

## THE GENETIC AND LINGUISTIC EVIDENCE FOR THE XIONGNU-YENISSEIAN HYPOTHESIS<sup>1</sup>

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The Xiongnu, also known as the ‘Huns’, were a confederation of different nomadic tribes (cf. Bregel 2003, Kroll 2015) and were located in the northern parts of China from the 3<sup>rd</sup> century BC to the 1<sup>st</sup> century AD. Even though the Xiongnu had a crucial influence on the Han-Chinese and other peoples from the Central Plains, their ethnic and linguistic phylogenetic position still remains unclear. Several theories concerning the origin and the historical development of the Xiongnu have been proposed. In order to shed a new holistic view on the origin and the ethno-linguistic identity of the Xiongnu, this study encompasses historical, archaeological, linguistic and genetic approaches.

### The history of the Xiongnu

The Xiongnu<sup>2</sup> were a confederation of different nomadic tribes (cf. Bregel 2003, Kroll 2015). According to the Chinese historical documents, e.g. *Hanshu* 《漢書》 (*HS*), *Hou Hanshu* 《後漢書》 (*HHS*), the interaction between the Xiongnu and the peoples of the Central Plains *Zhongyuan* 中原 lasted from the Warring States period (*Zhanguo* 戰國, 475 BC to 221 BC) on to the early Eastern Han dynasty (23 AD to 220 AD). These sources take the view that the Xiongnu originated in the unrecorded pre-history. Later, during the Southern and Northern Dynasties period, *Nanbeichao* 南北朝 they became extinct (cf. Table 1<sup>3</sup>).

The ancestors of the Xiongnu were likely to be one of the northern Mongolian groups in the northern part of the Gobi desert who maintained close interactions with the Slab Grave culture.<sup>4</sup> On the Mongolian grasslands, the biggest and earliest tombs of the Xiongnu are located in the Khunui-göl valley (cf. Ma 2005: 143). The river known as the ‘Xiongnu River’ in the HS can be identified as the Khunui-göl, that was the political centre of the Xiongnu. At the same time, this location is most likely the place of the Xiongnu’s origin (cf. Ma 2005: 149).

On the southern flank of the eastern Gobi desert, the agricultural and pastoral areas around the Yin mountains (Yin Shan 陰山) might be the geographical location where the ancestors of the Xiongnu originally resided (cf. Ma 2005: 30). The Xiongnu Empire arose on the Ordos plateau that is on the southern side of the Daqing mountains (大青山<sup>5</sup>) of Inner Mongolia.

In the 3<sup>rd</sup> century BC, Tümen, the third recorded leader of the Xiongnu, also known as Chanyu<sup>6</sup> (单于) of the Xiongnu, settled the Xiongnu in Inner Mongolia to the east of Bughot (cf. Lin 2007:4). Tümen’s son, Modu Chanyu (冒顿), executed his father and established the Xiongnu empire by subduing the neighbouring tribes such as the Donghu 東胡, the Xiru (an ancient Indo-

**Table 1:** The chronological development of the Xiongnu people

<b>Time</b>	<b>Historical events</b>
ca. 6000 B.C.	Huang Emperor expels Xunyu.
2070 B.C.~1600 B.C.: Xia	Xunyu supports the Xia dynasty.
1600 B.C.~1046 B.C.: Yin & Shang	3 years war between Guifang and the Yin under the reign of the Wuding Emperor
ca. 1046 B.C.~771 B.C.: Western Zhou	Xianyuan invades the Zhou
770 B.C.~ 221 B.C.: Spring & Autumn~ Warring States	Disappearance of Xunyu, Guifang, Xianyuan Formation of more than 100 nomadic peoples, e.g. Rong and Di.
300 B.C.	Appearance of the Xiongnu The beginning of the Iron Age
The Qin dynasty (221 B.C.~207 B.C.)	Chanyu Toumo is defeated by the Qin Fled to the north
209 B.C.~174 B.C.	Chanyu Modu sets up first nomadic dynasty in present-day Mongolia
127 B.C.: Emperor Wudi of Han, (Yuanshuo 2 year)	General of Han Wei Qing defeats Loufan & Baiyang Xiongnu give up Henandi
124/123 B.C.: Emperor Wudi of Han, (Yuanshuo 5/6 year)	Wei Qing defeats the Xiongnu The majority of the Xiongnu head back to Mobei
119 B.C.: Emperor Wudi of Han (Yuanshou 4 year)	Wei Qing, Huo Qubing defeat the Xiongnu The Xiongnu leave their place of origin
60 B.C.~57 B.C.	Collapse of the Xiongnu leadership
56 B.C.~36 B.C.	The Xiongnu decompose into disarray Chanyu Huhanye submits to the Han Unification of the Xiongnu by Chanyu Huhanye
48 A.D.: Emperor Guangwudi of the Eastern Han	Separation of Xiongnu into southern and a northern branch
91 A.D.	Han defeat the Xiongnu in Jinwei Mountains (the Altai Mountains) Bei Chanyu fled to Wusun and Kangju
304 A.D.~329 A.D.	The southern Xiongnu and the Tuge Hu form "Han—Qian Zhao" in Shanxi and Shaanxi
ca. 350 A.D.	The northern Xiongnu assassin the leader of the Alani kingdom and annex the region
401~460 A.D.	Linsong Lushui Hu set up "the Northern Liang" in the Hexi Corridor.
407~431 A.D.	The Xiongnu of Tiefu renames Helian, and constitutes "Daxia" in the Tongwan City(the western Yulin Shaanxi)

European people known as the Yuezhi 月氏<sup>7</sup>), Loufan 婁煩, Henan Wang, Hunyu 浑庾, Dingling 丁令 零蘭/靈<sup>8</sup>, Jiankun 坚昆, Xinli 薪犁, Loulan 樓蘭, Wusun 烏孫, Hujie 呼揭, and Ulaangom, Tagar, Pazyryk from Southern Siberia to the Altai Mountains (cf. Lin 2007:13; Ma 2005:166). It was the most powerful and prosperous period of the Xiongnu, who claimed sovereignty over the area from the Liao River (Liaohe 遼河) in the east, Pamir in the west, Baikal in the north, and the Great Wall in the south (cf. Ma 2005:1) (cf. Figure 1).

During the reign of Emperor Wudi of the *Han*, the *Han* defeated the Xiongnu and let the latter to withdraw to Mobei (cf. Lin 2007:6). Afterwards, during the Eastern *Han* Dynasty, the Xiongnu broke up into a northern and a southern part. The northern Xiongnu went into exile to the west from 91 AD, and the southern Xiongnu submitted to the *Han* dynasty (cf. Wang & Cong 2010: 174f., 190).

After the northern Chanyu fled, Mobei fell into disorder (cf. Lin 2007:98f): 1. The northern Chanyu's brother, the king of Zuoguli (Yuchujian 於除鞬) moved to the Lake Barköl (Pulei Hai 葡類海), and submitted himself to the *Han* people (→ *Han* dynasty); 2. The northern Chanyu moved to Wusun, and stayed in Sogdiana (South-eastern Kazakhstan); 3. The rest in Mobei joined the Xianbei 鮮卑<sup>9</sup>. The leading groups of the Xianbei consisted of the clans Yuwen, Tuoba and Murong. The Yuwen evolved from the Yuwen clan of the Xiongnu, who moved towards the eastern Yinshan mountains 陰山. In the 2<sup>nd</sup> century AD, the Yuwen clan of Xiongnu migrated eastwards, ruled over the Xianbei people in Xar Moron river (Mong. Шар Мөрөн), joined the tribal military alliance which was built up by Tanshihuai (Xianbei's leader), and finally changed into the Yuwen to Xianbei; 4. The rest stayed in the northwest of Mobei and remained powerful from the end of the 4<sup>th</sup> century to the beginning of the 5<sup>th</sup> century, until Rouran (柔然) arose and defeated them (Figure 2).

The northern Chanyu fled to Wusun, Sogdiana, and extinguished the kingdom of Alani and then without any historical records. The remaining of the Xiongnu can therefore only be traced back to the *Han* dynasty. The geographic distribution of the Xiongnu's artefacts ranges from Barkol, Turpan, Hejing to Kazakhstan. It can be said that the Xiongnu who moved towards the west were more outlasting than the eastern groups (cf. Ma 2005: 327).

The often cited connection between the Xiongnu and the Huns is caused by the fact that historical records in the western non-Chinese sources interchangeably used 'the Huns' and 'the Xiongnu'. However, the exact relationship between them remains unclear (Figure 3). During the Wei 魏, Jin 晉 and Southern and Northern period, the southern Xiongnu people who submitted to the *Han* erected several military stations. From 304 AD to 329 AD, the southern Xiongnu and the Tuge established the *Han-Qian Zhao* 漢前趙 kingdom

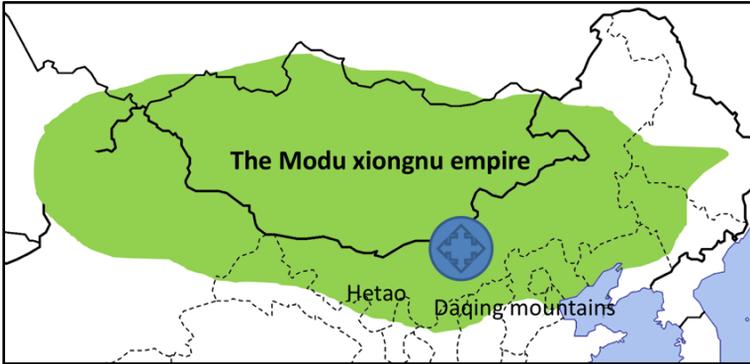


Figure 1: The Modu Xiongnu Empire

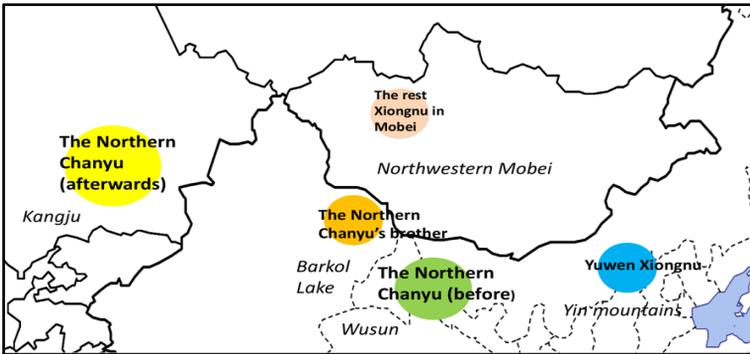


Figure 2: The distributions of the Northern Xiongnu after they fled

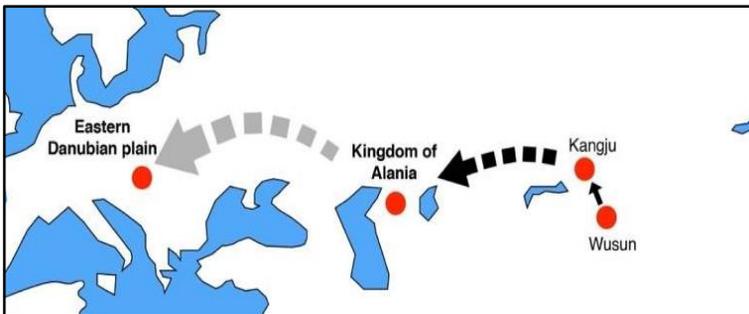
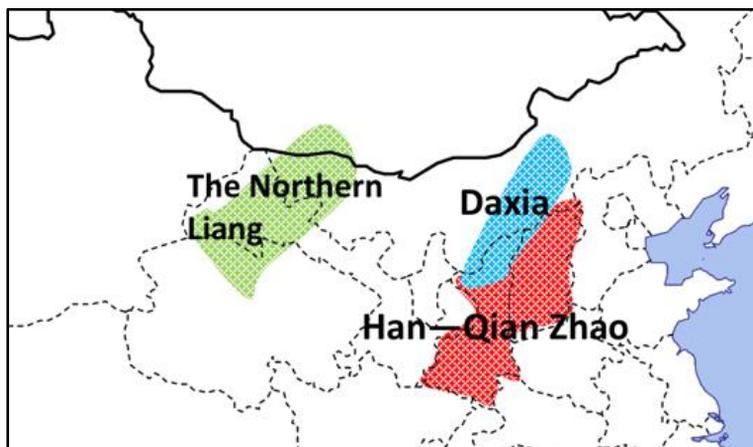


Figure 3: The possible escaping route of the Northern Chanyu



**Figure 4:** The kingdoms set up by the Southern Xiongnu during the period of the Wei, Jin, and Southern and Northern Dynasties

in Shanxi and Shaanxi. From 401 AD to 460 AD, Linsong Lushui Hu 廬水胡 set up the northern Liang kingdom in the Hexi Corridor<sup>10</sup> 河西走廊. In addition, a group called the Xiongnu of Tiefu 铁弗 emerged from the northern Xiongnu and Tuoba Xianbei. In the Sixteen Kingdoms of Five Nomad Groups Period, the Xiongnu of Tiefu changed the name to Helian, and constituted Daxia (大夏) in Tongwan Castle 统万城 (western Yulin, Shaanxi) from 407 AD to 431 AD (Figure 4).

### **The main distinctions between the southern and the northern Xiongnu**

Based on the historical documents and the archaeological excavations, human palaeontologists categorized the excavated skeletons of the Xiongnu into different morphological types (Table 2<sup>11</sup>).

Tumen (1987) examined 38 skulls of the Xiongnu relicts and concluded that the remains discovered in Mongolia and Trans-Baikalia were the same type, even though the facial disposition the Trans-Baikalians were positioned slightly higher than those from Mongolia (cf. Zhang & Zhu 2003:35).

Pan Qifeng divided the physiological development of the Xiongnu into three periods: the early period, the period of interaction and the period of separation. The early period is characterised by a Mongoloid type mixed with East and North Asians. The second period is defined by European and Mongoloid types. Pan furthermore inferred that the major composition of the northern Xiongnu was Palaeo-Siberian, different from the skeletons excavated in Datong 大通

**Table 2:** The skeleton types of the Xiongnu

Region	Type
Mongolian Plateau	Mongoloid, N.Asian (Short skull-shaped Siberian)
Trans-Baikalia	Long skull-shaped Palaeo-Siberian, a little mixed with Europe, probably mixed with Far East people.
Central Asia	Miscegenation of Mongoloid and European
Noin Ula, Khuni Gol	Palaeo-Siberian
Xinjiang	Miscegenation of Mongoloid and the original Europea
Qinghai, N.Shannxi	Similar to the Xiongnu on the Mongolian plateau
Dabaodang cemetery, Shenmu, Shaanxi	Similar to Mongoloid, N.Asian
Taohong Bala tombs	Similar to Mongoloid, N. Asian
Qinghai Datong Xiongnu tomb	Similar to the modern Mongolian, probably closer to Mongoloid, N. Asian, no miscegenation with other races

(Northern Shanxi) (cf. Zhang & Zhu 2003:35).

Han Kangxin expresses his restraints about the Mongoloid origin of the Xiongnu. More commonly, it was assumed that they originated from the region which encompasses southern Siberia and parts of Central Asia. Meanwhile, the European factors might give hints about their ancestry of local residents.<sup>12</sup> In addition to that, Zhu Hong stated that the skeletons in Russian Baikal and Mongolia sorted to Palaeo-Siberian, and lately added some European factors. The Xiongnu people which were found in China are characterized by the types of North and East Asian Mongoloids (cf. Zhu 1994:7-13). However, there is no certainty about the genetic origin of Xiongnu.

Another theory suggests that the two distinctive physical appearances of the Xiongnu imply that they were two distinctive ethnic groups. The descendants of the Chinese Bronze culture are people who belong to the southern Xiongnu, while those of the Beiyuan stone tomb culture can be related to the northern Xiongnu. These two parts might have a significant difference in physical appearance and culture (Table 3<sup>13</sup>). Therefore, the northern and the southern Xiongnu were consequently categorised as North and East Asians. The two cultures also show some distinctions, e.g. the tomb constructions of the Xiongnu have two patterns.

One is called the northern Chinese small tomb which is rectangular, shaft hole, no signs on the ground, little wooden coffins and animal sacrifice. The other one is known as the Mongolian and Trans-Baikalian big tomb and features

**Table 3:** The physical distinctions between the Southern and the Northern Xiongnu

Region/tomb	time	type
Taohong Bala, Yaozi Zhun county	Spring & Autumn ~Warring States	Mongoloid, N. Asian
Maoqinggou, Yinniugou	Spring & Autumn ~ Warring States	E.& N. Asian
Shangsunjia Zhai xiongnu cemetery	The late East Han dynasty	Mainly Mongoloid, north Asia type, a little east Asia type
Mongolia, Transbaikalia	-	Mongoloid Palaeo-Siberian type (a piece of north Asia type)

a circular pile on the ground, or stones around the tomb. Compared with the small tomb, the big tomb has more wooden coffins and almost no animals sacrifice. These are the obvious differences between the northern and the southern Xiongnu in tomb culture (cf. Tian & Guo 2004:475). Yet, their physical appearance provides no apparent discrepancies at all (cf. Ma 2005:315-316).

### The relationship between the Xiongnu and the Huns

In the 18th century, the French orientalist Joseph de Guignes (1721-1800) claimed that the Huns originated from the Xiongnu.<sup>14</sup> The American-German sinologist Friedrich Hirth (1845-1927) completed this hypothesis in 'Huns and Xiongnu in the Volga river', posited that the Xiongnu people moved westwards. According to Hirth, they migrated westwardly to the Volga river in the 4<sup>th</sup> century and then entered Europe in the end of 4<sup>th</sup> century.

In the middle of the 20<sup>th</sup> century, due to the lack of supporting evidence, scientists rejected this hypothesis. The Xiongnu and the Huns are different in life styles and customs. The Xiongnu are more advanced than the Huns in the fighting techniques and the social stratification. (cf. Liu 2010: 68-74). Based on the above evidence, the western non-Chinese history experts suggest that the origin of Huns is unknown. However, most Chinese scholars still claim that the Huns stemmed from Xiongnu (cf. Liu 2010: 64). Some Chinese scholars consider that the westward movement of the Xiongnu should not be understood as the migration by the northern Xiongnu, because the Xiongnu continually migrated to the west from the Mongolian Plateau (cf. Chen 2007: 471). Even some Chinese scholars consider that a tool called 'Fu' 鍬 which was excavated in Tortel (Hungary) was inherited from the Xiongnu. According to this evidence, the Huns may originate from the Xiongnu (cf. Ma 2004: 10). The skulls of Huns in Hungary ancient tombs and 'Masonszentjanos'<sup>15</sup> were both classified as Mongoloid (cf. Ma 2005: 187).

According to the history records, in the 5<sup>th</sup> century, Attila the Hun recalled his ancestors and proclaimed that they could be traced back to the famous Xiongnu leaders 1000 years ago. The names he listed mostly correspond to the

ones in the Chinese historical documents.<sup>16</sup> However, without further decisive evidence, the relationship between the Huns and the Xiongnu cannot be ultimately determined. It is most possible that the Huns were a tribe from the Ural region which were dominated by the superior Xiongnu.

### **The language of the Xiongnu people**

In Chinese historical documents, i.e. *Shiji* 《史記》 (SJ) and the HS, which were both compiled during the *Western Han*, there are approximately 190 words which might be of Xiongnu origin. The HHS exhibits 57 words and the *Jinshu* 《晉書》 has 31 words. Based on historical artefacts, early scholars thought that language was closely related to Slavic and Finno-Ugric (cf. Chen 2011: 62). The current leading theory in the western non-Chinese area is that the language might be related to a Turkic language. Another theory is that it might be phylogenetically affiliated to Altaic, Iranian or Yenisseeian (cf. Bailey 1985: 25-41; Vovin 2000: 87-104).

Other theories are that the Xiongnu language which was spoken in Trans-Baikalia was similar to Mongolian. The Xiongnu language spoken in Central Asia originated from Mongolian and was influenced by Turkic languages (cf. Li 2007). Shiratori Kurakichi analysed 17 Xiongnu words by focusing on the etymology and phonology of these words. By comparing them with Altaic languages, Kurakichi concluded the numbers of the 17 Xiongnu words belong to Mongolic, Turkic and Tungusic are two, two and three, separately. In the rest of the words, there are one word shared by Turkic and Mongolic, four words shared by Mongolic and Tungusic, and five words shared by Mongolic, Turkic and Tungusic.<sup>17</sup> A similar result was achieved by Fang Zhuangqiu. Fang found that in the 21 Xiongnu names, there are 11 show a strong similarity to Turkic, 12 to Tungusic, and 20 to Mongolic (cf. Fang 1930).

Based on the analysis of the phonology and the lexicon, Pulleyblank (1962) posited that the Xiongnu language is not part of the Altaic language family. The lexicon of the Xiongnu language exhibits similarity to that of Yenisseeian. Therefore, Yenisseeian people might be the descendants of the Xiongnu.

After the demise of the Xiongnu Empire, the people moved towards Siberia. Some of the Xiongnu entered the northern parts of Afghanistan and western Turkestan, then they managed to get access to the Yenisei River (cf. Wang 2005:508-509).

The analyses undertaken by scholars, e.g. Fang, Pulleyblank, Kurakichi, suggest that in order to find out the origin of the Xiongnu, it is crucial to include the linguistic data of the Yenisseeian language family.

### **The research about the genes of the Xiongnu**

In terms of genes and genetics, there are significant differences in genetic markers among populations of different geographic ancestries. These markers

can further be applied to distinguish dissimilar geographic groups. Presently, the most widely used genetic markers are the Y chromosome haplogroups. The results for Y chromosomes of Xiongnu are summarized in Table 4 (cf. Keyser-Tracqui *et al.* 2004:325; Petkovski *et al.* 2006; Kim *et al.* 2010; Zhao *et al.* 2010; Lin 2007: 74-79).

The Y chromosomes of the Xiongnu people exhibit four different haplogroups: Q, C, N, R (Figure 5). The Q-haplogroup is common in Xiongnu and is mainly found in Native Americans, fewer in north Asians. In modern populations, the R-haplogroup is widely distributed throughout Central Asia, east and south Europe. The N-haplogroup is mainly found in the Uralic speaking people, fewer in North and East Asians. The C-haplogroup is detected in Mongolians and Tungus people. Notably, in the nearby Yenisseian population Ket, the Q-haplogroup is found in approximately 94% of the population (Table 5) (cf. Kharkov 2007: 551-562). It can be inferred that, in North Asia, the Q-haplogroup is a major type only in Yenisseian Ket, which is in accordance with the Xiongnu data. The genetic evidence hence corroborates the linguistic relationship between the Xiongnu and the Yenisseian people.

### **Exploring the relationship between the Xiongnu and the Yenisseian**

Thus far, linguistic and genetic evidence support the Xiongnu-Yenisseian hypothesis. This hypothesis is further backed with archaeological excavations conducted in the southern parts of Siberia around the Yenissei River. A group of archaeologists found suggestive remains which dated from the 2<sup>nd</sup> century BC to the 1<sup>st</sup> century AD (Table 5<sup>18</sup>). Without gaining further interdisciplinary support, it is yet too early for a conclusive statement.

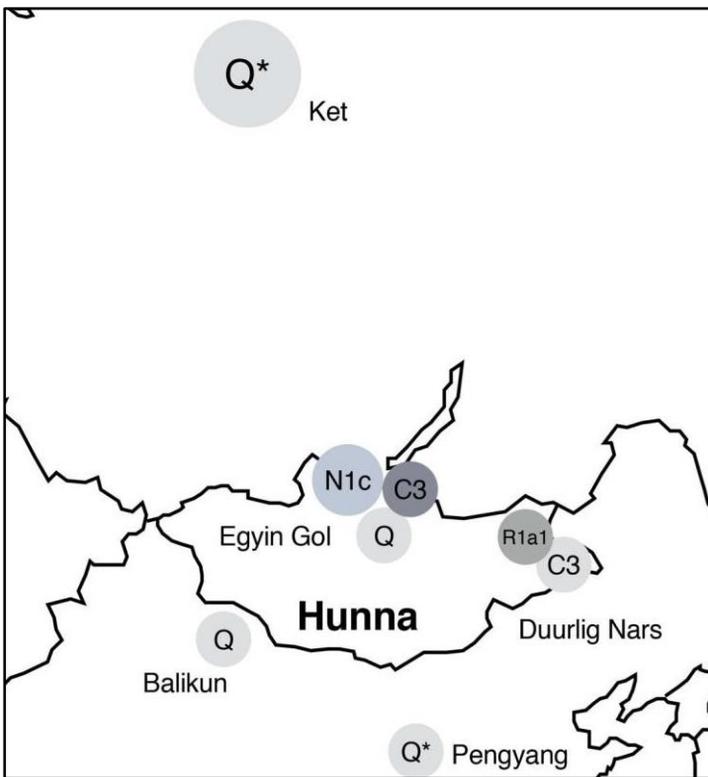
The two Xiongnu tombs that exist the Q-haplogroup samples don't correspond with the historical records of the Xiongnu's migrating to the Yenissei River. Therefore, it was possible for the Xiongnu in Barkol to move to the Yenissei River and settle there. Their Y chromosomes also belong to the Q-haplogroup.

After making sure the time of the Barkol samples, the conclusive results may be obtained. The Xiongnu remained in Mobei finally settled in the vicinity of the Yenissei River. The disappearance of the Xiongnu in this geographic area might be explained with the suggestive idea that the ancestry of the Ket people is tightly connected to the Xiongnu. However, this idea cannot be sustained with genetic evidence.

The Xiongnu that fled to Wusun were divided into two parts. Most of them moved to Kangju, and then defeated the kingdom of Alani. The rest remained in Wusun. There is no evidence that this branch of Xiongnu migrated to the Yenissei River.

**Table 4:** The remaining of the Xiongnu between the 2<sup>nd</sup> century and the 1<sup>st</sup> century

Region	Excavation
Kosogol, Uzbur, Mid-W. Yenisei River	11 bronze artisanal handicraft with typical patterns of the Xiongnu's, 15 goat heads beaulieu pattern buckles, buried in a copper kettle
Abakan grassland, W. Yenisei River	The Xiongnu's rock carvings, palace ruins built by Han-style materials, filled with the Xiongnu's and local remains; so-called Abakan palace
Minusinsk Basin, E. Yenisei River	The Xiongnu's rock carvings, Bronze plaques with special animal patterns, bronze rings, spoon-shaped buckles

**Figure 5:** The Y chromosome haplogroups of the Xiongnu and the Yeniseian Ket.

**Table 5:** The Y chromosome haplogroups of the Xiongnu samples

Tomb name	Time	Sample size	Q	Q1a*	Q1a1	Q1b	R1a1	N1c	C	C3
Dong Heigou, Barko, Tianshan Mountains, China	early Western Han dynasty: Chanyu Modu set up the first nomadic dynasty.	12	2	6		4				
Peng Yang, SE Ningxia, China	Eastern Zhou: (Spring & Autumn ~ Warring States) (770B.C.~ 256B.C.) :Nomads of the north mixed together.	4			4					
Egiin Gol 1 cemetery, N.Mongolia	ca. the 3 <sup>rd</sup> century B.C.: First appearances	3	1					1	1	
Del lige, Khentii Province, NE. Mongolia	late Western ~ early Eastern Han: diplomatic relationship between Han and Xiongnu deteriorate	2					1			1
Dong Heigou, Barkol, Tianshan Mountains, China	Eastern Han: The northern Xiongnu migrated westwards	1			1					

## Conclusion

The present study on the origin of the Xiongnu combined the disciplines of genetics, linguistics, philological and archaeological studies. According to these studies, we were able to deduce that the Xiongnu were with a high probability a Yenisseeian-speaking people. This result is backed by the genetic findings that the Y chromosome Q-haplogroup has high frequencies in the Xiongnu and the Ket people. Comparison on the basis of the language which was spoken by the Xiongnu and the Yenisseeian language family tells us that both languages share similarities. The third supporting information which supports the Xiongnu-Yenisseeian hypothesis is derived from the archaeological excavations. The Xiongnu not only exhibit a cultural affiliation but also a geographic closeness to the Yenisseeian people.

Even though the present study encompasses different scientific approaches, we still need more genetic and archaeological evidences in order to verify the Xiongnu-Yenisseeian hypothesis.

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*Notes*

1. Ed. This article uses the Pinyin transcription. For reasons of simplicity, tones for pinyin in the running text have been omitted, except in the linguistic annotations. The Old Chinese (OC) and Middle Chinese (MC) forms are based on Baxter & Sagart (2014). Chinese historical documents are cited in italic pinyin and the characters are put in doubled square brackets, i.e. 《 》. Furthermore, the name ‘China’ is used only in the most restricted sense, i.e. in the most modern political sense. Such terms and names should be understood as mere categories and not to be anachronistically projected back into another time depth.
2. Ed. 匈奴 Xiōng-nú < xjowng-nu < \*qh(r)oŋ-nʰa.
3. Data source: Lin 2007: 1-6, 15.; Jinshu 《晉書》, Vol. 97: 67 卷九十七列传第六十七, Si Di 四狄, Beidi Xiongnu 《北狄匈奴》; Shiji 《史记》, Vol. 120 卷一百十《匈奴列传》; Ma 2005.
4. Cf. Ma (2005: 28) Shibamu wenhua 石板墓文化.
5. Ed. part of the Yin mountain range in Inner Mongolia.
6. 單于 chányú < dzyen-hju < \*dʰar-gʷ(r)a.
7. Ed. yuè-zhì < ngjwot- dzyeX < \*ŋʷat-k.deʔ
8. Ed. Schuessler (2014: 276) compares 零蘭/靈 with Tägräg who spoke an “Altaic/Turkic” language.
9. Ed. According to *Tongdian* 《通典》(卷 194-200) composed by the Tang scholar Du You 杜佑, the term Beidi 北狄 comprises the following groups: Xiongnu 匈奴, Wuhuan 烏桓, Xianbei 鮮卑, Murongshi 慕容氏, Gaoju 高車, Tujue 突厥 (Turks) and Qidan 契丹 (Khitans). Schuessler (2014: 281) provides the information that the Xianbei can be related to the Särbi people, “Proto-Mongols” who defeated the northern Xiongnu in 85 CE.
10. Ed. also known as Gansu corridor.
11. Data source: cf. Wu (2005:12) for Russian data; Chen 2003 (cf. Chen 2011:57); Han *et al.* (2011:132-159); Pan and Han (1984:370f.)
12. Cf. Chen 2011:57. ed. Sai (塞 OC \*[s]ʰək, Saka, Scythians), Wusun (烏孫 OC \*[ʔ]ʰa sʰun).
13. Data source: Tian & Guo 2004:475-478.
14. Cf. Liu 2010: 63f., editors note: Guignes 1756.
15. Ed. a) Moson (Germ. Wieselburg); b) Mosonszentjános (Moson Szent János), near Jánossomorja in Győr-Moson-Sopron county, Hungary.

16. cf. Tian & Guo 2005: 511, ed. Bury 1889.
17. Mongolian: 1 match; Turkic: 2 matches; Tungus: 3 matches; Mongolian & Turkic: 1 match; Mongolian & Tungus: 4 matches; Mongolian, Turkic, Tungus: 5 matches.
18. Data source: cf. Ai'ardi (1996), Jia (2002:38) & Ma (2005:172).

### *References*

- Ai'ardi, Kelaosi 艾尔迪, 克劳斯. 1996. *Ou-Ya dalu faxian xiongnuren he xiongnu leixing de tong fu* 欧亚大陆发现匈奴人和匈奴类型的铜釜 [Discoveries of Xiongnu and Xiongnu-like copper cauldrons in the Eurasian continent]. *Ou-Ya Yanjiu* 欧亚研究 (*Eurasian Research*) 67.
- Bailey, Harold Walter. 1985. *Indo-Scythian Studies: Being Khotanese Texts, VII*. Cambridge: Cambridge University Press.
- Baxter, William and Laurent Sagart. 2014. *Old Chinese: a new reconstruction*. Oxford: Oxford University Press.
- Bregel, Yuri. 2003. *A Historical Atlas of Central Asia*. Handbook of Oriental Studies. Part 8 Uralic and Central Asian Studies. Leiden: Brill.
- Bury, Bagnell John. 1889. *History of the Later Roman Empire, 2 vols*. London: Courier Corporation.
- Chen, Liang. 2003. An Anthropological Study on Xiongnu, Xianbei and Khitan. PhD thesis. The National Library Editions.
- Chen, Lizhu. 2011. Assessment of Domestic Sources of Scholars of Xiong Nu. *Academics*, 9.
- Chen Xujing 陳序經. 2007. *Xiongnu Shigao* 匈奴史稿 [A Draft History of the Xiongnu]. Beijing: Zhongguo Renmin Daxue Chubanshe.
- Derenko, Miroslava, Boris Malyarchuk, Galina Denisova, Marcin Wozniak, Tomasz Grzybowski, Irina Dambueva and Ilia Zakharov. 2007. Y-chromosome haplogroup N dispersals from south Siberia to Europe. *Journal of Human Genetics*. 52: 763-770, doi:10.1007/s10038-007-0179-5.
- Jia Yiken 贾衣肯 [Jarken, Tursun]. 2002. Cong beifang manren (gongyuanqian 8 shiji) he xiongnu muzang kan gudai xiongyaliren de sangzang xisu (yiwen) 从北方蛮人 (公元前8世纪) 和匈奴墓葬看古代匈牙利人的丧葬习俗 (译文) [The funeral customs of the ancient Hungarian people from the perspective of the Northern Barbarians (8th century BCE) and the Xiongnu tombs]. *Xibei Minzu Yanjiu* 西北民族研究 [*Northwestern Minorities Research*] 3:29-42.
- Jinshu 《晋书》. Beijing: Zhonghua shuju 中華書局.
- Fang Zhuangyou 方壮猷. 1930. Xiongnu yuyan kao 匈奴語言考 [Analysing the Language of the Xiongnu]. *Guoxue jikan* 國學季刊 [*A Quarterly Journal of National Studies*]. 2.4.
- Guignes, Joseph de. 1756. *Histoire générale des Huns, des Turcs, des Mongols, et des autres Tartares occidentaux, & avant et depuis Jésus-Christ jusqu'à présent; précédée d'une introduction contenant des tables chronologiques & historiques des princes qui ont régné*

*dans l'Asie. 3 vols.* Paris: Desaint & Saillant.

- Han, Kangxin 韩康信. 1991. Anthropological Study of the Ancient Inhabitants of Xinjiang and Physical appearances of the Uyghur People. *Western Regions Studies*, 2: 1-13.
- Han Kangxin 韩康信. 1992. Sai, Wusun, Xiongnu he Tujue zhizhong renleixue 塞, 乌孙, 匈奴和突厥之种族人类学特征. *Xicheng yanjiu* 西域研究 2:3-23.
- Han, Kangxin 韩康信. 1993. The Study of the Human Crania from Alagou Cemetery, Xinjiang. *Collected Papers about the Racial Anthropological Study of the Ancient Xinjiang Inhabitants*. The People's Press of Xinjiang.
- Han, Kangxin 韩康信. 1994. The Study of Ancient Human Skeletons from Xinjiang, China. *Sino-Platonic Papers*, 51: 1-13.
- Han Kangxin 韩康信 et al. 2001. *Shaanxi Shenmu Dabaodang Han cemetery skeleton survey report*. Beijing Science Press. 132-159.
- Keyser-Tracqui, C., P. Blandin, F.X. Ricaut, E. Petkovski, E. Crubézy, B. Ludes. 2004. *Does the Tat polymorphism originate in northern Mongolia?*. International Congress Series 1261: 325-327.
- Kharkov, V. N., V. A. Stepanov, O. F. Medvedeva, M. G. Spiridonova, M. I. Voevoda, V. N. Tadinova, V. P. Puzyrev. 2007. Gene Pool Differences between Northern and Southern Altaians Inferred from the Data on Y-Chromosomal Haplogroups. *Russian Journal of Genetics*. 43.5: 551-562.
- Kijeong Kim, Charles H. Brenner, Victor H. Mair, Kwang-Ho Lee, Jae-Hyun Kim, Eregzen Gelegdorj, Natsag Batbold, Yi-Chung Song, Hyeung-Won Yun, Eun-Jeong Chang, Gavaachimed Lkhagvasuren, Munkhtsetseg Bazarraghaa, Ae-Ja Park, Inja Lim, Yun-Pyo Hong, Wonyong Kim, Sang-In Chung, Dae-Jin Kim, Yoon-Hee Chung, Sung-Su Kim, Won-Bok Lee and Kyung-Yong Kim. 2010. A western Eurasian male is found in 2000-year-old elite Xiongnu cemetery in Northeast Mongolia. *American Journal of Physical Anthropology*. 142.3: 429-440.
- Kroll, Paul W. 2015. *A Student's Dictionary of Classical and Medieval Chinese*. Leiden: Brill.
- Li Fajun 李法军. 2007. Xiongnu de yuyan shuxing: laizi kaoguxue de xiansuo 匈奴的语言属性: 来自考古学和人种学的线索 The Language of the Xiongnu: Clues from Archaeology and Physical Anthropology. 青海民族研究 (社会科学版) *Journal of Qinghai Nationalities Research (Social Science Edition)*. 4: 20-25.
- Lin Gan 林幹. 2007. *Xiongnu Shi* 匈奴史 [History of the Xiongnu]. Hohhot: Neimenggu daxue chubanshe 内蒙古大学出版社.
- Liu, Yangang 刘衍钢. 2010. Gudianxue shiye zhong de "Xiong" yu "Xiongnu" 古典学视野中的“匈”与“匈奴” [An Analysis of the “Huns” and the “Hsiung-nu” in A Perspective of Classical Studies]. *Gudai wenming* 古代文明 [The Journal of Ancient Civilizations]. 4.1: 63-113.
- Ma, Liqing 马利清. 2004. *Guanyu Bei Xiongnu xi qian de kaoguxue xin tansuo* 关于北匈奴西迁的考古学新探索 [A new archaeological exploration of the northern Xiongnu who

*migrated to the West*]. Neimenggu shehui kexue 内蒙古社会科学. 1.

- Ma, Liqing 马利清. 2005. *Yuan Xiongnu: Xiongnu lishi yu wenhua de kaoguxue tansuo* 原匈奴: 匈奴历史与文化的考古学探索 [The Origin of the Xiongnu: An Archaeological Exploration of the Xiongnu's History and Culture]. Hohhot: Nei menggu daxue chubanshe 内蒙古大学出版社.
- Ma, Liqing 马利清. 2007. *Guanyu Xiongnu renzhong de kaoguxue yu renleixue tansuo*. 关于匈奴人种的考古学与人类学探索 [An Archaeological and Anthropological Study of the Xiongnu]. *Zhongyang minzu daxue xuebao (zhexue shehui kexue ban)* 中央民族大学学报 (哲学社会科学版) [Journal of the Central University for Nationalities (Philosophy and Social Science Edition)]. 173: 4. 48-54.
- Pan Qifeng 潘其凤 and Han Kangxin 韩康信. 1984. *Nei menggu Taohong Bala Gumu he Qinghai Datong Xiongnu mu rengu de yanjiu*. 内蒙古桃红巴拉古墓和青海大通匈奴墓人骨的研究 [Research on the Inner-Mongol Taohong Bala cemetery and Qinghai Datong Xiongnu cemetery skeletons]. *Kaogu* 考古 [Archeology]. 4: 367-375.
- Petkovski, E., C. Keyser-Tracqui, E. Crubézy, R. Hienne, Ludes B. 2006. MALDI-TOF MS analysis of Y-SNPs in ancient samples. *International Congress Series*. 1288: 25-27.
- Pulleyblank, Edwin George. 1962. The Consonantal System of Old Chinese. *Asia Major* 9. 58-144, 206-265.
- Pulleyblank, Edwin George. 2000a. The Hsiung-nu. *History of the Turkic Peoples in the Pre-Islamic Period* (Philologiae et Historiae Turcicae Fundamenta I), ed. by Hans Robert Roemer and Wolfgang-Ekkehard Scharlipp. Berlin: Klaus Schwarz. 52-75.
- Pulleyblank, Edwin George. 2000b. The Nomads in China and Central Asia in the Post-Han Period. *History of the Turkic Peoples in the Pre-Islamic Period* (Philologiae et Historiae Turcicae Fundamenta I), ed. by Hans Robert Roemer and Wolfgang-Ekkehard Scharlipp. Berlin: Klaus Schwarz. 76-94.
- Sawada, Isao 沢田勲. 1996. *Kyodo: kodai yuboku kokka-no kobo* 匈奴きょうど: 古代遊牧國家の興亡 [The Xiongnu: The vicissitudes of an ancient nomadic people]. Tokyo: Toho Shoten.
- Schuessler, Axel. (2014). Phonological Notes on Han Period Transcriptions of Foreign Names and Words, *Studies in Chinese and Sino-Tibetan Linguistics: Dialect, Phonology, Transcription and Texts*. 漢語與漢藏語研究: 方言, 音韻與文獻. ed. by Richard VanNess Simmons and Newell Ann Van Auken. Taipei: Institute of Linguistics, Academia Sinica. 249-292.
- Shiji 《史记》. Beijing: Zhonghua shuju 中華書局.
- Tian Guangjin 田广金 and Guo Suxin 郭素新. 2005. *Beifang wenhua yu Xiongnu wenming* 北方文化与匈奴文明 [Northern Culture and the Civilization of the Xiongnu people]. Nanjing: Jiangsu jiao yu chubanshe 南京: 江蘇教育出版社.
- Tumen, Dashtseveg. 1987. Anthropological characteristics of Xiongnu, Mongolia. *Drevnie kul'tury Mongolii* [Ancient cultures of Mongolia]. ed. by R. S. Vasil'evskii. Novosibirsk:

Nauka.

- Vovin, Alexander. 2000. Did the Xiong-nu Speak a Yenisseian Language?. *Central Asiatic Journal*. 44.1: 87-104.
- Wang Shiyuan 王士元. 2005. Hanyu de zuxian 漢語的祖先 [The Ancestry of the Chinese language]. Beijing: 中華書局.
- Wang, Qingxian 王庆宪 and Cong Xiaoming 丛晓明. 2010. *Xiongnu: gudai youmu guojia de xingwang* 匈奴: 古代游牧股价的兴亡 [*The Xiongnu: The vicissitudes of an ancient nomadic people*]. Huhehaote: Nei Menggu remin chubanshe 内蒙古人民出版社.
- Wu, Mu 武沐. 2005. *Xiongnu shi yanjiu* 匈奴史研究 [*Research in the History of the Xiongnu*]. Beijing: Minzu chubanshe 民族出版社.
- Zhang Quanchao and Zhu Hong. 2003. Several opinions on the ethnicity of the Hun. *Central University for Nationalities (Philosophy and Social Sciences)* 6.
- Zhao YB, Li HJ, Cai DW, Li CX, Zhang QC, Zhu H, Zhou H. 2010. Ancient DNA from nomads in 2500-year-old archeological sites of Pengyang, China. *Journal of Human Genetics*. 55.4: 215-8.
- Zhu, Hong 朱泓. 1994. Renzhongxue shang de xiongnu, xianbei yu qidan 人种学上的匈奴, 鲜卑与契丹 [The Xiongnu, Xianbei and Qidan from an anthropological perspective]. *Beifang wenwu* 北方文物 [*Northern Cultural Relics*]. 38. 2: 7-13.