

Chapter 55

Evolutionary Aside 55.1--Human Adaptation to Living at High Elevations

Humans have the ability to acclimate to living at higher elevations, but recent genetic research has also revealed that populations living at high altitudes have recently, and rapidly, evolved genetic changes that make them better suited to such environments. This evidence is among the best evidence for the action of natural selection on human populations in recent times.

For example, most Tibetan highlanders have two mutations in a gene related to oxygen uptake; but few individuals in nearby lowland populations have these mutations. These results suggest that natural selection has driven these mutations to high frequency in very little time—the few thousand years since the Tibetans colonized the Himalayas. Researchers have recently discovered a number of other mutations in different genes involved in oxygen uptake and transport that also have evolved recently in these populations.

References:

1. T.S. Simonson and colleagues. 2010. Genetic evidence for high-altitude adaptation in Tibet. *Science* 329:72–75.
2. X. Yi and colleagues. 2010. Sequencing of 50 human exomes reveals adaptation to high altitude. *Science* 329:75–78.