Tibetan antelopes developed a unique way to survive high in the mountains
18 June 2020, by Bob Yirka

A team of researchers at the University of Nebraska's School of Biological Sciences has found that Tibetan antelopes evolved in a unique way to survive high in the mountains. In their paper published in the journal *Science Advances*, the group describes their genetic analysis of the high-altitude Tibetan antelope and what they learned about its genetic evolution.

The work involved characterizing the locus of ?-globin genes (globins are heavily involved in transporting oxygen in the blood). In so doing, they found two variants that were similar to those in cows. But when comparing the two species, the researchers found that the antelope lost the ?A variant (the most common one in mammals) during its evolutionary history. That left it without an adult form of hemoglobin. Instead, the antelope relies on a childhood form of the protein. Many mammals have a childhood form of globin (?F)—it expresses an isoform with higher oxygen affinity than the adult version, allowing for the smooth transfer of oxygen across the placenta. The Tibetan antelope is now the only mammal known to use ?F as a means of high-altitude survival as an adult. The researchers tested how well ?F was working for the antelope by conducting in vitro experiments—they found that it allowed for higher oxygen affinity than any other bovid, and explains how the antelope is able to thrive at such high altitudes.


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