



## Single nucleotide polymorphism analysis of exons 3 and 4 of IGF-1 gene in pigs

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**ABSTRACT.** The IGF-1 gene has been implicated as a candidate gene for the regulation of pig growth traits. We analyzed exons 3 and 4 of IGF-1 gene polymorphisms of the Banna mini-pig (28), the Tibetan mini-pig (30), the Junmu pig (55), and L. Yorkshire species (50) using PCR-SSCP. Three genotypes in exon 3 and 6 genotypes in exon 4 were observed, among which, one single nucleotide polymorphism, G201A, on exon 3 and two single nucleotide polymorphisms, A440G and T455C, on exon 4 were found. Statistical analysis of genotype frequencies revealed that the A allele was dominant in the large pig at the G201A locus (PIC = 0.20-0.34), and the AT alleles were dominant in the large pig at the A440G and T455C loci (PIC = 0.30-0.60). The genotype distribution between the various groups was significantly different ( $P < 0.01$ ), with the highest heterozygosity seen in Junmu pigs at 0.223 and the lowest seen in L. Yorkshire at 0.098. The genetic distance of the

Junmu pig from the L. Yorkshire is the smallest, the distance from the Tibetan miniature pigs is larger, and the distance from the Banna mini-pig is the largest. The IGF-1 gene polymorphism and heterozygosity results from various pig breeds indicate that IGF-1 is substantially polymorphic with significant difference of the polymorphic distribution and expression levels among various pig breeds. This information provides a theoretical basis for the genetic background of miniature pigs but also provides means to breed improved pig varieties.

**Key words:** IGF-1; PCR-SSCP; SNP