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Abstract

Polymorphism. A restriction fragment length polymorphism (RFLP) was detected in the swine TCP1 locus using the restriction enzyme XbaI. Source and Description of Clone. A 580-bp human cDNA clone for TCP1 was excised from the EcoRI site of plasmid pB1.4 hum (Willison et al., 1987).

Keywords

Porcine, TCP1, RFLP

Disciplines

Agriculture | Animal Sciences | Genetics and Genomics

Comments

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Rapid Communication: An *Xba*I Restriction Fragment Length Polymorphism at the *Porcine T-Complex 1 (TCP1)* Locus^{1,2}

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Polymorphism. A restriction fragment length polymorphism (RFLP) was detected in the swine *TCP1* locus using the restriction enzyme *Xba*I.

Source and Description of Clone. A 580-bp human cDNA clone for *TCP1* was excised from the *Eco*RI site of plasmid pB1.4 hum (Willison et al., 1987).

Method of Detection. DNA was isolated from whole blood, digested with *Xba*I, separated by agarose gel electrophoresis, and transferred to charged nylon membranes. Hybridizations were performed at 65°C for 16 to 20 h in 10% dextran sulfate, .5 M NaCl, .05 M sodium phosphate, pH 6.5, .5% SDS, and 100 µg/mL of sonicated, denatured salmon sperm DNA. Final washes were at 58°C in .7× SSC, .5% SDS for 15 min.

Description of Polymorphism. Hybridization of *Xba*I digests revealed four fragments (Figure 1). The 9.0-kb and 3.5-kb fragments were monomorphic, and the 12.4-kb and 11.2-kb fragments were polymorphic. *TCP1* polymorphisms were also detected with *Sst*I (36 animals).

Inheritance Pattern. Autosomal Mendelian segregation of the 12.4-kb and 11.2-kb *Xba*I fragment bands

was observed in three Chinese × U.S. reference families.

Frequency. Analysis of 41 unrelated pigs from seven breeds indicated overall frequencies of .73 for the 12.4-kb fragment and .27 for the 11.2-kb fragment (Table 1).

Comments. Mouse *Tcp-1* is a polymorphic t-complex gene that codes for a protein expressed in testis as well as in other tissues (Dudley et al., 1984.) Four *TCP1* sequences have been identified in humans, but only one seems to be a functional gene (Willison et al., 1987).

Literature Cited

- Dudley, R. K., J. Potter, M. F. Lyon, and K. R. Willison. 1984. Analysis of male sterile mutations in the mouse using haploid stage expressed cDNA probes. *Nucleic Acids Res.* 12:4281.
 Willison, K., A. Kelly, K. Dudley, P. Goodfellow, N. Spurr, V. Groves, P. Gorman, D. Sheer, and J. Trowdale. 1987. The human homologue of the mouse t-complex gene, *TCP1*, is located on chromosome 6 but is not near the HLA region. *EMBO J.* 6:1967.

Table 1. Percentages of *Xba*I *TCP1* genotypes^a in several breeds

Breed	No.	12.4/12.4	12.4/11.2	11.2/11.2
Meishan	4	0	25	75
Chester White	5	80	20	0
Duroc	7	100	0	0
Hampshire	7	14	86	0
Landrace	7	43	0	57
NIH Minipig	6	100	0	0
Yorkshire	5	100	0	0

^a12.4 allele = 12.4-kb *Xba*I fragment; 11.2 allele = 11.2-kb *Xba*I fragment.

Key Words: Porcine, *TCP1*, RFLP

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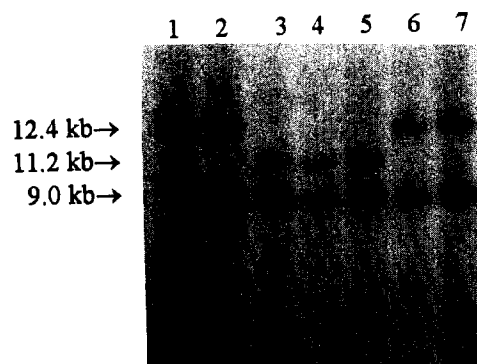


Figure 1. *Xba*I polymorphism at the swine *TCP1* locus. Lanes 1–6, Landrace; Lane 7, Duroc.

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