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The origin of horse domestication as revealed by multilocus genotype data



Vortrag auf Englisch

Diskussion auf Deutsch/Englisch

Trotz zahlreicher wissenschaftlicher Studien konnte die Herkunft domestizierter Pferde bisher nicht hinreichend geklärt werden. Während archäologische Funde einen Domestikationsursprung in der westlichen Steppe vermuten lassen, wurden mitochondriale DNA Daten bisher dahingehend interpretiert, dass Wildpopulationen in verschiedenen Regionen unabhängig voneinander domestiziert wurden. Neuere Untersuchungen basierend auf Mikrosatelliten Daten und Modellsimulationen bestätigen einen Ursprung domestizierter Pferde in der westlichen Steppe und zeigen, dass die enorme Diversität weiblicher Linien hauptsächlich durch Einkreuzung wilder Stuten in den Genpool domestizierter Pferde zustande kam.

For decades, researchers have puzzled over the origin of horse domestication. Archaeological evidence consistently points to the western part of the Eurasian Steppe (Ukraine, southwest Russia and west Kazakhstan) as a primary area of horse domestication; however, a single origin in a geographically restricted area has been argued to be at odds with the large number of female lineages in the domestic horse gene pool, commonly thought to reflect multiple domestication “events” across a wide geographic area. To address this issue we reconstructed both the population genetic structure of the extinct progenitor of domestic horses, *Equus ferus*, and the process of horse domestication using a spatially explicit stepping stone framework. I will show that *E. ferus* expanded out of East Asia approximately 160,000 years ago, likely reflecting the colonisation of Eurasia by this species. Horse domestication originated in the western part of the Eurasian Steppe, and domestic herds were continuously augmented with local wild horses as they spread out of this area. If restocking mainly involved wild mares, we can explain the high female diversity in domestic horses without having to invoke multiple domestications. Microsatellite data from traditional horse breeds in Europe also allowed us to identify a further putative population origin for horses in the Iberian Peninsula, the only area in Europe where open landscapes persisted in the mid-Holocene, a time when much of central Europe was densely forested. Based on our results we suggest that not only the eastern steppes, but also the Iberian Peninsula acted as a steppe refugium for wild horses during the Holocene period and a putative source for domestic horses in Europe.