

This table demonstrates how to compare the Short Tandem Repeat (STR) genotypes of your dogs. <u>PLEASE NOTE: only like</u> genotypes can be compared. You cannot compare genotypes processed using the Single Tandem Repeat (STR) with genotypes processed using the Single Nucleotide Polymorphism Panel (SNP).

You will see that each dog is unique, and you will be able to analyze parentage. Simply write in the letters of your dog's genotype in the order in which they appear on the DNA Profile, as shown in the example below. Then compare the results for each pair of markers. At each marker for a pup, the sire contributes one allele (letter), and the dam contributes one allele (letter). Therefore, the pup should have one allele or the other from the sire and the dam.

Using Genotypes for Genetic Identification and Parentage Verification – An Example

Marker:	PEZ 01	PEZ 03	PEZ 05	PEZ 06	PEZ 08	PEZ 12	PEZ 20	UCB 2010	UCB 2054	UCB 2079	PEZ 16	PEZ 17	PEZ 21	GEN
Sire Genotype =	BE	FG	BC	HH	EE	HH	GI	BB	CD	AA	AG	CD	BK	XY
Dam Genotype =	BF	DG	BC	DG	EE	GG	Π	BB	CD	AB	DE	AB	EF	XX
Pup 1 Genotype =	EF	DG	CC	DH	EE	GH	GI	BB	CD	AB	AE	AD	BF	XY
Pup 2 Genotype =	BF	DG	BB	DH	EE	GH	GI	BB	CD	AA	AE	BC	BE	XX
Pup 3 Genotype =	<u>CD</u>	<u>BE</u>	BB	<u>DD</u>	EE	<u>CH</u>	GI	BB	CD	AA	<u>CD</u>	AC	<u>AB</u>	XX

Parentage verification: At the first marker, the sire can contribute either a B or E to each pup, and the dam can contribute either a B or F. Pup 1 has EF (E from the sire, F from the dam). Pup 2 has BF (B from the sire, F from the dam). Pup 3 has CD, neither of which are present for the sire or the dam. When an allele from the sire or dam does not match with the pup, this is called an exclusion. If we continue this analysis across all fourteen markers, we see that the alleles for pups 1 and 2 are consistent with them being the offspring of the sire and dam (they are *included*). Pup 3, however, is *excluded* at six markers (underlined in the chart), showing that this pup cannot be the offspring of the sire and dam tested. In some instances, a pup will have an exclusion at only one marker. A single marker exclusion may be the result of a mutation event and, from a statistical standpoint, does not provide sufficient evidence to conclusively rule out parentage. Parentage of a sire/dam is considered excluded when the alleles at **two or more** markers are excluded.

Genotype Analysis Table

Use this table to compare the genotypes of your dogs. You will see that each dog is unique, and you will be able to analyze parentage. Simply write in the letters of your dog's genotype in the order in which they appear on the DNA Profile, as shown in the example below. Then compare the results for each pair of markers. At each marker for a pup, the sire contributes one allele (letter), and the dam contributes one allele (letter). Therefore, the pup should have one allele or the other from the sire and the dam.





If you would like the AKC to evaluate the parentage of a dog or litter for you, we offer a **Parentage Evaluation Service**. Based on AKC DNA Profiles, a DNA Analyst will examine the profiles of sire, dam and pups and issue an evaluation of the parentage. The cost is \$50 per litter. This fee does not include the processing cost of DNA Profiles.

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