

Study of allelic pattern of PLAG1 gene in the historical and modern populations of two oldest Russian dairy cattle breeds

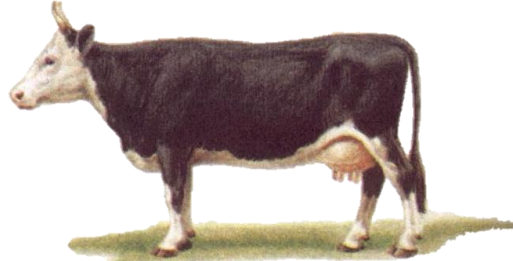
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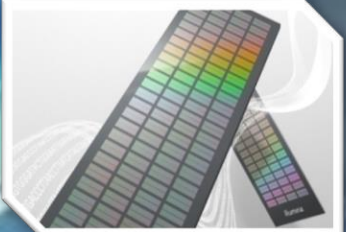
~100 years ago



present time

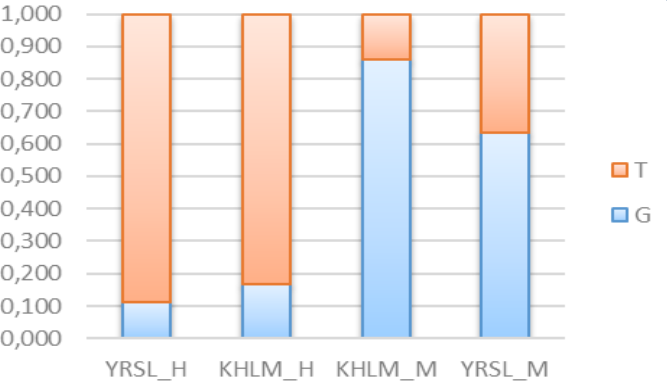


The aim of our work was to evaluate the effect of long selection for the increased body height on the alterations of the allele's frequencies of the PLAG1 gene in the historical and modern populations of the Russian Yaroslavl and Kholmogor dairy cattle breeds.



The historical specimens of Yaroslavl (YRSL_H, n=22) and Kholmogor (KHLM_H, n=12) cattle dated by the first quarter of the 20th century were derived from the craniological collection of the E.F. Liskun Museum for Animal Husbandry. The modern representatives of Yaroslavl (YRSL_M, n=31) and Kholmogor (KHLM_M, n=25) breeds were used for comparison.

Results. We observed significant differences in allele frequencies of PLAG1 genes between historical and modern populations of both breeds. The frequencies of G allele, which is associated with higher stature, were increased from 0.114 in historical Yaroslavl cattle and from 0.167 in historical Kholmogor cattle to 0.633 and 0.860 in the modern breeds' representatives, respectively. Our data suggest that PLAG1 gene was affected by artificial selection in studied cattle breeds. The research results will be useful for elucidation of the history of these two oldest Russian dairy cattle breed.



G and T alleles are associated with higher and lower stature, respectively.

The samples were genotyped using high-density DNA arrays (Illumina Inc., USA). The historical DNA was treated by USER enzyme before genotyping to avoid the misincorporated nucleotides occurred due to post mortem DNA damage.

The study was funded by the RSF No. 21-66-00007

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