

Thousands of years living at high altitudes has led to human evolution

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For thousands of years humans has lived at some of the highest places in the world, a harsh environment where the air barely holds enough oxygen to survive. Across the world different human populations have evolved locally in similar yet different ways to be able to handle this extreme situation better than the rest of humanity.

Across the world

There are three major groups of humans who have lived at the highest places on Earth for thousands of years. The first one of these are the Tibetans from the Tibet region in western China, an area which includes parts of the Himalayas which contains many of the highest mountains on Earth, including Mount Everest. The second of these groups are the indigenous Quechua and Aymara of South America. The third group is the Amhara from Ethiopia in eastern Africa.

Similar yet different

The major problem of living in high height areas at altitudes over 2500 meters above sea level is that there is less oxygen in the air which causes all kinds of problems for the human body. Both in the short term and in the long term this can have devastating effects. Because of this there is an evolutionary pressure to evolve ways for the body to deal with this for the groups who live in these high-altitude areas. Research during the last few years has shown that these three groups from different parts of the world have evolved in different ways, show different physiological traits from each other and that the genetic hereditary changes occurred in different genes, that is in different parts of their DNA. Even though there are very clear differences research has also shown that the effect of these changes often has an effect on something called hypoxia-inducible factors, a kind of protein that regulates how the body handles lack of oxygen. Recent evolutionary changes in local human populations are quite rare but this gives us an insight into how evolution in humans happens and how varied solutions can solve the same evolutionary problems.