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MITOCHONDRIAL PROFILE IN BULGARIAN NATIVE BREEDS OF DOGS

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Summary

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Domestication of dogs has covered whole Eurasia. Domestication is related to the period before the last Ice age (40-30 000 BC) and this continued later in time (Neolithic 15-10 000 BC). This implies the existence of several stages and centers of domestication in Eurasia. According to recent research it is likely that Europe is a major center of domestication. Studies of mitochondrial heredity in dogs show several major haplogroups. Basic haplogroups A, B and C occur in all Eurasia, while groups such as D, E and F are rather regional. For Europe, such a group is D, while E and F are of East Asian origin. In Bulgaria three local dog breeds are considered endagered: Karakachan dog, Bulgarian Barak and Ludogorsko beagle. Although diverse phylogenetic and population genetic studies of various breeds in Europe and other continents are present, until now Bulgarian local breeds remain unexplored, both in terms of their origin (phylogenetic relationships) and in terms of assessing the genetic structure of their populations in our country. Over the last year about 50 individuals from the Karakachan dog were examined in terms of mitochondrial heredity (D-loop, HVR1). The method includes isolation of DNA from hair follicles and stems, conventional PCR and sequence analysis of the amplificated fragments. The data show the presence of a variety of European subhaplogroups represented by haplogroup A (about 60%), B (about 30%) and D. The most interesting group is D (D1), which a frequency of about 10% and possibly of regional origin. Subhaplogroup D1 is specific for Southern Europe (found only in Italy), while the sub-group D2 is distributed only in Northern Europe (Scandinavian Peninsula). The low number of modern populations of the local dog breeds is a prerequisite for a high level of inbreeding. This leads to low levels of genetic heterogeneity, which in turn determines high levels of homozygosity and phenotypic expression of the recessive alleles in populations.