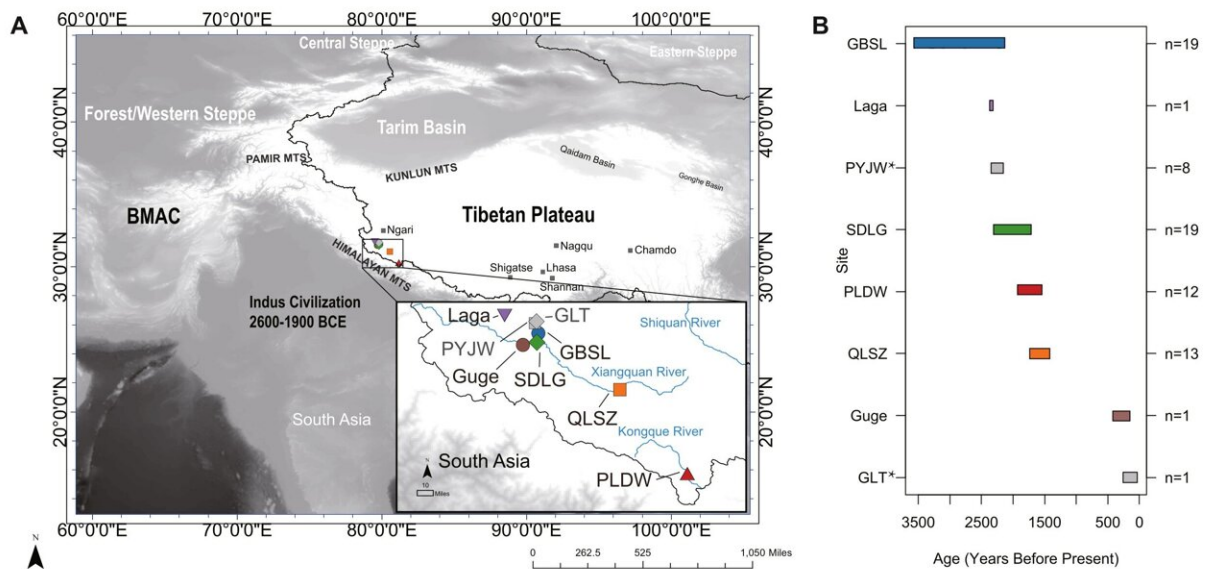


Ancient DNA study reveals population history of Western Tibetan Plateau

May 22 2024



The spatial and temporal distribution of Ngari samples involved in the study.
Credit: IVPP

According to a study [published](#) in *Current Biology* on May 22, the genetic components of the ancient populations in the western Tibetan Plateau are closest to ancient populations in the southern Tibetan Plateau, and their major genetic components have been maintained over

the past 3,500 years. In addition, these ancient populations in the western Tibetan Plateau had complex and frequent interactions with ancient populations inside and outside the plateau.

The study was conducted by Prof. Fu Qiaomei's team from the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) of the Chinese Academy of Sciences and archaeologists from the Tibet Institute for Conservation and Research of Cultural Relics and other institutions.

Ngari Prefecture, located in the western part of the Tibetan Plateau, is the junction connecting the Tibetan Plateau, South Asia and Central Asia, and a potential migration channel for early human populations. Previous research has confirmed that [genetic components](#) related to Central Asian populations affected this region about 2,300 years ago, but the genetic history of earlier populations in this region was unclear.

In this study, the researchers sequenced the genome-wide nuclear data of a total of 65 individuals from six sites dating from 3,500 to 300 years ago in Ngari Prefecture. The newly sequenced data cover six [archaeological sites](#), including Gebusailu, Laga, Sangdalongguo, Pulanduowa, Qulong sazha, and Guge Ganshi Cave.

Combining the recently sequenced data with previously published ancient genomic data, the evolutionary history of the populations in the western Tibetan Plateau over the past 3,500 years has now been reconstructed.

This study is a systematic, long-term genomic study of ancient populations in the western Tibetan Plateau. It is of great significance for the in-depth understanding of the history of interactions between ancient

western [plateau](#) populations and ancient populations within the plateau and in neighboring South Asia and Central Asia, according to the researchers.

Genetic characteristics of ancient western plateau populations and their interactions with ancient populations within the plateau

Previously, the understanding of the genetic history of the ancient populations of the western plateau was extremely limited. Based on only one site dating back 2,300 years ago, researchers have speculated that genetic influence occurred between western plateau populations and Central Asians. However, the specific time, place, and extent of this influence were unknown.

In this study, the researchers reconstructed the population evolutionary history in the western plateau over thousands of years using genetic information from various ancient Tibetan populations.

They showed that the ancient Ngari populations of 3,500 years ago had genetic components similar to the populations of the southern plateau and did not carry additional genetic components from Central Asia or South Asia.

This genetic composition has been stably maintained in northwestern Ngari Prefecture for more than a thousand years: The genetic composition of the late Gebusailu and Laga populations of 2,300 years ago is almost the same as that of the Gebusailu population of 3,500 years ago.

In other words, the Ngari population during this period mainly carried the genetic components of ancient populations in the southern plateau,

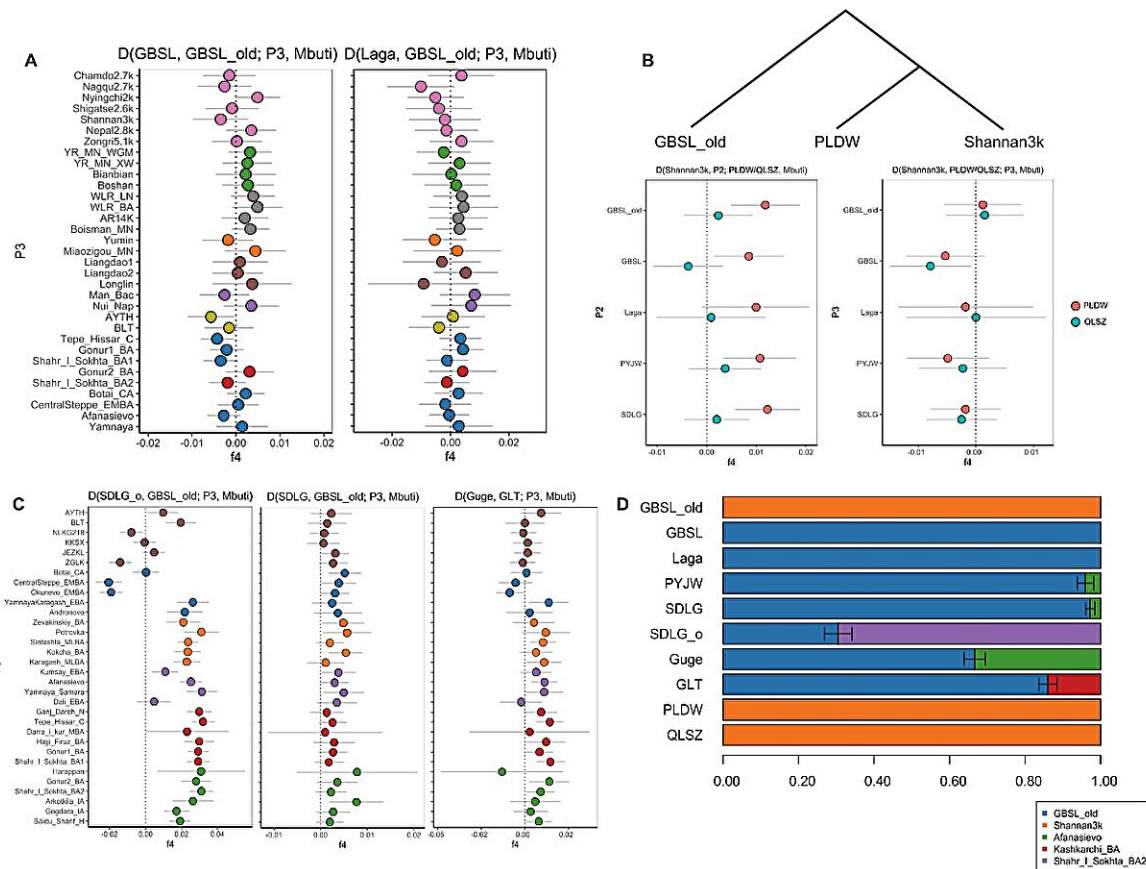
while genetic components from Central Asia and South Asia were introduced much later.

After that, starting from 2,300 years ago, Central Asian components appeared in some sites in northwestern Ngari Prefecture, but until 150 years ago, the proportion of Central Asian components was still less than 15%. Overall, local Ngari genetic components remained dominant from 3,500 to 150 years ago.

The researchers also found complex population interactions and migrations within the plateau. The genetic components of ancient populations in the southern and western parts of the plateau 3,500 years ago were very similar, indicating that population migration and expansion from south to west may have occurred earlier.

In addition, compared with the population in northwestern Ngari, populations from 1,800 to 1,600 years ago from the Kongque River to the upper reaches of the Xiangquan River in southeast Ngari were further influenced by ancient populations from the southern plateau. This indicates that the southern plateau people may have begun to expand westward again before the Tubo Empire expanded westward in the early 7th century.

In summary, the interactions between the ancient populations of the southern and western plateau were far more complex than recorded in historical documents. As early as 1,800 years ago, multiple east-to-west human migrations between the two places had occurred, and a gradient of genetic components introduced by the expansions can be observed in these east-to-west populations.



Analysis results of genetic characteristics of ancient populations in the Ngari Prefecture. Credit: IVPP

Interactions between ancient populations in the western plateau and outside the plateau

Although Central Asian components began to affect some Ngari populations around 2,300 years ago, the proportion of Central Asian components in the genomes of these populations is low (

Citation: Ancient DNA study reveals population history of Western Tibetan Plateau (2024, May

22) retrieved 20 June 2024 from <https://phys.org/news/2024-05-ancient-dna-reveals-population-history.html>

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