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ABSTRACT

Association of a single nucleotide polymorphism in ribosomal protein L27a gene with marbling in Japanese Black beef cattle

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Marbling, defined by the amount and distribution of intramuscular fat, is an economically important trait of beef cattle in Japan. The c2-11#2 expressed sequence tag (EST) has been previously shown to possess expression difference in *musculus longissimus* muscle between low-marbled and high-marbled steer groups, and to be located within genomic region of a quantitative trait locus for marbling. Thus, the ribosomal protein *L27a* (*RPL27A*) gene containing the c2-11#2 EST sequence was considered as a positional candidate for the gene responsible for marbling. In the present study, a single nucleotide polymorphism (SNP) in the promoter region of the *RPL27A*, referred to as *g.3109537C>T*, was detected between the 2 steer groups. The SNP was associated with the predicted breeding value for beef marbling standard number by the analyses using Japanese Black beef cattle population. The effect of genotypes of the SNP on the predicted breeding value for subcutaneous fat thickness was not statistically significant. These findings suggest that the *RPL27A* SNP may be useful for effective marker-assisted selection to increase the levels of marbling in Japanese Black beef cattle.

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