
Tracking Six Millennia of Horse Selection, Admixture and Management with Complete Genome Time-Series

Ludovic Orlando^{*1,2} and Consortium Erc Pegasus³

¹Centre for GeoGenetics (CGG) – Natural History Museum of Denmark, Øster Voldgade 5-7, 1350K Copenhagen, Denmark, Denmark

²Anthropologie moléculaire et imagerie de synthèse (AMIS) – Université Paul Sabatier (UPS) - Toulouse III, CNRS : FRE2960 – Adresse 37 allées Jules Guesde 31400 Toulouse, France

³Laboratoire d'Anthropologie Moléculaire et d'Imagerie de Synthèse (AMIS) – AMIS – CNRS UMR 5288, Université de Toulouse III Paul Sabatier, France

Résumé

The domestication of the Horse and its impact on warfare, transportation and agriculture, have revolutionized human history. Even though most modern breeds have been engendered within the last couple of centuries, humans have managed horse livestock for over five millennia. Recent selective and management strategies have tremendously impacted the genetic structure of horse populations. As a result, modern patterns of genetic diversity can only partly help reconstruct the horse domestication process prior to the modern era. Recent research in our laboratory, carried out in the framework of the ERC PEGASUS programme, has endeavoured to sequence complete horse genomes from across their whole temporal and geographical domestication range in order to identify how the many past human cultures progressively forged the horse genome by means of selection, drift and admixture. This work revealed two different dynamics at play within early and late domestication stages, involving the selection for different functional pathways, different management strategies for the genetic resource available, including stallion diversity, and a recent increase in the genomic deleterious load. Our new genome dataset now allows us to document such changes at unprecedented scales and reveals unexpected features of the whole population dynamic underlying horse domestication.

Mots-Clés: Horse domestication, animal husbandry, human, animal relationship

*Intervenant