Press Release

CSIR - Centre for Cellular and Molecular Biology, Hyderabad, India

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Genetic study traced the source of extinct Indian cheetah

Pic courtesy: Wikipedia

Over the last many centuries India kept losing cheetah, one of its big cats until just after independence. Today Africa harbours the highest number of these cats, called the African cheetah. The Asiatic cheetahs, on the other hand, are found in numbers as small as 50 in Iran. For more than a decade, India has been discussing if it should reintroduce cheetah in wild in the country. While the earlier cheetahs in India were the Asiatic cheetah, whose numbers are dwindling everywhere in the world, the choice is to try and see if the African cheetah can adapt to the Indian conditions. Earlier this year, the Supreme Court of India has allowed the central government to introduce Southern African cheetahs into suitable habitats in the country.

A major parameter that decides the choice between Asiatic and African cheetah reintroduction in India would be to see how different the two populations are. Scientists at CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad in collaboration with Birbal Sahni Institute of Palaeosciences, Lucknow; University of Cambridge, UK; Zoological Survey of India (ZSI), Kolkata; University of Johannesburg, South Africa; Nanyang Technological University, Singapore provide mitochondrial DNA analyses to understand finer details of the evolutionary history of Asiatic and African cheetahs - sub-species of *Acinonyx jubatus*. The farther back they diverged along evolution, the more different these two populations would be from each other. These results have recently been published in *Scientific Reports*.

Dr K Thangaraj, senior author of this study and Chief Scientist at the CCMB said “We have analysed three distinct cheetah samples; first one was a skin sample of a cheetah, believed to be shot in Madhya Pradesh in the 19th century, from mammal gallery of the Zoological Survey of India (ZSI), Kolkata, and the second was a bone sample of cheetah, obtained from the Mysore Natural History Museum, dates to 1850 – 1900, and third was a blood sample of a modern cheetah sample from the Nehru Zoological Park (NZP), Hyderabad”.

“We have isolated DNA from both the historical samples (skin and bone) in the ancient DNA facility of CCMB; the mitochondrial DNA (mtDNA) of these two samples, and the modern cheetah sample were sequenced, and analysed along with mtDNA of 118 cheetah from different parts of Africa and southwest Asia”, said Dr Niraj Rai, one of the lead authors of this study.

“While the museum specimen from ZSI and the modern sample from NZP are of Northeast African maternal descent; the museum specimen from Mysore shows close affinities with Southeast African cheetahs”, said Dr Thangaraj.

Extensive analysis of this study suggests that the divide between the North-east African cheetah with both the South-east African and Asiatic cheetah is 100-200,000 years ago. Their results also suggest that the South-east African and Asiatic cheetah diverged from each other 50-100,000 years ago. “This is contrary to an existing belief that the evolutionary divide between Asiatic and African cheetahs is only of 5000 years”, said Dr Guy Jacobs one of the seniors of this study from University of Cambridge.

Dr Rakesh K Mishra, Director, CCMB said that this study provides evidence towards establishing the genetic uniqueness of Asiatic cheetah, and hence, merits their targeted conservation efforts.

For further details:

Dr K Thangaraj
CSIR-Centre for Cellular and Molecular Biology, Hyderabad
Email: thangs@ccmb.res.in
Mobile: 9908213822