Linkage analysis of SNPs in *IGFBP-6* and its relation with the body sizes of pig

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ABSTRACT. Insulin-like growth factor binding protein-6 (IGFBP-6) is a member of the IGFBP family, which is known to be a key factor in regulating the effect of insulin-like growth factor-2 (IGF-2) on the animal growth and development. Gene sequences of 3'-untranslated regions (UTR) and exon 4 of *IGFBP-6* may influence the expression and proteolysis of IGFBP-6. In this study, 551 bp of the *IGFBP-6* (including 257 bp of intron 3, exon 4, and 170 bp of 3' UTR) were sequenced and compared in the Bama and Tibetan mini-pigs, the Landrace and Large White pigs, and the Northeast wild boars. Six single nucleotide polymorphisms (SNPs) were detected in the *IGFBP-6*, in which T593C, T636C, and T745C were in intron 3, A67G was in exon 4, and G37A was in 3' UTR. T636C, T745C, and A67G were in linkage and formed four kinds of haplotypes, with CCT being the dominant haplotype in the mini-pigs; however, the haplotype block was not formed in the Landrace pigs and Large White pigs or the Northeast wild boars. Based on the above results, we concluded that the SNPs and haplotype of the *IGFBP-6* may be related to the mini-size formation of the pig.

Key words: IGFBP-6; SNPs; Mini-pig; Haplotype; Body size

