



# Association between a non-synonymous HSD17B4 single nucleotide polymorphism and meat-quality traits in Berkshire pigs

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**ABSTRACT.** Single nucleotide polymorphisms (SNPs) are useful genetic markers that allow correlation of genetic sequences with phenotypic traits. It is shown here that HSD17B4, a bifunctional enzyme mediating dehydrogenation and anhydration during  $\beta$ -oxidation of long-chain fatty acids, contains a non-synonymous SNP (nsSNP) of *chr2:128,825,976A>G*, c.2137A>G, I690V, within the sterol carrier protein-2 domain of the *HSD17B4* gene, by RNA-Seq of liver RNA. The HSD17B4 mRNA was highly expressed in the kidney and liver among various other tissues in four pig breeds, namely, Berkshire, Duroc, Landrace, and Yorkshire. The

nsSNP was significantly associated with carcass weight, backfat thickness, and drip loss ( $P < 0.05$ ). Furthermore, HSD17B4 may play a crucial role during the early stages of myogenesis when expression of its mRNA was significantly high. In conclusion, HSD17B4 may serve as a possible regulator of muscle development, and its identification should help to select for improved economic traits of Berkshire pigs such as carcass weight, backfat thickness, and drip loss.

**Key words:** Berkshire pig; HSD17B4; Single nucleotide polymorphisms; Meat-quality trait