

... [A] new study, published in *Science Advances*, zooms in on the Andes, the mountainous spine of western South America. Archaeological evidence shows that people started living permanently in the Andean highlands about 9,000 years ago. But these aren't the easiest places to live, since it's cold and the air is thin, which makes it harder for human bodies to absorb oxygen. So how did Andean peoples move into this region, and how did they adapt to the harsh conditions?

To find out, researchers led by Emory University anthropologist John Lindo sequenced the whole genomes of seven Natives who lived in Peru's highlands between 1,600 and 6,100 years ago. The team also collected dozens of DNA sequences from two modern Native populations: the Aymara in Bolivia's highlands, and the Huilliche-Pehuenche, who live in Chile's coastal lowlands.

Comparing these DNA sequences revealed that the Andes' lowland and highland peoples split about 8,750 years ago, give or take a few centuries. The team also found signs of evolution acting on the highland Andeans' DNA, such as an uptick in gene variants linked to stronger hearts. If this is an adaptation to high altitudes, then the Aymara's bodies took a different approach than other high-altitude groups. Native Tibetans, for instance, more commonly have gene variants that affect blood's ability to carry oxygen.

"That was a bit of a surprise to me," says study coauthor Mark Aldenderfer, an archaeologist at the University of California, Merced. "What we see is convergent evolution: Here's an environmental challenge that people are confronted with in their genomes, and there appear to be multiple ways to [solve] that."

Vocabulary

Science Advances: a professional magazine for scientists to publish articles about their research studies

anthropologist: a scientist who studied the origins, development and customs of human beings
sequenced genomes: mapped out the individuals' DNA

uptick: increase

gene variants: differences between the two groups in the same genes

convergent: tending to come together

-Michael Greshko, "Ancient DNA Reveals Complex Migrations of the First Americans"
(2018) excerpt.