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# Mitochondrial DNA diversity of five Italian autochtonous donkey breeds

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**ABSTRACT**

To investigate the mitochondrial DNA diversity of five Italian donkey breeds (Amiata, Martinafranca, Romagnolo, Asinara, and Ragusano), we sequenced the HVR I region (D-loop, 288 bp) and *cytochrome b* gene (274 bp) in 121 individuals. In the D-loop we found nineteen mutations corresponding to fourteen different haplotypes, while in *cyt b* coding gene only six mutations were found, originating five different haplotypes. In particular, three mutations out of six were non-synonymous, causing an aminoacidic substitution. About the D-loop region, the value of nucleotide diversity ($\pi$) observed within breeds was relatively low, but not far from values detected in other European breeds. Phylogenetic and network analyses disclosed the presence of two divergent maternal lineages within Italian donkeys. These haplogroups correspond to the well known lineages of ancestors (*Equus asinus somaliensis* and *E. a. africanus*), as donkeys were domesticated from distinct wild subspecies living in Eastern Africa regions. In four of the investigated breeds we detected the presence of both mtDNA lineages, while Amiata donkeys were characterized by mitochondrial haplotypes belonging to the *E. a. somaliensis* lineage only. The genetic relationships between the Italian populations are discussed and interpreted according to the most recent bibliographic data.