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Tracing The Earliest Americans Through Mitochondrial DNA

By Ajit Jha

Historians and anthropologists have been struggling to discover how the first humans came to the Americas and what they did there once they arrived. They no longer need to, for the DNA comes with the power to penetrate realms beyond speculative history with a fairly certain degree of authenticity.

The DNA will tell the story of the earliest human migration in the Americas, claims University of Illinois Professor Ripan Malhi, who will be sharing his findings at a meeting on November 18 and 19 at the Royal Society in London. The meeting is to discuss the topic, "Ancient DNA: The First Three Decades."

Malhi, also an affiliate of the Institute for Genomic Biology at Illinois, works with Native Americans through collaborative approaches to explore their genetic history.

In a recent study, Malhi analyzed the changes in the mitochondrial genome which led him and his collaborators from the Tsimshian Nation on the northwest coast of British Columbia to discover a direct ancestral link between native peoples living today and ancient human remains in the region of the Prince Rupert Island.

The advantage of the study of mitochondrial genome is that they give us a true picture of lineage and ancestry, because children inherit mitochondrial genomes from their mothers only. Malhi's lab, in other studies, has analyzed protein coding regions of the genome or changes in the Y chromosome.

"The best opportunity to infer the evolutionary history of Native Americans and to assess the effects of European colonization," according to Malhi, "is to analyze genomes of ancient Native Americans and those of their living descendants."

What makes Malhi's lab unique is their focus not just on how people came to settle in Americas originally, but also on what happened to them after the initial settlement, said Malhi, "How did these groups move to new environments and adapt to their local settings over 15,000 years?"

Apart from British Columbia, where Malhi is currently doing his project, he is in the processing of establishing his study sites in Mexico, Illinois, Guatemala and California.

It is interesting to note that the earliest communities in California and the northwest coast were complex hunter-gatherers, Malhi said, "whereas in Mexico and Guatemala, it's more communities that transitioned to farming and then experienced the effects of European colonization."

Historians and anthropologists will have reasons to celebrate for genomic studies promise to fill in the gaps in our understanding of "life in the Americas before and after European colonization," Malhi said, while researchers "looking only at artifacts and language" are likely to draw wrong conclusions on human history, according to Malhi.

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