4th International Conference on
Forensic Science, Medicine, Research Technology
SEPTEMBER 19-20, 2024 | LONDON, UK
Volume: 09

Reconstruction of population ancestry of Ladakh region using Ancient DNA and stable isotopic approach

Richa Rajpal
DST- Birbal Sahni Institute of Palaeosciences, Lucknow, India

As part of the Silk Road and located at the geographic confluence of Eastern and Western cultures, the Ladakh Region has long served as a major crossroads for trans-Eurasian exchanges of people, cultures, agriculture and languages. Previous studied have tried to understand the demographic events that have shaped the present-day populations. Modern day populations show a complex population history, with genetic links to both Eastern and Western Eurasia. However, little is known about the ancestral source population that enabled the colonisation of this hilly area. To have a better understanding of peopling of Ladakh, we analysed 12 human skeletal remains recovered from a prehistoric cave site in Nyoma valley, Ladakh. All samples were processed in an ancient DNA facility in Birbal Sahni Institute of Palaeosciences, India. Following the extraction and sequencing of DNA, the data was mapped against the human reference genome. Of the 12 samples, 7 yielded ancient DNA data, as authenticated by characteristic DNA damage patterns. Three samples were dated using accelerator mass spectrometry to 1500 to 250 years before the present. Mitochondrial haplogroup analysis revealed the presence of different maternal lineages among the individuals in the cave, including U7a3b, H2a1a, and M52a1b. We found a strong founder effect for both paternal and maternal lineages. Our results indicate that the people of the Ladakh region had a diverse maternal ancestry, with origins in Europe, central/eastern Siberia and southern/western Asia Moreover, we report a close genetic link of Ladakh with the east and west Eurasia. Most of the Ladakh region share the haplogroups specific to South Asia, east asia and West Eurasia. In conclusion, our first genetic data suggest that the majority of human ancestry in Ladakh is largely derived from South Asia with largely influences from East and West Eurasia. This study investigates human dietary patterns and economic trends using stable isotopic data from 24 individuals buried from cave site. Carbon and nitrogen stable isotope values were measured from bone collagen extracted from archaeological human (n = 24) Skelton remains. Collagen suitable for isotopic analysis was extracted from 24 human samples from the bone samples. The stable isotopic result for human indicates that the human dietary regimen included a mix of C3 and C4 plant-derived components, inhabitants consumed a mixed diet composed primarily of marine protein.

Biography

Richa Rajpal is a distinguished researcher within the Department of Biological Sciences at the DST-Birbal Sahni Institute of Palaeosciences in Lucknow, India. With a keen focus on the evolutionary history of organisms and the environmental shifts influencing them, her research provides critical insights into ancient ecosystems. Her work has been instrumental in advancing the understanding of palaeobiology and has contributed to notable publications in the field.