

## Positive Selection in the ATP8 gene in the evolution of the Mountain Hare (*Lepus timidus*) revealed by mitogenomic analyses

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Mitochondrial DNA (mtDNA) introgression has been frequently detected among hare species and almost all the cases involve the arctic/boreal species *Lepus timidus* (mountain hare) as the mtDNA donor. *L. timidus* mtDNA introgression is geographically and taxonomically widespread, potentially affecting over 10 other hare species. As *L. timidus* is well adapted to cold environments and the mtDNA codes for proteins that are central in the regulation of heat and ATP production, we tested here the hypothesis that *L. timidus* mtDNA evolved under positive selection. We analyzed the patterns of codon evolution of the 13 mtDNA protein coding genes in 9 hare species, and detected signals of positive selection in one codon of the ATP8 gene in the *L. timidus* lineage. This result suggests that *L. timidus* mtDNA evolved under positive selection, eventually for adaptation to cold climates. It also strengthens the hypothesis that mtDNA introgression involving *L. timidus* might be adaptive.

[This work was partially funded by FEDER funds through the COMPETE program and Portuguese national funds through the FCT – Fundação para a Ciência e a Tecnologia – PTDC/BIA-EVF/111931/2009 research project.]

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