



DNA Tribes® Digest December 29, 2009
Copyright © 2009 DNA Tribes®. All rights reserved.

To request an email subscription to DNA Tribes® Digest, email digest@dnatribes.com with the subject “Subscribe.” To unsubscribe from DNA Tribes® Digest, email digest@dnatribes.com with the subject “Unsubscribe.” Previous issues of DNA Tribes® Digest are available online at: <http://dnatribes.com/library.html>.

Table of Contents:

Introduction.....	1
Generals of the Steppes: Basic Genetic Contributions in Tungusic, Mongolic, and Turkic Populations.....	2
Getting the Most from Your Testing	7

Introduction

Hello, and welcome to the December 2009 issue of DNA Tribes® Digest. This month’s feature article highlights Tungusic, Mongolic, and Turkic speaking populations of the Asian steppes. These grassy plains have been the staging areas for the well known horseback military campaigns that forged the medieval Mongol Empire, as well as earlier Scythian, Hunnish, Turkic, and Khitan armies.

To complement the more complex inter-regional genetic analyses of Asian steppe populations in previous Digest articles¹, this issue examines Asian steppe populations in terms of basic European, East Asian, Indian Subcontinent, and American Indian² (possibly associated with older Paleo-Siberian and Yeniseian populations) genetic contributions. This more basic analysis can provide a simplified point of reference to help clarify the complex tangle of history and culture in these “Great Plains” of Asia.

Best regards and Happy New Year,
Lucas Martin
DNA Tribes

¹ See “Patterns of Gene Flow through the Inland Silk Routes” at <http://dnatribes.com/dnatribes-digest-2008-12-26.pdf> and “Genetic Relationships in Northern Europe” at <http://dnatribes.com/dnatribes-digest-2008-11-28.pdf>.

² Perhaps from an ancient stratum of Paleo-Siberian and Yeniseian cultures resident in Siberia since the Mesolithic period. See “Old Siberia” at <http://dnatribes.com/dnatribes-digest-2009-11-30.pdf>.

Generals of the Steppes: Basic Genetic Contributions in Tungusic, Mongolic, and Turkic Populations

Background: The Eurasian steppes are a wide stretch of flat grassy plains (similar to the Great Plains of North America) stretching from Central Europe in the west to northern China in the east. Beginning with the domestication of the horse near the present day Ukraine, this long grassy strip has been a conduit for numerous horseback empires that rapidly arose, conquered, and then dispersed, often leaving little trace. To name just a few of these military confederations: the Arya of Iran and India³, the Scythians known to the ancient Greeks, the Xiongnu known to China, the Huns who helped break the Roman Empire, the Turks who took hold of the inland Silk Routes⁴, the Kara Khitan (whose name *Catai* or *Cathay* became synonymous with China), and the Mongols who established the largest contiguous land empire in history.

Despite this fast changing blur of nomadic armies, the Asian portion of the Eurasian steppes is home to several cultures that can be understood in terms of geography (mapped in **Figure 1**). In the Asian steppes, the primary language families spoken today are the Tungusic, Mongolic, and Turkic languages. These Asian steppe cultures have interacted with early Indo-European nomads who brought the domestic horse to Asia, with Asian civilizations to the south (such as the Indo-Iranian, Tibetan, Chinese, Korean, and Japanese cultures), and with Siberian peoples to the north (such as Uralic, Yeniseian, and Paleo-Siberian cultures).



Figure 1: Map of language families (labeled in yellow type) and landmarks (labeled in white and black type) near the Asian steppes. Primary language zones of Tungusic, Mongolic, and Turkic cultures discussed in this article are highlighted in red. Many of these languages have also been spoken outside of the primary locations mapped above during various periods of expansion, migration, and empire.

³ See “Basic Genetic Contributions near the Hindu Kush,” <http://dnatribes.com/dnatribes-digest-2009-10-31.pdf>.

⁴ See “Patterns of Gene Flow through the Inland Silk Routes,” <http://dnatribes.com/dnatribes-digest-2008-12-26.pdf>.

Although the nomadic horse warrior has become associated with Mongol horsemen, the era of steppe armies conquering their neighbors and spreading over vast distances began far away from Mongolia, in Eastern Europe. Horse domestication is thought to have taken place in the Pontic-Caspian steppe near the present day Ukraine, eventually giving rise to the horse drawn chariot used in warfare. Propelled by these innovations, it is thought that **Proto-Indo-Europeans** expanded from Europe to conquer large parts of Europe and Asia.⁵ In Asia, these Indo-European conquests generated new Indo-Iranian cultures memorialized in the *Rigveda* of India and the *Avesta* of Persia⁶.

However, not all of these early Indo-European speaking nomads were absorbed in settled Asian civilizations to the south: some remained near the steppes and developed into Asian nomad cultures (perhaps coming into contact with indigenous East Asian and Siberian peoples in the process). One early eastern offshoot of this originally European horse culture was the **Afanasevo** archaeological culture, (located in the area later associated with Turkic and Mongolic languages, see map in **Figure 1**). Later, during the time of the ancient Greeks, the steppes were the home of Iranian speaking **Scythian** nomads, and the Tarim Basin was home to **Tocharian** cultures⁷ (see map in **Figure 1**).

In time, new Asian cultures emerged that made use of the horsemanship once introduced from Europe. In present day Mongolia, the **Xiongnu Empire** emerged around the third century BC and encroached on the nearby Qin state⁸, which began construction of the Great Wall of China to protect Chinese civilization from nomads. The cultural affiliations of the Xiongnu are unknown, although some Chinese sources suggest an association with later Hunnish and Turkic peoples. Far away from China, military confederations calling themselves **Huns**⁹ soon appeared and threatened lands of South Asia and Europe¹⁰. These Hunnish armies appear to have been multi-ethnic, and available records of Hunnish conquests in South Asia and Europe include both Indo-European and Turkic-like names and titles.

In the sixth century AD, the first formally Turkic state emerged on the Asian steppes: the **Göktürks**. Nevertheless, lingering traces of Indo-European contacts persisted even at this late date. The

⁵ The areas associated with Indo-European expansions in Asia are also associated with European-like genetic characteristics. Genetic evidence of Indo-European expansions is discussed in “Old Europes” at <http://dnatribes.com/dnatribes-digest-2009-07-29.pdf> and <http://dnatribes.com/dnatribes-digest-2009-08-29.pdf>.

⁶ Some of these Indo-Iranian cultures near the Hindu Kush Mountains are discussed in “Basic Genetic Contributions near the Hindu Kush,” <http://dnatribes.com/dnatribes-digest-2009-10-31.pdf>.

⁷ Genetic contributions to Uyghur populations living today in the Tarim Basin are discussed in “Patterns of Gene Flow through the Inland Silk Routes,” <http://dnatribes.com/dnatribes-digest-2008-12-26.pdf>.

The modern term “Tocharian” comes from a tribe listed by the Greek writer Strabo as *Tokharoi*. It is perhaps worth pointing out that without the Greek plural ending *-oi*, this would be rendered as *Tokhar*. If treated as a plural Turkic ethnonym (*-ar* is a plural ending in Turkic languages), *Tokhar* could be translated as “Tokhs.” Given that the nearby origins of the Turks (*Türkler*) several centuries later are unknown, it is perhaps worth considering whether this ancient ethnonym survived in an unrecognized form. Another possible appearance of early *Tokhar* mentioned in the Indian epic *Mahabharata* is the Tushara Kingdom located to the northwest of India.

⁸ The name “China” used in the West comes from the Qin Dynasty, named for Qin Shi Huang, whose sometimes ruthless programs contributed to a more unified Chinese civilization.

⁹ The relationship between the Xiongnu of Mongolia and the Huns of South Asia and Europe is unclear. Another similar but later ethnonym is Dzungar or Zunghar (meaning “Left Hand” in Mongol), for whom Dzungaria (north of the Tarim Basin) is named (see **Figure 1**).

¹⁰ One group of nomads calling themselves Huns who conquered parts of South Asia was the Hephthalites or White Huns, discussed in “Basic Genetic Contributions near the Hindu Kush,” <http://dnatribes.com/dnatribes-digest-2009-10-31.pdf>.

ruling Göktürk clan was said to be descended from Northern Xiongnu, but was named *Ashina*, an Iranian word meaning “blue.”¹¹ Turkic peoples also established kingdoms in Asia and Europe, including the Ottoman Empire that became the modern Republic of Turkey, while others retained their traditional nomadic lifeways near the steppe territories of the Göktürks¹² (see **Figure 1**).

In the twelfth century AD, these steppe territories came under the rule of Tungusic **Kara Khitan**, who brought Chinese cultural elements from their native lands near Manchuria to the east (see **Figure 1**). The Kara Khitan Empire was replaced by the Turkic or Mongolic Naimans, who are thought to have left descendants among modern Kyrgyz, Uzbek, and Hazara peoples. However, both of these peoples were soon to be overshadowed by history’s most famous steppe empire: the **Mongol Empire** of Genghis Khan. Like earlier steppe confederations, the Mongol armies included volunteers from allied tribes¹³ as well as forcibly enlisted conscripts drawn from populations conquered by the Mongols.

Throughout this long progression of steppe empires, another quieter pattern of interactions has existed between the steppe nomads and **Siberian taiga peoples** to the north. These taiga (forest) peoples include Uralic, Yeniseian, and Paleo-Siberian speaking cultures (see **Figure 1**) thought to be descended from indigenous hunting and fishing populations living in Siberia since the Mesolithic era (Middle Stone Age). Although less prominent in historical documents, available genetic data suggest that these taiga populations have retained genetic characteristics otherwise associated with American Indian populations.¹⁴

Brief Summary of Asian Steppe History:

- Domestication of the horse in Europe led to military use of chariots and cavalry.
- Expansion of nomadic Indo-European horse cultures into the Asian steppes.
- Establishment of Indo-European steppe cultures in Asia (Scythians, Tocharians, and others).
- Ongoing contacts with forest peoples of Siberia (Uralic, Yeniseian, and Paleo-Siberian cultures).
- Local emergence of new Hunnish, Turkic, Mongolic, and other nomadic societies in Asia.
- Expansion of Asian steppe nomads to conquer parts of Asia and Europe.

Genetic analysis: Basic genetic contributions to several individual population samples of the Asian steppes were identified, including samples from a Xiongnu burial site in Egiin Gol, Mongolia (used between the 3rd century BC and 2nd century AD). Results are illustrated in **Figure 2** and summarized in **Table 1**.

¹¹ The *Gök* component of *Göktürk* appears to have been a calque of the Iranian name *Ashina* (“deep blue”): *Gök* means “blue” in Turkic languages. Notably, a traditional name for the central divinity in Turkic cultures is *kök Tanrı* (“blue Heaven”). Another word linking Turks and the color blue is the English word “turquoise,” thought to derive from the French word *Turquois* (“Turkish”).

¹² Genetic analysis of relationships between the Altaian (Central Asian and Siberian Turkic) region and neighboring genetic regions is available in “Genetic Relationships in Northern Europe,” <http://dnatribes.com/dnatribes-digest-2008-11-28.pdf>.

¹³ The multi-ethnic composition of the Mongol army was evident not only among the rank and file soldiers, but also among the Mongol leadership. Subutai, one of Genghis Khan’s top four generals (Temujin’s loyal “dogs of war”) was of *Uriankhai* (taiga) origins.

¹⁴ See “Old Siberia,” <http://dnatribes.com/dnatribes-digest-2009-11-30.pdf>.

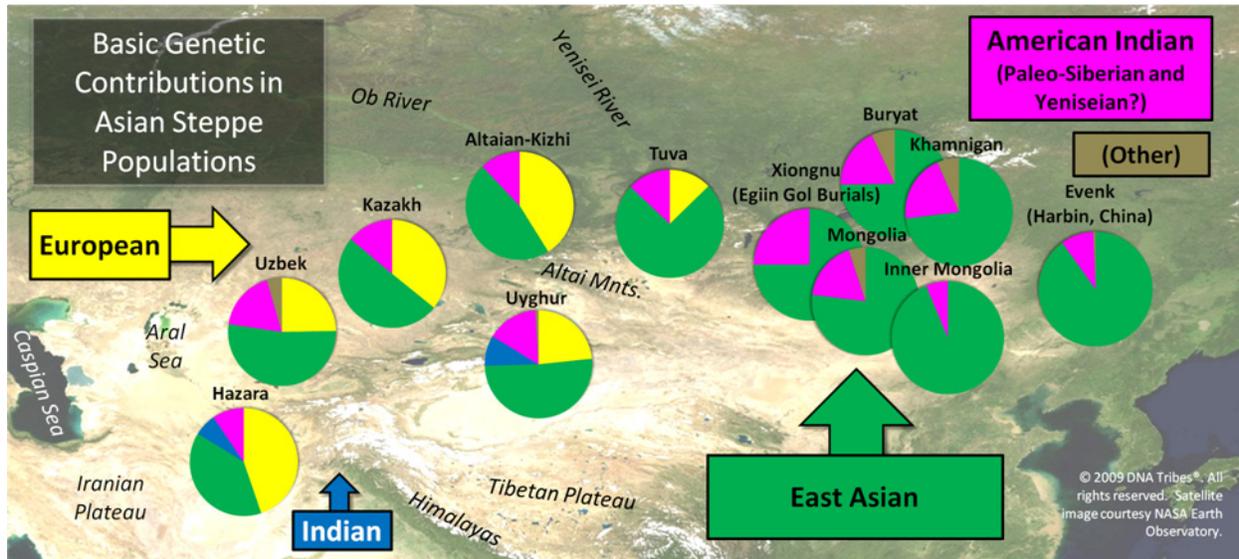


Figure 2: Map of basic genetic contributions to Tungusic, Mongolic, and Turkic populations of the Asian steppes.

Population Name	Language Family	E. Asian	European	Amer. Ind.	India	Other
Hazara	Iranian (orig. Mongolic)	39.0%	44.8%	9.5%	6.7%	-
Uzbek	Turkic	52.7%	24.7%	18.1%	-	4.6%
Kazakh	Turkic	50.3%	35.8%	13.9%	-	-
Uyghur	Turkic	51.2%	23.3%	15.4%	9.1%	0.9%
Altaian-Kizhi	Turkic	46.8%	41.1%	12.1%	-	-
Tuva	Turkic	74.2%	12.7%	13.0%	-	-
Xiongnu (Egiin Gol Burials) 3 rd c. BC – 2 nd c. AD	(Unknown)	75.1%	-	24.9%	-	-
Mongolia	Mongolic	76.9%	-	17.9%	-	5.2%
Buryat	Mongolic	74.8%	-	18.2%	-	7.1%
Khamnigan Mongol	Mongolic (orig. Tungusic)	73.1%	-	20.3%	-	6.6%
E. Mongolian (Inner Mongolia)	Mongolic	93.7%	-	6.3%	-	-
Evenk (Harbin, China)	Tungusic	90.1%	-	9.3%	-	0.7%

Table 1: Basic genetic contributions to populations of the Asian steppes.

Discussion: Results in Table 1 indicate European genetic contributions to Asian steppe populations west of Lake Baikal, but are not identified in Mongolic and Tungusic populations further east. This might reflect contacts with Scythians, Tocharians, and other Indo-European peoples that introduced nomadic horse cultures to Asia from the west. However, the absence of European genetic contributions east of Lake Baikal suggests that the spread of horse cultures east of Lake Baikal might have taken place by

cultural diffusion. In addition, a second earlier source of European genetic contributions might have been Uralic populations living further north in the Siberian taiga¹⁵.

Substantial East Asian contributions are identified for all studied Asian steppe populations, but are smaller in populations west of the Sayan Mountains (between 39.0% and 74.2%)¹⁶ and larger in populations east of the Sayan Mountains (between 73.1% and 93.7%). The largest East Asian genetic contributions are identified in Inner Mongolia (93.7%), nearest to territories primarily associated with Chinese civilization. This pattern of East Asian contributions throughout the Asian steppes but greater in the east is consistent with gene flow from East Asia, perhaps spread in part by waves of expanding Mongolic, Tungusic, and Turkic cultures that emerged in Asia after adopting new horse based cultures from neighboring Indo-European nomads¹⁷.

Smaller contributions from India are observed for the Hazara (6.7%) and Uyghur (9.1%), perhaps reflecting contacts with India mediated by Indo-Iranian cultures. Although they speak a Persian language, the Hazara are thought to be descended from Mongol armies and are sometimes associated with the Tocharian Kushans who built the Buddhas of Bamyán¹⁸.

Smaller American Indian like genetic contributions are identified for all studied Asian steppe populations. These contributions might reflect contacts with an older stratum of Mesolithic hunting and fishing populations in Siberia (associated with Uralic, Yeniseian, and Paleo-Siberian cultures) that has been assimilated by European and East Asian populations that have expanded into Siberia continually since the domestic horse was introduced in the Neolithic era¹⁹. Notably, American Indian contributions discussed in this article are largest in the ancient Xiongnu sample from the Egiin Gol burial site (used between the third century BC and the second century AD), perhaps suggesting that perhaps populations in Mongolia have become more East Asian since that time.

In general, the most notable contrast identified is between the Turkic steppe populations to the west (which are partly European) and the Mongolic and Tungusic populations to the east (which are not partly European). This substantial genetic continuity with European populations among Turkic steppe populations suggests that the Indo-European nomads did not disappear “into thin air,” but instead might have been involved in the creation of new Turkic cultures that retained traces of their Indo-European forebears in their lifeways and perhaps even their names. That is, perhaps the *Saka* and *Tokhar* of the ancient steppes became the *Sakha*²⁰ and *Türkler* of today.

¹⁵ See “Old Siberia,” <http://dnatribes.com/dnatribes-digest-2009-11-30.pdf>.

¹⁶ Further west in European Russia, substantially smaller East Asian genetic contributions were identified in the Turkic Bashkir. See “Old Siberia,” <http://dnatribes.com/dnatribes-digest-2009-11-30.pdf>.

¹⁷ A similar emergence of nomadic military confederations took place more recently in the Great Plains of North America, when the Lakota and other American Indian societies adopted the horse for use in hunting and warfare from European explorers and settlers.

¹⁸ See “Basic Genetic Contributions near the Hindu Kush,” <http://dnatribes.com/dnatribes-digest-2009-10-31.pdf>. It is worth noting that genetic characteristics of the Hazara (Indo-Europeanized Mongols) resemble those of Turkic steppe populations (perhaps descended from Mongolized Indo-Europeans?). Comparisons between the Hazara and earlier Kushans are sometimes rejected on the basis of a presumed clear-cut historical distinction between Indo-Europeans and later cultures of the Asian steppes. However, genetic data and a careful reading of the historical record instead suggest substantial continuity between earlier Indo-Europeans and later Turks in particular.

¹⁹ See “Old Siberia,” <http://dnatribes.com/dnatribes-digest-2009-11-30.pdf>.

²⁰ To the present day, the Turkic Yakut of far eastern Siberia call themselves *Sakhalar* (“Sakhas”). Yakut are discussed in more detail in “Old Siberia” at <http://dnatribes.com/dnatribes-digest-2009-11-30.pdf>.



Getting the Most from Your Testing

Once your core DNA Tribes® 15-Marker (Standard Kit) or 21-Marker (Premium Kit) testing is complete, we offer several options to keep your report current and to customize your analysis to deliver the information you want. (Prices are listed as of December 30, 2009 and are subject to change.)

Updating Your Analysis:

We incorporate new data in our algorithms on a periodic basis. This includes not only new reference data (our uniquely detailed and comprehensive database now includes 1,040 reference populations in all inhabited continents around the world), but also refinements to our algorithms and enhanced world region definitions.

New data also allow us to refine our genetic world region definitions. Based on a rigorous mathematical analysis of hundreds of ethnic and national reference samples, world regions express the actual genetic structure we have identified in world populations. These regional definitions both enhance your own analysis, and provide the necessary picture of world genetic structure to put your own results in a global context.

A map illustrating the populations and genetic regions currently identified in our analyses can be viewed at:

<http://dnatribes.com/populations.html>

Once lab testing is complete, your analysis can be updated at any times of your choice for \$24.99 through our secure online checkout at: <http://dnatribes.com/order.html>

Customizing Your Analysis:

DNA Tribes® offers several \$24.99 Add-On reports to customize your analysis for the information you want:

Extended Match Results: This is a comprehensive 26-page listing of your DNA match scores for all 940 reference populations in our database. We recommend this Add-On for customers who enjoy combing through lots of information.

Native American Panel: This two-page report lists your DNA match scores for all Native American tribal reference populations in our database. This can provide a closer look to complement Parts B and D of core results for customers who have substantial Native American origins.

African Panel: This two-page report lists your DNA match scores for all Sub-Saharan African reference populations in our database. This can provide a closer look to complement Parts B and D of core results for customers who have substantial African origins.

Central Asian Panel: This two-page report lists your DNA match scores for all Central Asian reference populations in our database, including Turkic populations as well as European Roma (Gypsy)



populations. This can provide a closer look to complement Parts B and D of core results for customers who have substantial European, Near Eastern, South Asian, or East Asian origins.

Once lab testing is complete, Add-On analyses can be selected at any time of your choice through our secure online checkout at: <http://dnatribes.com/order.html>

DNA Tribes® Europa: A Detailed Comparison to European Sub-Regions:

DNA Tribes® Europa provides the most detailed and complete analysis of European autosomal genetic structure available. DNA Tribes® Europa provides your DNA match scores for 17 genetic sub-regions of Europe, which is substantially more robust than the individual population matches in Parts B – C of core results and more detailed than the European world regions referenced in Part D of core results.

More information about DNA Tribes® Europa is available at:
<http://dnatribes.com/dnatribes-europa.html>

Expanding Your Analysis with a 21 Marker Upgrade:

For customers who have completed 13-marker or 15-marker testing with DNA Tribes®, we now offer a 21 Marker Upgrade. This includes lab testing of additional STR marker systems, which provides a closer comparison of your own DNA to world populations for greater accuracy and power of exclusion. The incorporation of additional marker systems can confirm or clarify your initial 13 or 15-marker results, and includes an update to all Add-On analyses previously ordered for your kit.

21 Marker Upgrades are available for \$119.99 through our secure online checkout at:
<http://dnatribes.com/order.html>

Researching Your Results:

Each person's DNA Tribes® results are one of a kind and express their own unique collection of genetic material inherited from both paternal and maternal ancestors. However, human genetic relationships involve a complex hierarchy of relationships, from individual to family to ethnic group to genetic region to global population structure. A library of articles based on DNA Tribes® original ongoing research and analysis of world genetic structure is available free at:

<http://dnatribes.com/library.html>