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

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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