Prehistoric genomes reveal the genetic foundation and cost of horse domestication - DTU Orbit (14/02/2019)

Prehistoric genomes reveal the genetic foundation and cost of horse domestication

Significance The domestication of the horse revolutionized warfare, trade, and the exchange of people and ideas. This at least 5,500-y-long process, which ultimately transformed wild horses into the hundreds of breeds living today, is difficult to reconstruct from archeological data and modern genetics alone. We therefore sequenced two complete horse genomes, predating domestication by thousands of years, to characterize the genetic footprint of domestication. These ancient genomes reveal predomestic population structure and a significant fraction of genetic variation shared with the domestic breeds but absent from Przewalski’s horses. We find positive selection on genes involved in various aspects of locomotion, physiology, and cognition. Finally, we show that modern horse genomes contain an excess of deleterious mutations, likely representing the genetic cost of domestication.

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