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Rapid Communication: Linkage Mapping of Porcine Interleukin 6 (IL6)

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Abstract
Source and Description of Primers. Dog primers designed from human sequence (Venta et al., 1996) were used to amplify a 774-bp fragment of the porcine IL6 gene. The 5¢ primer is located in exon 3, and the 3¢ primer is located in exon 4.

Keywords
Pigs, Interleukin 6 Gene

Disciplines
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Comments
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Rapid Communication: Linkage Mapping of Porcine Interleukin 6 (IL6)

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Source and Description of Primers. Dog primers designed from human sequence (Venta et al., 1996) were used to amplify a 774-bp fragment of the porcine IL6 gene. The 5' primer is located in exon 3, and the 3' primer is located in exon 4.

Primer Sequences. Forward primer: 5' GCA CTG GCA GAA AAC AAC CT 3' (GenBank accession no. L77434); reverse primer: 5' ATC TGA AAC TCC ACA AGA CC 3' (GenBank accession no. L77435).

Method of Detection. A PCR amplification (25 µL final volume) was performed using 25 ng of genomic porcine DNA, 1x PCR buffer (Promega), 1.5 mM MgCl2, 200 µM each dNTP, .2 µM each primer, and .6 U Taq polymerase (Promega). The thermocycler profile was 93°C for 3 min; 35 cycles of 94°C for 45 s, 55°C for 1 min, and 72°C for 1 min; followed by a final extension at 72°C for 5 min. Five microliters of the 744-bp product was digested with MspI and separated on a 2% agarose gel.

Description of Polymorphism. The MspI digestion of the IL6 fragment produced a 774-bp band (no cut site), a 674-bp band, and a 100-bp band. The 774-bp fragment was designated as the A allele. The presence of the 674-bp and 100-bp fragments was designated as the B allele (Figure 1).

Inheritance Pattern. A Mendelian inheritance pattern was observed for the IL6 MspI polymorphism in five three-generation families of the PiGMaP reference families (Archibald et al., 1995).

Frequency. Frequencies for the A allele were .95 for Meishan (n = 11), .15 for Large White (n = 10), 0 for Wild Boar (n = 2), 0 for Chester White (n = 9), .20 for Duroc (n = 20), .32 for Hampshire (n = 11), .08 for Landrace (n = 6), and .18 for Yorkshire (n = 11).

Chromosomal Location. Previous physical mapping has placed IL6 on porcine chromosome 9 (Rettenberger et al., 1996). This was confirmed by linkage analysis with significant linkages (LOD and recombination in parentheses) to S0095 (6.65, .16), S0019 (20.40, .02), MYOG (4.00, .15), S0295 (10.05, .11), and S0119 (8.54, .11). These markers are on the published PiGMaP chromosome 9 map. The IL6 locus was most tightly linked to S0019 and likely falls between S0019 and S0119.

Comments. The pig PCR product was sequenced to confirm the product was IL6. The coding sequence was 100% similar to available pig mRNA (GenBank accession no. M80258).

Literature Cited


Key Words: Pigs, Interleukin 6 Gene

Figure 1. Two alleles representing three genotypes. Lane 1: 1-kb ladder; lane 2: AA genotype, lane 3: AB genotype; lane 4: BB genotype. The margins indicate allele sizes in base pairs.