam, Indonesia, and Southern China. The O2b haplogroup occurs at high frequency in Japanese and Korean populations and at low frequency in East Asian populations.

Haplogroup P

Haplogroup P is very rare in modern populations. Although it is believed to be the ancestral line to haplogroups Q and R, it only occurs at low frequency in India, Pakistan, and Central Asia. It most likely originated in either Central Asia or the Altai region of Siberia

Haplogroup Q

Haplogroup Q first appeared 15,000 to 20,000 years ago and is believed to have originated in Central Asia and subsequently migrated through Northern Asia into the Americas. This lineage is found in North and Central Asian populations as well as Native Americans and is the major lineage that links Asia and the Americas. Haplogroup Q3 is unique among Native American populations and is estimated to have originated 8,000 to 12,000 years ago during the migration into the Americas.

Haplogroup R

Haplogroup R includes two main lineages, R1a and R1b. The undifferentiated R1 lineage is rare and found only at very low frequencies in Europe, Central Asia, and South Asia. This lineage possibly originated in Europe and then migrated east into Asia. Haplogroup R1a commonly occurs in Slavic populations of Eastern Europe and in populations of Central and Western Asia, India and Pakistan. It is believed to have originated in the Kurgan culture on the Eurasian Steppes north of the Black and Caspian Seas. The Kurgans are believed to be responsible for the domestication of the horse in approximately 3000 B.C.E. and were also believed to be the first speakers of the Indo-European language group. The R1b haplogroup first appeared approximately 35,000 years ago is the most frequently occurring lineage in Western European populations. This haplogroup is a direct descendent of the Cro-Magnon people, characterized by a broad face and tall stature. It is believed to have migrated throughout Europe during re-colonization after the ice age, 10,000 to 12,000 years ago.

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