Portuguese native domestic dog breeds: a multidisciplinary approach to their characterization

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Abstract

Currently there are 10 established dog breeds registered in the Portuguese kennel club, 8 of which are internationally recognized. These are all working dogs, selected and still used today to work as livestock guardians and herders, hunters or fishing assistants. With the increased deterioration of the rural lifestyle observed in Portugal since the end of the 19th century the need for dog's specific work has been decreasing. Following the Food and Agriculture Organization (FAO) classification, some Portuguese native dog breeds are considered to be Endangered. It is therefore important that efficient strategies for surveillance, evaluation, conservation and utilization of this available genetic resource are established as soon as possible. In order to better identify this Portuguese native animal resource, dog breeds were studied regarding their morphology and genetic composition using molecular markers. Morphological data indicate that for these breeds show sub-structuring related to their breeding system: "kennel-bred" versus working animals. They differ in several variables regarding body size and, in some cases, proportions, which are critical characters for working performance, the very aspect for which these breeds were selected for. The use of a combination of different molecular markers allowed assessing the genetic diversity for the native breeds, and a better understanding of their origin and evolutionary trajectory. Higher levels of genetic diversity were detected in comparison to other breeds and consequently a lower level of breed differentiation. However we could find in most cases a correlation between breed affiliation and molecular structure. Based on mitochondrial and Y-chromosome DNA we found no evidence of local domestication of these breeds. We are currently also assessing new approaches to the characterization of the past and present of Portuguese dog breeds, such as the molecular study of ancient dog-archaeological remains, more in-depth analysis of biometric traits, comparison of morphological data to breed standards and biomechanic analysis of movement.

Poster
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