

1994

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## Abstract

Source and Description of Probe. A 2.7-kb human cDNA clone for TAP1 was excised from the XbaI site of the plasmid pRSV.5neo (Spies et al., 1990). Method of Detection. Hybridizations were performed at 65°C for 16 to 20 h (10% dextran sulfate, 7% SDS, .263 M NazHP04, 1% BSA, 1 mM EDTA, 100 pg/mL sonicated denatured salmon sperm DNA). Final washes were done at 65°C in .7x SSC, .5% SDS for 15 to 20 min.

## Keywords

Pigs, Major Histocompatibility Complex, Antigens, Polymorphism, Genetic Markers

## Disciplines

Agriculture | Animal Sciences | Genetics and Genomics

## Comments

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# Rapid Communication: Restriction Fragment Length Polymorphisms at the Porcine *Transporter Associated with Antigen Processing 1* (TAP1) Locus<sup>1,2</sup>

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**Source and Description of Probe.** A 2.7-kb human cDNA clone for *TAP1* was excised from the *Xba*I site of the plasmid pRSV.5neo (Spies et al., 1990).

**Method of Detection.** Hybridizations were performed at 65°C for 16 to 20 h (10% dextran sulfate, 7% SDS, .263 M Na<sub>2</sub>HPO<sub>4</sub>, 1% BSA, 1 mM EDTA, 100 µg/mL sonicated denatured salmon sperm DNA). Final washes were done at 65°C in .7× SSC, .5% SDS for 15 to 20 min.

**Description of Polymorphism.** Hybridization of *Sst*I digests with the human TAP1 probe revealed three fragments. The 9.8-kb and 7.2-kb fragments were polymorphic, and the 4.2-kb fragment was monomorphic. Hybridization of *Nco*I digests with the human TAP1 probe revealed four fragments. The 2.8-kb fragment was polymorphic and the 6.1-, 3.6-, and 1.8-kb fragments were monomorphic. No polymorphisms were detected for the *TAP1* locus in unrelated pigs using *Xba*I (16 pigs), *Pvu*II (16 pigs), or *Rsa*I (16 pigs).

**Inheritance Pattern.** Autosomal Mendelian segregation of the 9.8-kb and the 7.2-kb *Sst*I polymorphic fragments was observed in 34 pigs in a three-generation Meishan-Landrace reference family. Autosomal Mendelian segregation of the 2.8-kb *Nco*I fragment was observed in 27 pigs in a three-generation Meishan-Hampshire reference family.

**Frequency.** Analysis of 42 unrelated pigs from seven breeds produced estimated allelic frequencies of .45 for the 9.8-kb *Sst*I fragment and .55 for the 7.2-kb *Sst*I fragment (Table 1). Additionally, the polymorphic 2.8-kb *Nco*I fragment was found in 66% of the

Hampshires tested (six of nine unrelated pigs) but was absent in all other breeds tested (32 pigs from six breeds).

**Comments.** The human *transporter associated with antigen processing 1* (*TAP1*) gene is located in the major histocompatibility complex (MHC) class II region and is involved in control of the cell surface expression of MHC class I antigens. The *TAP1* protein product is homologous to mammalian and bacterial ATP-dependent transport proteins and is also a member of a superfamily of transport proteins. *TAP1* is the standard nomenclature for all species, but this locus has also been called *HAM1*, *mtp1*, *Y3*, *PSF1*, and *RING4* (Monaco, 1992).

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**Key Words:** Pigs, Major Histocompatibility Complex, Antigens, Polymorphism, Genetic Markers

J. Anim. Sci. 1994. 72:255

Table 1. Percentage of *Sst*I TAP1 genotypes in several breeds

Breed	n	9.8 <sup>1</sup> /9.8	9.8/7.2 <sup>2</sup>	7.2/7.2
Meishan	5	100	0	0
Minzhu	3	0	67	33
Duroc	7	28	58	14
Hampshire	9	11	67	22
Landrace	8	0	13	87
Yorkshire	5	60	40	0
Chester White	5	0	20	80

<sup>1</sup>9.8-kb *Sst*I fragment.

<sup>2</sup>7.2-kb *Sst*I fragment.

<sup>1</sup>Journal paper no. J.-15491 of the Iowa Agric. and Home Econ. Exp. Sta., Ames. Project no. 3083 and 3043.

<sup>2</sup>This project was supported in part by the National Pork Producers Council, the Iowa Pork Producers Association, and the USDA. The authors thank J. Newton for blood collection and C. Hergenrader and S. Kenealy for DNA preparations. The human TAP1 probe was kindly provided by Dr. Thomas Spies, Dana-Farber Cancer Institute.

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Received September 1, 1993.

Accepted October 1, 1993.