



Identification of single nucleotide polymorphisms in the CCNA2 gene and its association with wool density in Rex rabbits

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ABSTRACT. The Rex rabbit is a typical fur breed. Wool density, hair length, wool fineness, and hide area are the main indices of fur quality. We previously found that the CCNA2 gene plays an important role in hair follicle initiation and development, and it is involved in the distinctive wool density of the Rex rabbit. It is an important candidate gene for wool density selection through marker-assisted selection. We conducted an association study to identify single nucleotide polymorphisms (SNPs) within the CCNA2 gene and their ligands associated with wool density. Using PCR-RFLP technology, we discovered two SNPs (129G>A and 1140G>C) of the CCNA2 gene. Allele frequencies of these two SNPs were investigated and evaluated by the χ^2 test in 100 Rex rabbits. The two SNPs were both in Hardy-Weinberg equilibrium. We also looked

for a potential association of these SNPs with fur traits in 100 Rex rabbits. Rex rabbits with the GG genotype had significantly higher wool density ($P < 0.01$) than those with other genotypes; the other three fur traits did not differ significantly among the genotypes. In conclusion, the two SNPs of the CCNA2 gene affect wool density in the Rex rabbit.

Key words: Rex rabbit; CCNA2 gene; SNPs; Fur; Wool density