# CHINA

# DNA analysis reveals two waves of migration

## Testing conducted on remains further proof of Hexi's role as pivotal hub

By **LIANG SHUANG**
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In a pioneering study, scientists from Fudan University in Shanghai have delved into the ancient DNA of individuals buried in a mass cemetery in Gansu province, revealing compelling insights into the genetic makeup of Hexi Corridor residents dating back over 12 centuries.

The research, the first of its kind, utilized ancient DNA data to explore human migration along the Hexi Corridor, a pivotal hub on the historical Silk Road.

The results of the study, published in mid-December in the Science Bulletin, revealed two major migration waves in the past two millennia.

The Hexi Corridor, primarily located in present-day Gansu, was a narrow yet crucial link connecting the heartland of ancient China — the Central Plains — to the Western Territory, encompassing areas such as the current Xinjiang Uygur autonomous region and parts of Central Asia. Characterized by its lofty mountains and arid deserts, the ancient pathway was dotted with cities founded along short rivers fed by melted snow.

Historical documents attest to the Hexi Corridor's significance as a crossroads where Western and Eastern civilizations converged through trade, religion and occasional conflicts following the establishment of the Silk Road during the Han Dynasty (206 BC-AD 220).

As technological advances in molecular biology open new avenues for exploration, archaeologists are increasingly drawn to analyzing DNA samples from ancient tombs to validate historical accounts or uncover previously undocumented narratives.

Led by Wen Shaoqing from Fudan University's Institute of Archaeological Science, the team successfully extracted DNA data from teeth and temporal bones found at two sites in Gansu — the Heishuiguo site near Zhangye in the central part of the Hexi Corridor, and the Foyemiaowan site near Dunhuang in the western part of the pathway.

An aerial photo shows the Jiayuguan Pass on the Hexi Corridor in Gansu province. LIU JINHAI / XINHUA

The DNA analysis, encompassing 25 individuals from the Han to the Tang Dynasty (618-907), pinpointed two outliers from the Foyemiaowan site, dating to the Wei Dynasty (221-265) and the Tang. Further scrutiny revealed one had approximately 50 percent western Eurasian ancestry and the other 30 percent, suggesting the individuals were likely descendants of unions between western Eurasian women and local men.

Despite being interred in a mass cemetery, the individuals received equal treatment from their families, indicating the openness and tolerance of ancient Dunhuang, a researcher told Xinhua News Agency. The discovery aligned with materials found in the Mogao Caves in Dunhuang, reflecting the diverse cultural elements in the area at that time.

The team's comparative analysis of data samples and present-day genetics of Hexi Corridor residents led to the conclusion that contemporary Han Chinese in Gansu and specific ethnic groups in the corridor, such as the Dongxiang, Bonan, and Yugur, carry more western Eurasian lineages than their ancient counterparts.

The study identified a significant genetic amalgamation approximately 600 to 1,000 years ago, a period coinciding with the expansion of the Mongol Empire in the early 13th century. Historical records suggest that Genghis Khan and his sons recruited soldiers and artisans from Central and Western Asia during that time, with some settling in the Hexi Corridor. The Yuan Dynasty (1271-1368), established by Genghis Khan's grandson Kublai Khan, further contributed to migration as it defended the Hexi Corridor.

The team said the genetic mix could be partially attributed to those migrations. The western Eurasian elements from the latter period displayed no discernible gender inclination, indicating migration to the Hexi Corridor likely occurred in family units.

Experts said the second major migration period was marked by a significant shift in the gene pool. The first, occurring from the late Neolithic period to the Han Dynasty, witnessed large-scale migration organized by Han rulers in response to the establishment of the Silk Road.

Historical records say migration facilitated by Chinese explorer Zhang Qian's visit to the Western Territory from 138 BC resulted in the creation of the Silk Road. Han rulers moved hundreds of thousands of people, including soldiers, from the mid-lower reaches of the Yellow River to cultivate plants, establish counties and defend the corridor. DNA data has now corroborated those historical records, affirming major genetic changes resembling those found in people from the lower reaches of the Yellow River.

Communication between the East and the West in ancient times has always been a hot topic among researchers, Wen said, adding that the team will continue to explore how the process evolved over a longer period or across larger areas.

# Confucius' birthplace cashes in on rural tourism

By **QUAN ZHANFU**
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Nestled at the foot of Nishan Mountain, often considered the birthplace of Confucius, in Qufu, Shandong province, Luyuan new village is making strides in rural vitalization.

Benefiting from its strategic location and cultural advantages, the village is now home to more than 180 rural homestays featuring Confucian culture themes that are in high demand year-round, Dazhong Daily, a news outlet in Shandong, reported.

To further develop tourism, a high-standard Confucian virtue demonstration block was built in Luyuan.

It has also established Confucian culture experience areas such as a Confucius post office and the Kong Mansion seals workshop. Young people returning to Luyuan have designed unique souvenirs such as Kong Mansion pastries and handicrafts.

Residents have also replaced their daily square dance routines with traditional cultural art performances reflecting Confucius culture such as a dance called *The Land of Rituals and Etiquette*.

The central role of Confucian culture in the village's rural tourism economy has given it a distinct competitive edge compared to other rural tourism destinations. And as more tourists came to visit, more villagers began to pay more attention to the village's image and development.

Workers water plants in a homestay in Luyuan new village in Qufu, Shandong province, on Nov 2. YANG GUOQING / XINHUA

"Some uncivilized habits that were repeatedly singled out as needing to change during village meetings but never seemed to disappear are gradually disappearing," villager Kong Fanling, who runs a homestay, told Dazhong Daily.

Luyuan's success in attracting tourists through its cultural advantages exemplifies Qufu's attempts to leverage its rich cultural heritage for comprehensive rural vitalization.

In addition to the thriving rural tourism sector, the preservation and development of intangible cultural heritage in the countryside play a vital role in rural vitalization in Qufu.

Traditional crafts such as Dazhuang silk flower production and mulberry papermaking are driving the growth of the "courtyard economy" in Qufu's villages, enabling villagers to increase their incomes, according to local media reports.

Qufu has a permanent population of 617,700, including 214,500 rural residents.

By embracing the use of its rich cultural heritage as a path to rural prosperity, Qufu has fostered culture-driven agricultural and industrial growth.

In the first three quarters of last year, revenue from recreational agriculture and rural tourism reached 376 million yuan ($53 million), up 135 percent on the same period in 2022, when COVID-19 restrictions limited domestic travel.

Villagers make silk paintings in Luyuan new village on June 8. GUO XULEI / XINHUA

# Experts call for better communication of CPC history to the world

By **ZHOU WENTING** in Shanghai
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A global symposium in Shanghai underscored the need for two-way communication in explaining the story of the Communist Party of China to the international community.

Experts in Party history and international relations emphasized the importance of understanding global audiences while effectively framing the Party's narrative for the modern world.

"The effort requires both a clearer grasp of international interest in China and the CPC, and a more effective rendering of the Party's story in sync with the times," said Jiang Feng, Party secretary of Shanghai International Studies University, at the symposium co-organized by the university and the Memorial for the Site of the First National Congress of the CPC.

The Memorial for the Site of the First National Congress of the Communist Party of China draws visitors in Shanghai. LIU YING / XINHUA

Jiang stressed the value of tailoring communication to audience interests for efficient engagement. He also championed building a strong narrative that resonates with the international community. He cited China's recent concepts like "the Chinese path to modernization" and "building a community with a shared future for mankind" as examples of integrating Chinese wisdom with universal values to be heard on the global stage.

Professor Zheng Guoyu from SISU's School of Marxism Studies noted historical instances of international fascination with China and the CPC, particularly during the tumultuous events of the 1920s and 1940s. She highlighted works like Edgar Snow's novel *Red Star over China* as examples of early foreign engagement with the Party's narrative.

Zheng drew parallels between past interest and today's interconnected world, suggesting these historical materials offer valuable insights into effectively sharing the Party's story with a globally interconnected audience.

Gafar Karar Ahmed Karar, a professor at SISU's China-Arab Research Center on Reform and Development, pointed to the CPC's success in eradicating poverty and its Belt and Road Initiative as examples of concrete experiences and initiatives impacting the international community. He argued that a deeper understanding of the CPC's early years could help explain these recent endeavors.

Xue Feng, Party secretary and director of the Memorial for the Site of the First National Congress of the CPC, highlighted the institution's efforts in fostering international exchanges and cross-cultural communication. He mentioned initiatives such as multi-lingual guided tours and foreign language narration services aimed at enhancing visitor engagement from diverse backgrounds.

# Chinese device sets precision standard

By **LIU MINGTAI** in Changchun and **ZHOU HUIYING**

The first coronal images captured by China's Spectral Imaging CoronaGraph were published by the Changchun Institute of Optics, Fine Mechanics and Physics last month, setting a new global standard for precision.

The achievement marked the successful completion of work on China's first independently developed ground-based coronagraph.

Zhang Hongxin, a researcher at the institute, said the coronagraph, sitting at an altitude of 3,200 meters at the Lijiang Yulong Astronomical Observatory in Yunnan province, had three key components: an optical imaging lens, an optical filter and an equatorial mount.

Zhang's team began researching the optical imaging system in December 2019, setting the groundwork for the coronagraph's successful development and becoming pioneering researchers in the field in China.

Scientific data obtained from the coronagraph has been lauded internationally, with the instrument recognized as the world's foremost ground-based coronagraph thanks to its sub-0.5-nanometer optical glass accuracy.

Jointly developed by Shandong University, the institute in Changchun, the Chinese Academy of Sciences, the Nanjing Institute of Astronomical Optics and Technology, and CAS' Yunnan Observatory, the coronagraph is a testament to China's advances in astronomical instrumentation.

Zhang said observing the sun's corona, the outermost layer of its atmosphere, was important for various scientific purposes. However, capturing the coronal signal, which is significantly weaker than the brightness of the solar sphere, posed a considerable challenge due to atmospheric light scattering.

To address the challenge, Zhang and his team pioneered the precision polishing of optical glass to below 0.5 nanometers to suppress stray light. They simulated an artificial sun in the laboratory and used meticulous calculations, filtering and testing to achieve the desired precision.

Zhang said the project had significantly enhanced the team's scientific research capabilities, marking a new starting point in their field. It now plans to conduct debugging and testing, and optimize the equipment's operation.

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