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Genetic and linguistic perspectives on the prehistory of the Yakuts

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On the basis of archaeological, ethnographic and linguistic data, the Yakuts have been hypothesized to have originated in South Siberia. However, molecular-genetic analyses show a close affinity of Yakut women with the neighbouring Tungusic-speaking Evenks, indicative of a common ancestry of the two groups. Therefore, I would like to analyse the Yakut language in order to ascertain the possibility of an Evenki substrate, which would be expected if the Yakut women had shifted from a Tungusic to the current Turkic language. In addition, I intend to perform more genetic analyses to gain further insight into the prehistory of the Yakut population.

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The Yakuts

The Yakuts, who live in the Sakha Republic (Yakutia) in northeastern Siberia, and the Dolgans, who live on the Taimyr Peninsula, are the world's northernmost Turkic-speaking peoples. Along with the Turkic language, which distinguishes the Yakuts from their nearest neighbours (the Tungusic-speaking Evenks and Evens and the Yukagirs, who speak a so-called "Paleosiberian" language), the Yakuts stand out among the north Siberian populations by reason of their subsistence pattern, which traditionally consists of semi-nomadic cattle- and horse-breeding, as opposed to the more common patterns of reindeer herding or hunting and gathering. The Yakut language and subsistence pattern have led researchers since the 18th century to assume a southern origin of the population (e.g. Nikolaus Witsen, Johann Philipp von Strahlenberg and Jakob Lindenau, cited in Berezkin 1987).

Former habitat

The language itself contains some indications of a former habitat further to the south, for example in the words for 'March', *kulun tutar*, which literally means 'holding the foals', i.e. in order to prevent them from suckling so that the mare could be milked. In the harsh climate of Yakutia foals are not born until May, however. The Yakut language also has a word for 'camel', whereas other indigenous Siberian languages borrowed the Russian word *verbljud*, indicating that the forebears of the Yakuts were

familiar with the animal. Furthermore, the Yakut word for 'ocean, sea' is *bayyal*, implying a former habitat in the vicinity of Lake Baykal. In addition, the traditional epics and legends of the Yakuts tell of a migration from the south to the middle reaches of the Lena River.

The Kurykans

On the northwestern shores of Lake Baykal, the archaeologist Okladnikov discovered the remains of a horse and cattle breeding population, which he identified as the Kurykans (*quriqan*) mentioned in Chinese sources and appearing in the Turkic inscriptions from the Orkhon valley. These Kurykans are proposed to have lived in the area surrounding Lake Baykal during the second half of the first millennium A.D. Based on the archaeological remains and a number of rock paintings in that area as well as on the folklore and ethnographic data, Okladnikov (1955) postulated that some Kurykans migrated to the north along the Lena river after the invasion of the Mongol hordes in the 11th to 13th centuries. He assumed that some admixture with these Mongols had taken place before the migration, and that those Kurykans remaining behind had mixed completely with the invaders, thereby forming the Buryats, who still live in the areas surrounding Lake Baykal. Okladnikov further hypothesized that the groups migrating northward along the Lena displaced and mixed with the indigenous Evenks, Evens and Yukagirs, thereby forming the Yakuts.

Three questions

The main hypothesis regarding the origins of the Yakuts as postulated by Okladnikov and others (cf. Konstantinov 1975; Alekseev 1996) gives rise to three questions:

- (i) Do the Buryats and Yakuts stem from a shared ancestral population (the Kurykans)?
- (ii) To what extent did admixture with Mongols and with Tungusic populations (Evens and Evenks) take place?
- (iii) Do the Yakuts show close affinities with other Turkic-speaking groups, as indicated by their language?

Genetic analyses

In an attempt to elucidate the origins of the Yakuts and to provide answers for the above questions, I performed molecular-genetic analyses on a sample of 117 Yakuts from the Vilyuy River and 76 Buryats from Ulan-Ude. The data were then compared to all available data for other populations from Eurasia taken from the literature. These included, among others, Mongols (Kolman, Sambuugiin & Bermingham 1996), Kirghiz, Kazakh, Uyghur (Comas et al. 1998), Altay (Shields et al. 1993), Anatolian Turks (Comas et al. 1996), Evenks (Torrioni et al. 1993, Wiebe, pers. comm.) and Evens (Derenko 1997).

Currently, two parts of the human genome are most widely used for purposes of reconstructing human population histories. One is mitochondrial DNA, the other the non-recombining portion of the Y chromosome (NRPY).

Mitochondrial DNA (mtDNA) is a separate DNA molecule found in the cell's mitochondria (the cell's energy-producing centres). It is a very small, circular molecule that has several advantages for molecular anthropological studies over the "normal" nuclear (autosomal) DNA contained within chromosomes. mtDNA is present in hundreds to thousands of identical copies within each cell, which makes it very easy to obtain enough DNA for genetic analyses. The fact that all the copies within a cell (and within an individual) are identical means that there is no recombination, i.e. the genes on the mtDNA are not "reshuffled" every generation, as happens in autosomal DNA. Therefore, mutations (errors in the DNA sequence) are expected to accumulate in individual genetically related lineages, which can be followed back through time. Furthermore, one of the most important assets of mtDNA is the fact that it is passed on only in the female line. Therefore, one is able to study the genetic history of the female part of a population using mtDNA (for a review of the use of mtDNA in molecular anthropology, see Stoneking 1993).

The Y chromosome, on the other hand, is passed on only from men to their sons, thereby giving us the opportunity of studying the male part of a population's history. Interestingly, as many recent studies have shown, male and female histories can differ considerably. In addition to its solely paternal inheritance, the NRPY has the same advantage as mtDNA of not undergoing recombination, so that it is possible to determine genetically related lineages from accumulated mutations. These can then be followed back in time in order to reconstruct population histories (for a review of the use of Y chromosomal analyses in evolutionary studies, see Hammer & Zegura 1996).

Results

The results of these genetic studies (which will be published elsewhere) indicate that the Yakuts are not genetically related to Buryats, as has been postulated by other researchers (see figure for a schematic representation of the results). On the contrary, the mtDNA analyses (i.e. those analyses uncovering the female part of the population history) show that the Yakut and Evenk women stem from a common ancestral population, with the Yakuts having undergone Mongolian admixture. This last point will hardly be surprising to Turcologists, as the Yakut language is known to contain a large number of Mongol loanwords. The mtDNA analyses do not show any relationship of the Yakuts to the other Turkic-speaking populations used in the comparisons; of course, these represent only a small subset of all current Turkic populations, the choice having been restricted by availability of relevant data.

Severe reduction in number of men

The Y chromosomal analyses show very interesting results in that the Yakut men have undergone a recent and very severe reduction in population size. This population reduction could be due to either of two causes:

(i) a small group of related men migrated to the territory of what is now the Sakha Republic (Yakutia); or

(ii) the indigenous men were severely decimated, with only a small number of related men surviving.

In the first case, the immigrants would have to have had some attributes which led the indigenous Evenk females to mate preferentially with them. This would most plausibly be the “southern” cultural elements, such as horses, cattle, and the knowledge of iron—which are most logically linked with the Turkic language. In this case, a group of Turkic immigrants, carrying the southern cultural elements with them, would have migrated north, where they mated with the indigenous females, who replaced their Tungusic language with the Turkic one. In the second case, a strong group would have decimated the indigenous Tungusic-speaking males, leaving only a few closely related survivors. In this case, both the males and the females would have undergone language replacement—which would indicate that the dominant males were Turkic speakers, and that the replacement process was one of extreme elite dominance.

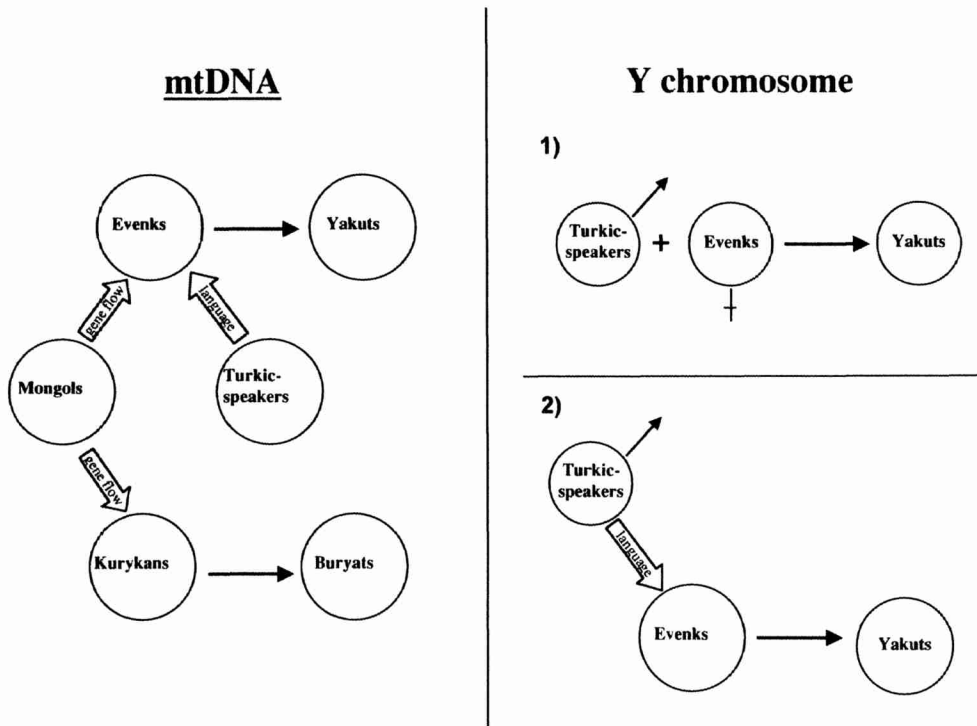
Aim of the study

It is the aim of the current study to further analyse Yakut prehistory, using both genetic and linguistic methods. I thereby hope to establish whether genetic and linguistic approaches can usefully be combined in order to elucidate population histories. One of the main questions I wish to address with the linguistic studies is whether a Tungus/Evenki substrate is detectable in the Yakut language. This question has not been studied intensively up to now (cf. Stachowski & Menz 1998)—however, since the results of the mtDNA analyses show that the Yakut and Evenk females stem from a common ancestral population, quite a strong Evenki influence might be expected in the language.

Furthermore, I intend to specifically test the competing hypotheses of (i) a recent immigration of Turkic-speaking males with “southern” culture and a strong selective mating advantage versus (ii) a violent language replacement by elite dominance of a Turkic-speaking group over indigenous Tungusic populations.

I would expect the first hypothesis, i.e. Turkic-speaking males mating with Tungusic-speaking females, with only the latter shifting their language, to result in differences in the origin of words appertaining to gender-specific domains. Therefore, an analysis of such words might clarify the process of language replacement that has taken place in the Yakut population. Genetically, the origin of the Yakut males can be elucidated using specific markers on the Y-chromosome, especially in Turkic- and Tungusic-speaking populations in addition to the Yakuts themselves.

Figure: Schematic representation of the results from the mtDNA and Y chromosome analyses.



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