



Cloning and association analysis of *KIT* and *EDNRB* polymorphisms with dominant white coat color in the Chinese raccoon dog (*Nyctereutes procyonoides procyonoides*)

S.Q. Yan¹, C.Y. Bai¹, S.M. Qi², M.L. Li¹, S. Si¹, Y.M. Li¹ and J.H. Sun^{1,2}

¹College of Animal Science, Jilin University, Changchun, China

²College of Animal Science and Veterinary Medicine, Qingdao Agricultural University, Qingdao, China

Corresponding author: J.H. Sun
E-mail: jhsun0528@163.com

Genet. Mol. Res. 14 (2): 6549-6554 (2015)

Received October 1, 2014

Accepted February 23, 2015

Published June 12, 2015

DOI <http://dx.doi.org/10.4238/2015.June.12.8>

ABSTRACT. The Chinese raccoon dog (*Nyctereutes procyonoides procyonoides*) is one of the most important fur-bearing animal species. The dominant white individual, a coat color variant in farmed Chinese raccoon dog, shows a completely white phenotype over the entire body. The *KIT* and *EDNRB* genes have been reported to be associated with the dominant white coat color in some mammalian species. In the present study, the full-length coding sequences of *KIT* and *EDNRB* were amplified from a dominant white and a wild-type Chinese raccoon dog. Sequence analysis revealed that the coding region of *KIT* and *EDNRB* in Chinese raccoon dog was 2919 and 1332 base pairs in length (accession No. KM083121 and KM083122), respectively, and 2 single-nucleotide polymorphisms (SNPs; c.600C>T and c.967G>A) in *KIT* and 1 SNP (c.259A>C) in *EDNRB* was found only in the dominant white individual. An alternative splicing site at the boundary of exons

4 and 5 of the *KIT* gene was identified in both individuals. We further investigated the association between the 3 SNPs of *KIT* and *EDNRB* and dominant white coat color by genotyping 18 individuals. We found no association between these SNPs and dominant white coat color. Based on these results, we can exclude the coding regions of the *KIT* and *EDNRB* genes as determinants of the dominant white coat color in Chinese raccoon dog.

Key words: Chinese raccoon dog; Coat color; *KIT* gene; *EDNRB* gene; Polymorphisms